An international forum for the expression of ideas and opinions pertaining to the submarine telecoms industry
Welcome to the January 2006, 24th issue of Submarine Telecoms Forum, our Asia Pacific edition.

As I write, my 18 year old son hangs precariously from our home’s roof earning a few bucks before returning to university from the Christmas break. The painting we started last year left gaping holes of brown drab, and what we had hoped to finish then is still incomplete. The house looks lots better than it did in the past, but not as good as we would like. But an unexpected warm spell has given just the right opportunity to move things forward. So we are hopeful our abode will be reinvigorated in this new year, as well as our means to afford it.

We start 2006 with some excellent industry insight.

Paul Budde discusses today’s Asia Pacific submarine systems market, while Anne LeBoutillier provides a primer for the finer points of submarine cable conferences. Simon Frater describes the future for cable repair and maintenance, while the Aniva Bay project near Sakhalin Island is revealed. Murray Eldridge describes past and future price market forces. We continue the multi-part serialization by Bob Bannon and Doug Burnett of terrorism and cable infrastructure concerns, while cable security discussion is further enhanced by Jack Runfola and Alfred Richardson. Jean Devos returns with his ever-insightful observations, and of course, our ever popular “where in the world are all those pesky cableships” is included as well.

Happy New Year, and if you’re at PTC, look me up as always at the Mai Tai Bar.
China Telecom to transmit traffic directly between the US and China. This has enabled China Telecom to boost its business while reducing the carrier’s international operating costs.

China Netcom is also becoming more and more international.

We have not attempted to evaluate the differential growth in demand on the three routes that we examined. In general terms we would expect a continuation of very high growth in traffic that is relatively RTD tolerant. Between Asia and Europe the deployment of systems that are less tolerant to RTD is also likely to increase rapidly and this should allow the low RTD route to continue to command a premium, assuming that the in-service performance proves to be exemplary.

In order to maintain a premium price the “high quality” route needs to be high quality as perceived by the users.

In the fifteenth and sixteenth centuries our forefathers founded the “silk routes” and “spice routes” between East and West. In the twenty-first century, carriers have to find the most profitable “routes” between Europe and Asia.

There is a choice of course. Like the explorers of old we can go West or East. We have to decide what is the absolute right fit for our customers.

has entered into an arrangement with

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making available, complimentary to subscribers, comprehensive databases of commercial vessels (www.sea-web.org/), ports and companies (www.portguide.com).

In order to qualify for a free trial of these services, contact LRFTrialOffer@SubTelForum.com.
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AT&T Notes Success with Enterprise Customers Following SBC Acquisition

Just weeks since the formation of the new AT&T Inc., the company has established the leadership of its business sales team worldwide and expanded its suite of networking services, signaling the formal transition and integration of enterprise customers, according to a statement released by the company.

www.subtelforum.com/NewsNow/8_january_2005

Carriers Announce Deals with Auto Industry

In two separate announcements, major European carriers have announced deals with leading automakers that strengthen their positions in that market.

www.subtelforum.com/NewsNow/11_december_2005

China Telecom, Rostelecom Hold Seminar on TEA Services Possibilities

A partnership between China Telecom and Rostelecom has made it possible to hold a business seminar for major European and Asian telecom operators dedicated to the Transit Europe-Asia (TEA) project.

www.subtelforum.com/NewsNow/2_january_2005

CTC Marine Projects opens Singapore Office

CTC Marine Projects’ has opened a satellite office in Singapore in order to support CTC’s increased project activity in the ‘Eastern Hemisphere’.

www.subtelforum.com/NewsNow/8_january_2005

Farice to Open New Pop, Plans Redundant Land Routes

In late January, Farice will open a new Point of Presence (PoP) in Telehouse North in London, in addition to the current PoP in Edinburgh.

www.subtelforum.com/NewsNow/8_january_2005

Haiti License Awarded to TCCN Consortium

Trans-Caribbean Cable Company (TCCC) has announced that the Prime Minister of Haiti, Mr. Gerard Latortue, has approved the licensing and installation of the undersea cable to be owned and operated by the Trans-Caribbean Cable Network (TCCN) consortium.

www.subtelforum.com/NewsNow/11_december_2005

Microsoft and Telstra Relationship to Enhance Business Meetings

Microsoft has announced a new relationship with Telstra to deliver integrated audio and web conferencing services via Microsoft® Office Live Meeting.

www.subtelforum.com/NewsNow/11_december_2005

MCI Launches Industry’s First Comprehensive Security Risk Management Service

MCI, Inc. has announced the launch of its NetSec Security Risk Management Service, a new managed solution that helps companies improve their security by quantifying, prioritizing and remediating security risks across an enterprise.

www.subtelforum.com/NewsNow/11_december_2005

Makai Ocean Engineering Selected for 2005 Compass Industrial Award

The Compass Industrial Award is presented annually to a company that has made a significant and outstanding contribution in the area of oceanography or marine technology.

www.subtelforum.com/NewsNow/11_december_2005

IT International Telecom Commences Fibralink Installation

IT International Telecom has announced that the Fibralink cable network marine installation has commenced.

www.subtelforum.com/NewsNow/20_november_2005

Asia Netcom Touts the Philippines for BPO

During a media briefing, Bill Barney, Asia Netcom’s President and COO, outlined the importance of international telecoms solutions in facilitating the country’s growth through business process outsourcing (BPO).

www.subtelforum.com/NewsNow/11_december_2005

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Fax: +44 (0) 1325 390 555
Email: marketing@ctcmarine.com
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More on SEA-ME-WE-4
There have been many press statements following the inauguration ceremonies for SEA-ME-WE-4 and the following is an official release from Etisalat in which a representative of each consortium member made a statement about the significance of SEA-ME-WE-4.

New World to Establish PoP at NAP of the Americas
New World Network, the principal owner of ARCOS, has announced that it has signed a multi-year contract to establish a point of presence at Terremark’s NAP of the Americas.

North Sea Cable Systems Interconnected
North Sea Communications AS, an independent telecom operator in the North Sea region and a TeliaSonera subsidiary, has made interconnection agreements with both TampNett AS and Central North Sea Fibre Telecommunications Company Ltd (CNSFTC), thereby linking all companies’ fiber optical networks in the North Sea.

Official Opening of Tricom Asia Representative Office in Hanoi
Tricom Asia has recently moved into new offices in the Hanoi Horison Office Suites and had their official opening ceremony on November 22.

PROMET International Inc. Introduces FiBOTM, the First Portable Fiber Optic Connector End-Face Inspection Device
FiBO™, a true phase-shifting Michelson interferometer for non-contact fiber optic connector end-face geometry testing, combines 3D surface mapping and 2D visual inspection capabilities in one compact, portable and sturdy design.

SingTel Unveils New Organization
Singapore Telecommunications Limited (SingTel) has unveiled a new organization structure to leverage its key businesses to be the best communications group in Asia Pacific.

VS NL Chosen Network Administrator of SEA-ME-WE4
India’s Videsh Sanchar Nigam Limited (VSNL) has been chosen as the network administrator for one of the world’s largest and sophisticated trans-continental cable systems—SEA-ME-WE-4 (South East Asia-Middle East-Western Europe).

WFN Strategies Celebrates 5th Year of Operation
WFN Strategies, a provider of telecoms engineering and marine procurement services, celebrated the commencement of its fifth year in operation, and despite a turbulent telecoms market it did so appreciating another year of record growth.

WFN Strategies Certified with SBA 8(a) Status
WFN Strategies, a provider of telecoms engineering and marine procurement services, has been certified as a Participant in the 8(a) Business Development Program by the US Small Business Administration.

WV Fiber Picks Hibernia Atlantic for Connection to LINX
Network services provider WV Fiber has selected Hibernia Atlantic’s trans-Atlantic transport network to provide two OC-48 level services from New York to London to directly connect with LINX, one of Europe’s largest network exchange points.
Since 2001, Submarine Telecoms Forum has been the platform for discourse on submarine telecom cable and network operations. Industry professionals provide editorial content from their own niche and focus.

Each bi-monthly edition includes commentary and information on system and service provision, and issues critical to the industry.

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Post your web linked banner to the home page, as well as News-Now sections of the Submarine Telecoms Forum website, where some 5000+ readers can come as often as every week to view the latest news feed, or our bi-monthly magazine.

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Global expert in cables and cabling systems
Introduction
The shakeout in the submarine cable market in the Asia Pacific region has continued as operators, struggling to handle the changing nature of the market, confront a range of problems. The severe over-provision of undersea cables in the region five or more years ago has seen a lot of unlit fibre sitting doing nothing. More recently we have seen the emergence of VoIP services as a cheaper alternative to the traditional IDD traffic. So those providers that had been reeling under massive debt burdens and overcapacity following the global telecom slump, were hit by a wave of increased competition in the marketplace. This segment of the industry has been experiencing huge price declines – typically 30% to 40% a year. On some routes, prices have dropped by 90%. And all this has led to a string of corporate casualties.

In the last 12 months or so, however, the bad news certainly seems to be easing. And development activity has started to pick up, although so far it has been centred around a few specific events. Creating interest in 2005 we saw India’s VSNL finalising its acquisition of Tyco (overcoming some reservations in the US), and China Netcom ramping up its involvement in the sector after the acquisition of Asia Crossing (forming Asia Netcom). Also interesting has been the progress of a number of new cables on the very busy route between India and Singapore.

We can expect rationalisation within the Asia Pacific undersea cable market to continue as oversupply works its way out of the system. The demand for wholesale services will continue to rise, driven in the short term by voice services, but in the longer term by data services. Asia’s booming IP-based service market will expand further, with the volume of international Voice over Internet Protocol (VoIP) traffic into and out of the region increasing and making significant inroads into the traditional IDD traffic. In the short term this shift in the market has distorted the demand for bandwidth. However, in the longer term, this will inevitably lead to demand for submarine fibre networks to support the necessary increased bandwidth.

VSNL/Tyco
Following the successful bid by India’s VSNL for the acquisition of the US-based Tyco Global Network (TGN) in November 2004, the deal came under scrutiny in the US in early 2005 when some senators began urging an investigation of the national security implications involved in the sale of the Tyco submarine cable network to VSNL. The network was described as a ‘strategic asset of incalculable value to United States security and commercial interests’. The network has been carrying as much as 80% of voice and data traffic across the Pacific from the US. The senators sought a review of the network’s pending sale by the US Committee on Foreign Investment in the United States. The Tyco sale had been aggressively opposed by Crest Communications, part of the Washington-based Carlyle Group.

However, by June 2005, having overcome the concerns in the US, VSNL was able to announce that it had completed the acquisition of Tyco Global Network (TGN), a move that made the operator one of the world’s largest providers of submarine cable bandwidth.

Coming into 2006, VSNL has been busy expanding its global presence and activities. The operator has been setting up operations in Sri Lanka, Singapore, Europe and the US.

India/Singapore
India-Singapore is currently the world’s 2nd fastest growing communications route. Spurred by the burgeoning IT industry in India and a general strengthening of demand, a number of new submarine cable networks have been launched over the last few years connecting India to Singapore, in what has been a ‘bucking of the flat investment in undersea cable’ trend for the wider region.
The US$650 Network i2i, a 50:50 joint venture between SingTel and India’s Bharti Group is a 10,800km cable network linking Singapore with the Indian cities of Chennai and Mumbai. The system had an initial capacity of 160Gb/s, upgradeable to 8.4Tb/s. The entire i2i cable network utilises DWDM technology. It was claimed at launch that i2i was the world’s largest submarine cable in terms of capacity and that the project also represented the largest infrastructure investment involving cooperation between Singaporean and Indian companies.

Another link between India and Singapore was established when VSNL launched its Tata Indicom Cable (TIC) undersea fibre-optic system in November 2004. The cable is 100% owned, operated and maintained by VSNL. The 3,175km cable has its landing points in Chennai in India and in Changi in Singapore. The 5.12Tb/s TIC cable system (initial capacity 320Gb/s) is set to significantly increase the bandwidth capacity available into India. Upon launch, it increased connectivity between two countries by 60%.

In August 2005, VSNL reached an agreement with Networki2i enabling the two operators to use each other’s undersea cable networks. The deal was intended to protect both operators against network failures.

C2C
The C2C cable, owned by SingTel subsidiary, C2C Pte Ltd, presents a sorry tale of undersea infrastructure investment. SingTel had this fibre optic submarine cable network installed in 2001/2002 at a cost of around US$2 billion. The cable links Singapore to China, Hong Kong, Japan, South Korea, Taiwan and the Philippines. The network, with a design capacity of 7.68Tb/s, was launched with an initial capacity of 160Gb/s.

Entering the market after the global telecom market downturn, SingTel’s strategy with C2C was to introduce a modified service model. Unlike traditional submarine cable systems in Asia that provided shore-to-shore connectivity, C2C customers were to be offered the opportunity to purchase capacity on direct links to the various major business centres in Asia and the US from the company and its landing parties. (Hence the name C2C, or City to City.)

Apart from SingTel, C2C’s other investors included Globe Telecom of the Philippines, South Korea’s GNG Networks, Hong Kong’s iAdvantage, Japan’s KDDI-SCS, Taiwan’s New Century Infocomm Co and US-based Tycom Asia Networks, as well as US venture capitalist Norwest Venture Partners.

Following network launch in 2002, the operator struggled to sign a critical mass of service contracts. By early 2003, SingTel was reporting that the C2C business had failed to reach the revenue target required under its US$650 million secured financing facility. C2C subsequently entered into talks with its bankers to restructure the debt. In May 2003, SingTel reported that it had written off the cost of its investment in the C2C cable operation. By the start of 2004, SingTel was preparing to inject US$225 million into C2C as part of a plan to restructure the debt. Whilst the move was not expected to hurt SingTel’s balance sheet, the wisdom of injecting money into a business that had been hit hard by cut-throat competition and overcapacity was questionable. At the same time, C2C moved to reduce its operating costs.

The crunch came in October 2005, when SingTel announced that C2C had been put up for sale by its receivers. Expressions of Interest (EoIs) had been called for the acquisition of all the issued shares of C2C. SingTel was holding 59.5% of C2C. The business had been placed in receivership by its creditors as part of an effort to restructure its US$650 million debt. By December, the receivers reported that they had identified a bid that was acceptable and were going through a process to close the transaction. The identity of the bidding party or parties was not made available.

China Netcom/Asia Netcom
The fate of regional submarine cable operator, Asia Global Crossing (AGC), together with the emergence of new player, Asia Netcom, is typical of the adjustments that have taken place in the Asia Pacific market. After AGC had been struggling for some time with financial difficulties, China Netcom took control of the operator. AGC’s regional network and customers were subsequently moved to a newly created entity, Asia Netcom, a joint venture between China Netcom, the Softbank Asia Infrastructure Fund and Newbridge Capital.

In November 2002, China Netcom formed a subsidiary, Asia Netcom, for the purpose of acquiring some of the assets and operations of financially struggling submarine cable operator, Asia Global Crossing (AGC). The purchase was financed by US$120 million in equity, provided by China Netcom (51%) and US-based investment companies Newbridge Capital and Softbank Asia Infrastructure Fund (49%), and US$150 million in bank loans. The principal asset purchased was East Asia Crossing (EAC), a 19,500km undersea cable that connects Japan, Hong Kong, Taiwan, South Korea, Singapore and Philippines. (AGC subsidiary Pacific Crossing was excluded from the deal, as was Taiwan Crossing, which AGC said would be sold to a US investor.) As part of the deal, AGC filed for Chapter 11 protection in the US Bankruptcy Court in New York. The transaction was finalised in March 2003. Once completed, the deal saw AGC separated from its founder and 59% owner Global Crossing (which was also being sold off in a separate deal). In January 2004, as part of a group restructuring, China Netcom bought out its other shareholders for an undisclosed amount. Asia Netcom was then placed into China Netcom Group’s new division, Netcom International.
Based in Hong Kong, Asia Netcom has continued to operate as an autonomous subsidiary providing a range of cross-border carrier services throughout the Asia Pacific region. Asia Netcom’s EAC system provides links to China, Hong Kong, South Korea, Japan, Taiwan, the Philippines and Singapore. The company also operates a global service network through capacity on third party cables and maintains local offices in all major Asian markets, the US and Europe. The establishment of Asia Netcom for the first time provided a Chinese domestic carrier with a strong offshore footprint.

Indicative of its vigorous approach to the market, Asia Netcom announced in October 2005 that it was set to dramatically improve connectivity options and network performance between South Korean and mainland China. This was to be achieved through the establishment of a landing for the EAC cable in the northern China city of Qingdao. The project, scheduled to be complete by mid-2006, was designed to place an extra 40Gb/s of direct capacity between Korea and China. Once completed, EAC will be the first privately-owned cable system to land directly in China.

The new link was expected to improve network performance between Korea and China, in particular, northern China including the capital city, Beijing. Previously, traffic between the two countries has had to be routed southward through Taiwan and Hong Kong, resulting in extra latency and exposing the traffic to potential congestion. The reduction in network latency between Korea and Beijing (improved by some 40%) would be very important in supporting services such as online gaming, IPTV and live TV broadcasts with their strict network performance requirements.

In November 2005, China Netcom was reported to be in talks with Spain’s Telefonica to sell a strategic stake in Asia Netcom. Telefonica already owns a 5% stake in the China Netcom Group (Hong Kong). Media reports suggested that there were other potential buyers for a major stake in Asia Netcom, including ‘an Indian company’ and Singapore Technologies Telemedia.

**SEA-ME-WE 4**

In late 2005, we saw the commissioning of the fourth in the South East Asia-Middle East-Western Europe (SEA-ME-WE) series of cable systems. SEA-ME-WE4 is now carrying traffic. This latest inter-regional cable system spans some 20,000 km with landings in 14 countries – Algeria, Bangladesh, Egypt, France, India, Italy, Malaysia, Pakistan, Saudi Arabia, Singapore, Sri Lanka, Thailand, Tunisia and UAE. The terabit-capable cable has an initial capacity of 160Gb/s and was built at an estimated cost of US$500 million.

India’s VSNL, reinforcing its desired role as a global player, has been appointed network administrator for SEA-ME-WE 4. Both VSNL and Bharti from India are consortium partners in SEA-ME-WE4, which has 16 such members. VSNL also hosts the network-operating centre for the system in Mumbai.

In the meantime, the SEA-ME-WE 3 cable underwent an upgrade in 2005. In what was the third major upgrade since its completion in 2000, the latest project will see contractor Alcatel adding new-generation DWDM, multi-service optics and global network management. The upgrade would allow the cable to serve as backhaul infrastructure for the new SEA-ME-WE 4 network. It is clear that in the short term the upgrading of existing submarine cables throughout the region will become a significant feature of industry activity.

**CALL FOR PAPERS**

The International Cable Protection Committee (ICPC) is holding its next Plenary meeting in Vancouver from 16-18 May 2006 inclusive. The theme of this Plenary will be: Submarine Cables: Diverse Applications / Common Goals

Presentations that address the following topics are invited:

- Regulatory Requirements in a Repair Emergency
- Environmental Interaction
- Legal & Regulatory
- Cable Protection
- Evolving Uses

Abstracts must be submitted via email to plenary@iscpc.org no later than 28 February 2006. For more information about this Call for Papers and opportunities for exhibitors please visit the ICPC’s website at www.iscpc.org
Happy New Year! Thanks so much to Wayne for asking me to contribute to SubTelForum. I was a bit hesitant at first, since my analysis these days is focused toward conferences rather than the demand for long haul networks, but as I thought about it I realized that I might be able to offer you some insight about conference attendance and sponsorship -- particularly in terms of what indicators you can look to that might help you ensure you’ll achieve a return on investment from the events you choose for your calendar year. After many years as a conference speaker, chairperson and delegate, I’ve discovered from the “organizers” side of the fence a few tricks of the trade that I hope might be helpful as you plan your conference calendar for 2006.

Now, by way of introduction, I should also warn you that I can’t resist providing you a bit of a rundown on the Submarine Networks World 2005 conference that took place in Singapore last September. This was a really exciting event, with nearly 200 participants who walked away with some very positive messages about the industry. I’ll get to that a bit later.

Anne’s practical advice on conferences:

Lesson #1: **Conferences really do offer a return on investment.** The key is to pick the right event, in order to ensure that you will accomplish your specific goals during your time spent at the conference. Conference companies have the ability (and the responsibility) to communicate what type of audience will gain the most from each event. You attend conferences to learn, to network, to benchmark, to sell and to get ideas. You attend conferences to grow your business. Get a clear understanding of who has attended in the past as an indicator of attendance. For a new conference the organizer should provide you with a specific indication of who is targeted for attendance. This

Anne LeBoutillier is General Manager at Terrapinn Pte Ltd., a global firm running specialized business-to-business conferences and trade shows. Ms LeBoutillier’s Telecom and Media Team organizes high level, strategically oriented events throughout the Asia Pacific region. Previously, Ms LeBoutillier was Director, Asia-Pacific at TSA, managing all of TSA sales, marketing, research and analysis activities for the Asia Pacific market which included telecom service providers, infrastructure developers, equipment manufacturers, banks and financial institutions. In her position at TSA, Ms. LeBoutillier was a frequent guest on CNBC News, providing commentary and analysis on subjects such as market demand and corporate activities in the Asia Pacific region, and global telecom markets. She spoke frequently at regional and global telecommunications conferences and also provided commentary to numerous telecom publications on telecommunications demand requirements, market and financial analysis, telecom networks, and the undersea fiber optics marketplace. Prior to joining TSA, Ms. LeBoutillier held management positions in business development, strategic marketing, and product management with AT&T International Operations Group, AT&T Submarine Systems, Inc., AT&T Labs, and Tyco Submarine Systems, Ltd. Upon opening Tyco’s Singapore regional office in 1998, Ms. LeBoutillier directed business development and marketing efforts for Tyco Submarine Systems Ltd. throughout the Asia Pacific region. Ms. LeBoutillier also spent five years with the U.S. Department of State as a Foreign Service Officer. Her diplomatic assignments included a political advisorship to the U.S. Ambassador at the United Nations in New York City, and an assignment as political officer in Khartoum, Sudan. Ms. LeBoutillier received an International MBA from Thunderbird, The Garvin School of International Management and holds a bachelors degree in Political Science and International Economics from the University of Illinois. Ms. LeBoutillier resides in Singapore with her husband Kris, a professional photographer.
type of information should be available as you make decisions on your schedule for the year, and if it isn’t it may suggest the organizer hasn’t fully developed their conference concept or marketing strategy.

Lesson #2: The speakers list tends to be reflective of the conference audience, so look carefully at speakers’ geographic locations, business sectors and level in their companies. I tend to focus on high level and strategic events, and therefore invite speakers that are senior levels within their firms. But if I were to run a more technical conference, I would bring in speakers who are engineers and project managers, in order to ensure they speak to the appropriate level for my audience (and vice versa, to draw the correct audience).

Lesson #3: Conference content is where it’s at. To be honest, there are plenty of delegates who attend conferences based more on the speakers and sponsors than they do in consideration of the content. I personally feel that content is crucial to the overall value of a conference and should be considered as carefully as everything else in an attend-don’t-attend decision. The great thing here is that YOU can influence content. Any conference organizing firm should welcome your thoughts and suggestions for content, and in fact again have a responsibility to seek input from outside sources. But one note here: please don’t be offended if a conference organizer does not ask you to speak at an event, especially if you spoke the year previously. Repeat speakers can suggest (and produce!) a stagnant conference, which is bad marketing for both the conference and the speakers. An exciting event will bring in a combination of new speakers, repeat speakers, and even speakers from businesses that are peripheral to the core industry.

Lesson #4: Many conference firms provide speaking positions as a benefit of sponsorship. Perhaps I’m naïve, but only upon joining Terrapinn did I realize why there are often so many speaker-commercials at conference events. If you are an event sponsor, do consider accepting a speaking slot only after careful consideration of your message. Conference attendees become more annoyed than informed by “company commercials” instead of informative presentations. That said, I do believe conferences are a wonderful way to brand your company, demonstrate a long-term commitment to your market and are a great way to highlight new initiatives. Just make sure your speaking content is interesting to your delegate audience so that you ensure a positive branding experience for your firm!

Lesson #5: Sponsorship is good business. Conference sponsorship is a great way to launch new products, establish new offices, expand your business regionally/globally, and establish your brand name. One caution here, if you are looking at conference sponsorship you need to ensure that you have a defined objective, and that your conference organizer understands what you hope to gain from the event. Too often, conference management companies offer standardized sponsorship packages that may not accomplish what the sponsoring firm needs/wants from the event. Be prepared to communicate with your conference organizer, and insist that they adjust their packages, if need be, to best perform for you. Both you and the conference organizing firm should take an active role to ensure your achieve a return on your sponsorship investment.

Lesson #6: There is room for creativity. My view is that every conference should provide you the optimum combination of interest/learning, fun/networking and the ability to grow your business. I joined Terrapinn because I consider them the market leader when it comes to providing the conference experience and generating creative and concrete methods to expand your return on investment. We are constantly looking at new opportunities to bring you even more experience from our conferences, and of course you’re ideas and suggestions are always welcome!

Lesson #7: The best conferences are planned months in advance. Now that I’ve told you how important and welcome your input is, I must also point out that most conference firms will work on a lengthy lead time. At Terrapinn for example, conference content is being drafted and speakers are being invited up to six months before the event! A longer market cycle helps to bring in more of the international delegate base that helps you to expand your contact base and sales potential. It also helps us to bring additional branding value to our sponsors. Consider sharing your conference content ideas, sponsorship and speaking requirements with conference organizers early in the process to ensure your needs are met.

An overview of Submarine Network World 2005
I’m really thrilled to write that 100% of survey respondents told us the Submarine Networks World 2005 conference helped them to expand their business! Our thanks all of you who supported the event last year, and for your continued enthusiasm for the September 2006 event, which will once again be held in Singapore.
“Submarine Networks World has evolved into a comprehensive global connectivity conference, with in-depth coverage of the content and applications that drive demand for bigger and better bandwidth. I look forward to the strategic and long-range planning discussions that always take place at this well organized and networking focused event.”
Tom Soja, President, T Soja & Associates

The concept behind Submarine Networks World moved in earnest last year to one of global connectivity. Content was designed to provide strategic insight on issues ranging from the global network environment to the requirements of carriers and enterprises vis-a-vis global infrastructure connectivity, to the legal and environmental issues surrounding the industry, and finally to a first-hand update on the various projects happening around the world.

“It was the best conference in years! Finally again, some positive stories. It is presently the one and only conference of importance and interest.”
Van Oord Offshore

In what has become a conference tradition, we ended the event with a lively discussion on the “3G of IP – Girls, Games and the Grateful Dead” – a topic looking at how such consumer heavy bandwidth consumption from online pornography, gaming and music downloads will affect global demand and drive the need for greater connectivity around the world.

“After years of significant challenges in our industry, we’re expecting some positive messages for the global telecoms sector. Demand on some routes – with China in particular – is very strong, and new applications such as HDTV will drive demand for additional infrastructure.”
Bill Barney, President and Chief Operating Officer, Asia Netcom, Hong Kong.

Submarine Networks World 2006 will take place in Singapore on 26-28 September. The conference continues the global connectivity theme, and will take a strategic look at the extent to which the “big dumb pipes” in actuality provide the world’s “Intelligent Infrastructure.”

Global Marine Systems, Ltd is supporting the event as our exclusive Platinum Sponsor in 2006. We are already underway in designing the conference agenda and I look forward to speaking with many of you about new initiatives and expanded conference themes for the event. Our goal is to ensure we help you to drive your business, so please do feel free to contact me if there is specific content you would like for us to address, speakers you would like to hear from, or new initiatives you would like to hear/talk about!

Many thanks to Wayne and to all of you for your continued support. My team and I look forward to seeing you at Submarine Networks World 2006!

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Every subsea telecommunications cable brings with it the issue of its maintenance and in particular, its repair on sustaining damage. Every cable is sooner or later liable to a break. If its owners are expecting further use from the cable, then it will need to be re-instated.

This may seem painfully obvious yet it expresses some fundamental truths about all subsea cables: (1) how to ensure that the cable is resilient to damage in the first place; and (2) how the cable owner will respond when the cable sustains damage.

Much of the history of the telecommunications industry’s response to the risks to a cable on the seabed is better covered elsewhere. Suffice it to say that it has been driven from different directions. One is in response to the increasing extent and technological improvement of fishing techniques that permit deeper and more aggressive fishing tactics. Another is commercial pressure from the cable owner at system installation for the use of techniques that conceal the cable, given the loss of availability of ideal routes across the seabed that would have naturally provided better protection. The reduction of route availability has been caused by the use of the more ideal cable routes by earlier cables and the issue of recovering out-of-service cables so to free up previously used routes is outside the scope of this article.

Increasing resilience to external threats to the cable has been achieved by progressive improvement to burial techniques. The development of seabed ploughing and post laid burial techniques has substantially improved resilience. Burial to 1 m has been commonplace for a substantial period, and demands for burial in excess of 3 m can no longer be considered exceptional. In some parts of the Asia-Pacific region it is commonplace.

To achieve these depths, the assets available to implement them have also grown. Marine installers routinely hold seabed ploughs capable of achieving 3 m burial and remotely operated vehicles (“ROV’s”) with complementary capabilities. There are also a number of assets that are independently available in the marine engineering industry at large. The result is that it is probably true to say today that the cables installed in the last 6 years have never been so well protected from external aggression.

A further factor that is pertinent in the reduction of external damage to subsea telecommunications cables in some parts of the world, especially in the North Sea and the Western Approaches, is a significant reduction in fishing. If, and when, fish stocks recover sufficiently to permit extensive fishing once again, then an increase in incidence of external aggression to cables can be expected. No doubt this will test some of the improvements in protection introduced in the more recently installed cables.

To a cable owner, a break on some part of its telecommunications network, especially a subsea segment, will at best cause it to lose margin resulting from switching the capacity that would have been carried on that segment to another cable very probably under some restoration agreement with a competitor. In the worst cases, a cable owner might suffer commercially irrecoverable losses of revenue, or actually having to pay more to carry its customers’ traffic than it will actually receive from them. None of these circumstances could be considered acceptable.

The pressure is very much to achieve a repair and the return to service of the segment as soon as possible. Traditionally this has been achieved by calling on the prearranged services of a suitably equipped repair service. Such services so far have entailed capital intensive solutions comprising purpose built or adapted ships equipped with specialist equipment manned with marine and engineering crews experienced in the work. This all requires a significant initial capital expenditure with substantial annual running costs to maintain each ship and its equipment and crew in the required location and ready for call out.

Around 10 years ago, such services were being provided largely by subsidiaries or divisions of the national incumbent telecommunications companies. In the United Kingdom, it was Cable & Wireless Marine and BT Marine. The owners of these businesses, being themselves transoceanic telecommunications cables owners and operators, saw their cable ships as in-
house facilities first rather than active profit centres in their own right. Further, the historical nature of the telecommunications businesses worldwide meant that many of the co-owners of many of the submarine cables were state-owned and likewise viewed as public necessities rather than shareholder owned, profit driven, businesses many of them are today.

This in turn was reflected in the nature of many of the maintenance arrangements worldwide. From ACMA and NSCMA in the Atlantic and Europe to SEAIOCMA and the Pacific zones, the predominant structure for procuring maintenance and repair services for subsea cables was the “club” method.

The club method works on a day-to-day basis of distributing the cost of providing the vessel as a standby facility between the cable owners of the cable that that had joined the club. Any individual cable that required a repair would be solely responsible for the cost of that operation. Depending on the circumstances, the day-to-day standing charges for the assets assigned to the club by the cable ship owning companies would also include an element for the acquisition cost of the assets.

While revenues from international telephony remained high and with it the opportunity of substantial margins to the cable owners, the club method worked very successfully. It is likely that many of the larger telecommunications companies who maintained cable ship divisions gained by being service providers to a club as much as they paid out around the world.

The late 1990’s saw radical change to the telecommunications market. Deregulation, probably some latent conservatism amongst the incumbent telecommunications companies, and the substantial shift both in the demands for telecommunications services and in the nature of the services demanded, provided opportunities not previously encountered. Businesses such as Global Crossing were formed out of nowhere. Entrepreneurial techniques were used to meld substantial financial resources obtained from banks and money markets with growing capabilities in the technology to install substantial quantities of telecommunications capacity. These companies were staffed with substantial numbers of people who either had little or no previous telecommunications experience or those who had but were seeking a change from their well-established Telco employers. The result were new entrants who had approaches more akin to the general principles of procurement for both installation and repair and maintenance services than an understanding of what was a long-standing collaborative method.

The vast increase in the available telecommunications capacity was not, in hindsight, matched with the expected increase in demand. The consequences inevitably led to a collapse in telecommunications capacity prices on some key routes, notably in the Atlantic. In other parts the world, the availability of capacity is more equal to the demand, and in some cases there is little alternative to the single system in place.

It is little surprise that where a market collapses, the lead supplier (in this case a Telco) will look to recover as much of its margins as possible, including out of its own supplier base. The price for repair and maintenance services is no less susceptible to this approach. Over the last few years this is exactly what the cable owners have set out to achieve.

Successive rounds of recent negotiations for new or renewed maintenance contracts have often had the appearance of Dutch auctions. The price offered for the service by the purchasers has successively been reduced firstly to a point where the shipowners lost all margin and then secondly, depressed further where even the contribution received from the service price dangerously approached actual cost.

With a history of enjoying the featherbed reassurance of the club system, many shipowners had inevitably lost touch with the concept of efficiently run businesses. For instance, some suppliers to shipowners were able to be paid three or four times the market price for their goods by simple dint of imposing annual increases in price over many years that were never questioned. It is difficult to argue how forcing the removal of such waste and inefficiency from the service supply was unfair on shipowners. However it caused pain and suffering as they were forced to examine their business models and reform accordingly.

It is perhaps to be expected that this process did not just result in the removal of waste and inefficiency. Some of those tasked with the procurement of the service for the Telco customer took on a more revolutionary zeal. To them, price cutting came to be seen infinitely available without consequence. Indeed, there is a well-known business practice of forcing a supplier to accept the lowest prices possible regardless of whether they are below the level of adequate sustainability.

In United Kingdom, a recent example of this was provided by British Airways and Gate Gourmet over airline meals. No doubt as a result of perceived negotiating strengths, or the lack of them, Gate Gourmet accepted a contract that did not have sufficient additional revenue in it for it to be able to maintain standards and administer the contract to the standard expected by British Airways. On the other hand, British Airways, or at least the relevant procurement portion of the company, perhaps felt that the keenness of the price obtained was the only adequate measure of value. The consequences were disastrous. Industrial relations broke down in Gate Gourmet as a consequence of its reaction to a contract that it could no longer sustain, and British Airways found itself cancelling 700 flights and losing GBP30 million revenue for the lack of meals. The resultant compromise found the price being adjusted upwards.

It is probably unlikely that any cable owner who has contracted for repair and maintenance services will suffer quite the same failure in service as British Airways did. However prices that are depressed so significantly to being little more than the day-to-day cost of maintaining the assets on standby does not bode for a healthy future. For a start, cable ship's and ROV’s have finite lives. In the case of ships, it is usual to expect to replace a ship after 25 years’ service from new. They are expensive capital assets and have to be paid for. The shipowner has to have sufficient revenue to plan for fleet replacement. Smaller, marine services only, businesses will have the most difficulty in meeting this plan. Larger businesses that service greater portions of the submarine cable system supply and maintenance market will have greater opportunity for cross subsidy within their businesses to be able to
take, what could euphemistically be called, a strategic
view to maintenance.

It is often been said that cable owners have feared
domination of any portion of their transoceanic systems
supplier pool by any particular supplier. However with
that goes responsibility of managing that supplier pool
within the constraints of local competition and anti-trust
rules to ensure that, along with the bread-and-butter,
there is enough jam to allow for fleet replacement and
long-term investment in equipment and people.

So what then of the suggestions that cable owners should
no longer have to pay for maintaining maintenance
services on standby? There would appear to be two
means of providing maintenance services in the face of
this.

The first, and assuming that there were shipowners
prepared to do so, would result in repair costs being priced on an opportunity basis and given the
unpredictability of the opportunity, be very expensive
as a result. It would be of little surprise to find that
the cable owner that suffered more than one repair in a
year would easily pay more than had it subscribed to a
maintenance contract and paid the operational expenses
as those repairs occurred. So far, early experiments with
this model have found the shipowner has had to be very
sure of the likely actual demand to ensure sufficient
revenue.

The second means would be similar in many ways to
the current maintenance contracts. However in place
of individual negotiations with shipowners, the cable
owners would purchase insurance contracts against
the need for a repair. Yet this approach seems just to
be replacing pre-existing arrangements direct with
shipowners, with a pre-existing arrangement with an
insurance company. It is difficult to see how this could
be cheaper than the current model given its effects on
the availability of maintenance and repair services.

With the insurance option, there are two courses of
action available to the cable owners and the relevant
insurer. Firstly the current prearranged assets model is
reflected in the insurance product. This would require
the insurer to negotiate with shipowners for standby
facilities. It is not difficult to see how this inclusion of
a third party would cause a significant disconnect
between the long established cooperation between
cable owners and shipowners of the technical issues
that arise in cable repair and maintenance. The insurer,
being the paying party, would seek to involve itself in
all aspects of its product. This would seem to be an
unsurprising commercial conclusion. In addition, the
insurer would bring additional overhead requirements
and margin expectations which are difficult to envisage
being mitigated by the availability of sufficient savings
elsewhere in the model. In other words: the price would
go up.

An alternative model would be for the insurer to provide
a financial only solution reimbursing the cable owner
for the cost of the repair. Once again, this probably
differs very little from a shipowner led opportunity
based service but with the additional costs of an insurer
on top.

Further, and depending on the frequency of repair as
in any particular region, the availability of alternate
sources of supply may become severely restricted
by the simple operation of economics and the lack of
viability of having more than one insurance product
offer from different insurers. Clearly there would
be greater opportunities for diverse products in regions
where there is significant demand for repairs, however
where the fault rate is low, there is probably little room
for more than one insurance led service provider.

These models have so far assumed that there are specialist
operators of cable ships with assets specifically devoted
to the submarine cable business. If maintenance and
repair revenue should fall away (overall or in any region)
to being an opportunity only market, then there is also
a market model which has no specialist ships. Instead,
those requiring such services would have to obtain
services from generic marine engineering businesses
that are able to temporarily equip a ship (whether they
owned it or hired it) for the operation. It is unlikely that
this would be the cheapest solution and risks the loss in
some regions of professionals skilled in the art of cable
repair.

Over the coming year or so, both ACMA and SEAIOCMA
will fall to be re-negotiated. SEAIOCMA, one of the
‘old’ club contracts, has been a lucrative contract for
the shipowners. ACMA has suffered significant price
and service level pressure from cable owners. It will be
interesting to see how these contracts are replaced given
the depressed revenues from capacity sales, especially in
the Atlantic and the now established performance of the
cable protection methodologies introduced or enhanced
over the last 6 or 7 years. While we should expect the
replacement for SEAIOCMA to be less generous towards
the shipowners, it equally should be hoped that ACMA
takes account of the future that the cable owners wish to
see over the coming decade.

Simon Frater has been involved in commercial contracts for over 18 years. After accomplishing
a law degree from Brunel University and a professional legal qualification in the UK, he initially worked in ship
and asset finance from 1987. From 1990 he has specialized in commercial affairs and contracts and with the last six years
exclusively in the submarine telecoms market while with Global Marine Systems, where
he was the principal legal support to the company’s commercial activities ranging from
system supply, installation and maintenance with significant involvement at all stages of
contract and project life. He joined WFN Strategies in 2005 as Commercial Manager, and has supported telecom projects in West
Africa and Gulf of Mexico.
There is no doubt that submarine telecommunication systems bring high reliability and security over other mediums of transmission. Consumers, like us, want and demand uninterrupted communication service. We would be lost today without access to our internet, telephone, faxing and cable TV services. Many today believe that these submarine telecommunication systems, the international umbilical cords, are endangered from a variety of sources. Some believe that these systems are vulnerable to terrorist action.

If all or most of the systems linking to and from the USA were to go down at once it is hard to say what the cost would be to industry and the US or UK government. However, as a reference point, telecommunication revenue in 2003 was $12 trillion for the USA and about $2 trillion for the UK. Revenue generated by submarine telecommunication systems is not broken out separately but it is a significant contributor to these revenue numbers.

One of the more significant facts is that all international traffic to the US passes through some foreign source and a very important point is that no company in the United States has a majority ownership in any of the systems. This is noteworthy as it represents a serious security risk for our government and industry. The need to gain more direct control of critical communication traffic to the US is of utmost importance.

Damage at sea is more likely to be caused by fishing activity, anchoring and occasionally by Mother Nature. A single boat dragging an anchor or some other devise with the intent to damage all of the submarine cables landing in the US would not be very effective nor get very far. The network operations cable management system would sound alarms and action would be taken. The actual practicality of all these systems being damaged at sea at once is very slight. Various opinions within the submarine community believe that more submarine cable surveillance should be employed and cable systems should be buried to deeper depths. This in itself is not a bad thought but it does not encompass the cost ramifications that would be required.

There are a variety of ways submarine cables can be protected. The more practical methods are self healing rings, cable selection and deeper burial. For a self healing ring the price of the system will be significantly higher due to the additional equipment required versus a point to point system. Proper cable selection can assist in minimizing the damage to a system. However, the more protective material you apply the more the cost. Deeper burial and horizontal drilling at the shore end is one of the better solutions for protecting a cable, but once again it comes with a price. Other steps that can be taken now are the examination of existing systems and their landing sites and make changes where possible and practical. The planning of future systems needs to be in a manner that will make the system less vulnerable.

In the world we live in today intelligence or counter intelligence against planned disruptions is critical. Information is critical for effective action. Today what we suffer from is not a lack of information but the ability to define critical information and get it to the concerned parties in a timely manner for appropriate action. But how do we distinguish between accidental and deliberate damage? If we can distinguish between the two, what should the response be? This issue is being addressed by numerous sources and has been solved within some areas but not universally.

To provide better protection and security the question becomes who should pay- owners of the systems or the government? Actually at the end of the day the answer will be us, the consumer or taxpayer who will pay for improvements in security and protection. What becomes more of a question is if any action is to be taken on existing systems, who puts up the capital required to provide this additional protection and how will this capital be returned? Will it be through an increase in
prices or taxes? This may be the time that industry and stockholders should re-evaluate their contribution to national security in order to protect their revenue of today and tomorrow.

Before this question is answered we need to have a greater consensus in regard to protection and security of infrastructure. There is an important need to re-think the protective measures of our infrastructure. In order to make effective and practical measures industry is in the best position to lead and implement changes with government support. The government, specifically the Department of Homeland Security, should be the one to name this committee and its head. Government cannot be solely responsible for consensus or change. Both industry and government have the same critical need. Industry needs to protect its revenue from disruption and the government needs to protect its communication. That is why industry and government need to become partners and the somewhat adversarial relationship between them requires minimization.

Jack Runfola is the Managing Director of International Technology Resources LLC (ITR). With over 30 years of experience he has managed internal operations, business development, project management, contract negotiations and manufacturing operations for domestic and international companies. ITR is a professional service company that offers, engineering for cable systems and networks, operation standards, project planning and management, quality assistance, business development, strategic planning, budgeting and contract support.

Alfred G. Richardson is Chief Technical Officer of ITR. He has over thirty years of management responsibility in engineering, product management, manufacturing, and quality. Al is a recognized “Subject Matter Expert” in undersea fiber optic cables and has been Granted US Patent: Method for Fabricating An Optical Fiber Cable, Patent Number 4,484,963 Nov 27, 1984. He also certified in CMMI and 6-Sigma trained.
Global Marine Systems Limited Case Study: The Aniva Bay project

The Customer
Saipem are a global contractor in the offshore construction industry, particularly in deepwater pipelay and field development and offshore drilling. After investing some 1.2 billion Euros in its offshore fleet between 1998 and 2001, it now has one of the most technologically advanced and efficient in the industry.

Saipem were the lead contractor working for Sakhalin Energy Investment Company Ltd (SEIC), a Shell-led operating company for the Sakhalin II Production-Sharing Agreement. This organisation was formed in 1994 to develop the Piltun Astokhskoye oil field and the Lunskoye gas field in the Sea of Okhotsk, offshore Sakhalin Island in the Russian Far East. The Sakhalin II development is the largest single foreign direct investment project in Russia, requiring a multi billion dollar investment.

The challenge
Global Marine was sub-contracted by Saipem to install a 5 km length of integrated power/telecom cable from the beach to a Tanker Loading Unit. The cable had to be buried to a minimum cover depth of 0.5 metres through rock. Networker and Rocksaw were assigned the task of making the 3,500 mile journey between Indonesia and Sakhalin Island to mobilise for the project. The scope had to be delivered to specification within a tight schedule to allow other construction operations to be completed before the onset of winter. Infrastructure on the Island was poor, so every conceivable spare part was transported up to Sakhalin with the aim of limiting the impact of any mechanical downtime. Networker was supported by two anchor handling tugs and a support barge to transport Rocksaw and Injector spares. Safety and protection of the marine environment were of the highest priority for our customers, who intensively audited the vessels prior to and during mobilisation.

The benefits
To Saipem and their Customer (SEIC) the installation of the power cable allows the TLU to be powered directly from the shore thus providing a robust dedicated power supply in a hostile offshore environment. Highlights Global Marine’s capability in installing power cables while satisfying the stringent demands of the offshore market. This new customer presented a dynamic and challenging operating environment which continues to validate our product portfolio as we succeed in penetrating new markets worldwide.

We say...
By any measure, this was a successful operation. We continue to expand our skill base and once more have demonstrated the effectiveness of our subsea tools and platforms.

Facts and figures
The cable was installed to the customers’ satisfaction by the earliest date possible, and was buried to a minimum depth of 1.3 metres through rock. The vessel arrived back in Batam on schedule, a remarkable achievement for a 120 day project.

The customer says...
“Well done and a task well executed”. - Alan Rogers, SEIC

“Congratulations to the Networker and her crew for a job well done in Sakhalin”. - David York, Saipem
Global Marine Systems Limited Case Study: The Aniva Bay project
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International Terrorist Law Update for Infrastructure Protection

One of the central tenets of U.S. homeland security policy must be adherence to the norms of international law as embodied in UNCLOS and other treaties to which the United States is a party, such as the 1959 Geneva Convention on the High Seas and the 1884 International Convention for the Protection of Submarine Cables. In essence, these treaties guarantee the right of all nations to lay, maintain, and repair international cables on the high seas beyond the usual 12 NM territorial seas. These U.S. protections extend to not only telecommunications cables, but to power, scientific, and military cables as well. By allowing domestic U.S. states like California, Oregon, or New Jersey, or even federal agencies such as NOAA or ACOE to assert regulatory jurisdiction over cables beyond U.S. territorial seas, a negative precedent is set by which foreign countries can extend their jurisdiction over U.S. military or scientific cables laid outside but near their territorial seas. China currently adopts this position, and Canada is currently considering similar proposals. If this happens, the ability of the U.S. to use underwater sensors and cables to collect intelligence and scientific data beyond U.S. shores may be substantially degraded in short order.

Homeland Security to Prevent Underwater Telecommunications Fiber Optic Cable Destruction

The Department of Homeland Security will exercise its unique powers under international law to proactively diminish the prospects from injury to undersea cables by terrorist actions. When cable owners and operators report possible terrorist activities, homeland security forces, i.e., the U.S. Coast Guard, must act to protect this vital infrastructure.

Under UNCLOS, nations may claim a territorial sea up to 12 nautical miles from the coastal baseline. While the United States is only a signatory to UNCLOS, it recognizes a 12 nautical mile territorial sea, a 24 nautical mile contiguous zone, and a 200 nautical mile EEZ. UNCLOS recognizes the right of innocent passage by foreign vessels through territorial waters. Outside of territorial seas, on the high seas, there is generally no right for a coastal nation’s naval forces to board a foreign vessel without the permission of the ship’s flag state. International law, however, offers an exception in the case of vessels suspected of injury to submarine cables. Once again, however, this right depends upon adherence to international law.

Preparedness and Prevention Program

Intentional acts, such as vandalism, sabotage, and terrorism, can be hampered, if not prevented, by

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2 Presidential Proclamation 5928 (54 F.R.77) Within territorial seas, a coastal nation’s naval and police forces can board foreign vessels that it believes will violate national laws and national defense.
3 Presidential Proclamation 5030 (48 F.R. 1061) In the Exclusive Economic Zone (‘EEZ’), the nation can regulate offshore structures used to exploit natural resources, which are defined as oil, gas, minerals, and sedentary marine life. Cables not associated with these activities are not subject to regulation, unlike oil and gas pipelines, which can be regulated in the EEZ.
4 Article 10 of the 1884 International Convention on Protection of Submarine Cables provides for such boardings by the commanding officer of a naval vessel to obtain evidence if the officer believes an infraction of this treaty such as injury to the cable has occurred.
an aggressive cable protection policy coupled with unscheduled cable patrols and alert parties reporting individuals found observing or photographing facilities and beach right-of-ways.

An analysis of cable fault histories indicated that cable in water depths of greater than 1,200 meters were the least vulnerable to acts of aggression. Cable segments in water depths of less than 1200 meters experience cable faults at a rate twenty times that of the deeper segments. Records of the International Cable Protection Committee Ltd. (ICPC) support the widely held industry view that faults most frequently occurred at depths between 20 and 70 meters. “External aggression,” either from natural or cultural causes, account for approximately seventy five percent of the failures. Natural external aggression failures result from events such as submarine landslides, abrasion caused by currents or wave action, ice scour, and fish bites. To date, fishing activity (trawling and dredging) and ship’s anchor damage are the primary cause of man-made or cultural aggressions.

Vulnerability Assessment, Facility/Infrastructure Recovery, Risk Management, and Threat Elimination

Risk management has become a highly defined regimen relying on specialized expertise, technical knowledge, and the mathematical regimentation of quantitative analysis. It requires in-depth knowledge of the specific technology application, in this case underwater telecommunications systems technologies, construction implementation, systems maintenance, and restoration technology. For subsea fiber optic systems, it also requires knowledge of oceanographic engineering, navigation, submarine survey techniques, and soil dynamics.

Telecommunications companies such as AT&T, BT, and C&W have cable protection and restoration groups trained to combat service interruptions and aggressive fault events. These individuals are specialists trained in the following:

- Identification of potential risk sites based on historic fault data.
- Establishment of risk boundaries with USCG and NOAA. One bold controversial approach is the one favored by Australia’s new Telecommunications and other Legislation Amendment Protection of Submarine Cables that entered into effect in September 2005.

This law allows the Australian government to designate protection corridors around “national security cables.” These “national security cables’ include the existing Australia-Japan cable, which links Sydney with Japan and then the United States; the Southern Cross Cable, which links Sydney with New Zealand and Fiji and then the United States; and the SEA-ME-WE3 cable, which links Perth with Jakarta, Singapore, and then Europe. Around these cables a national security corridor, up to one nautical mile on either side of a cable, extending through the territorial sea and continuing until the edge of the EEZ or the juridical limit of the continental shelf is established. Future cables can request to be included in these corridors. Alternatively, future cables can land elsewhere outside of the corridors, but they will have to undergo the more complicated existing cable permitting and will not be entitled to the special protections available to cables in the designated protection corridors. These protections include a flat-out prohibition against bottom fishing, anchoring, or other activities that occur on seabeds. Fines in the amount of Australian $330,000, ten years in prison, and forfeiture of the vessel’s gear, in addition to civil damages, will provide a sure deterrent. Interestingly, in considering its new legislation, Australia considered the U.S. model and rejected it because U.S. law is primarily interested in competition and not in security.5

New Zealand also uses protected waters where undersea activities such as trawling are prohibited and subject to heavy fines and prison terms to protect its undersea electrical power and telecom cables in its territorial seas. In both cases surveillance and protection of cables is enhanced. In New Zealand’s case, the historical data shows an additional benefit

5 “Explanatory Memorandum Telecommunications and Other Legislation Amendment (Protection of Submarine cables and Other Measures) Bill 2005.”
in that the marine environment in the protected areas has shown a tremendous rejuvenation in the protected areas since fishing was prohibited.

- Evaluation of ramifications and potential collateral damage (i.e., protected reef ecosystem).
- Protection of Cable Station facility right-of-way protection.
- Establishment of protection and restoration procedures for Cable Owners’ Club and non-members’ cables.

However, due to the underwater environment, infrastructure rebuilds and restoration to the original facility routes can be extremely expensive and time-consuming because faulted cables must be recovered to the surface, repaired on a ship, often in extreme sea states, and reburied beneath the ocean floor to meet ICPC and AT&T protection recommendations and requirements.

Chemical and Biological Disasters Provide Mapping Techniques for Cable Disaster Assessment

Many of the traditional defense contractors involved in mapping, simulation modeling, and related information analysis are examining the need for advanced data fusion technologies for emergency management for natural and man-made disasters. The requirements for these information analysis tools are driven by the Department of Homeland Security (DHS) IAIP and FEMA organizations. Their goals are to manage the following disasters:

- Airborne Toxic Gas Release
- Aquatic Toxin and Biological Threats and Releases
- Flooding
- Oil Spill and Terrorist Destruction of Oil and Gas Infrastructure
- Nuclear Radiation (both surface and subsea)
- Tropical Windstorm
- Wildfire (natural, man-made aggression, and terrorist activity)
- Biological Threats (terrestrial and underwater eco-system disasters)
- Earthquake and Landslide (natural and induced)

As a result of the devastation from Hurricanes Katrina, Rita, and Wilma in the southern United States, it became apparent that better mapping and information fusion tools are required for disaster response. Mapping information provided by NOAA and FEMA must include underwater communications route information to prevent secondary damage by response agencies. The response capabilities were taxed to the limits with the other 2005 disasters of the Southeast Asian tsunami on August 29 and the Pakistani earthquake on October 21. Various databases require fusion-able transfer formats to allow sharing of data in the United States as well as the world. On February 16, 2005, an agreement for a 10-year implementation plan for a Global Earth Observation System of Systems (GEOSS) was reached by 61 member countries of the Group on Earth Observations at the Third Observation Summit held in Brussels. Nearly 40 international organizations also support the emerging global network. The GEOSS project will help all nations involved produce and manage their information in a way that benefits the environment as well as humanity.

For the underwater community, disasters require detailed maps, such as the ones prepared by AT&T and NOAA for the fishing industry to pinpoint underwater cable systems and oil and gas pipeline routes. Computer simulations can allow for DHS and infrastructure owners to perform risk-management assessments, strategically place response sensitive assets and recovery systems, and develop environmental and infrastructure damage mitigation procedures. GEOSS information would provide vital information for route installation, protection, and management.

Electronic Charting Display and Information Systems (ECDIS) is transforming the accuracy of navigation and precision location records of critical assets. Subsea precision location is a daunting challenge for those involved in repair and restoration due to the inaccuracies of manually prepared maps and charts. The use of Digital Global Positioning System (DGPS) still only provides relative location to the surface. The U.S. Navy through their implementation of ECDIS-N and the concentrated efforts of the National Imagery and Mapping Agency (NIMA) will produce Digital Nautical Charts (DNC) and Tactical Ocean Data (TOD) libraries that will promulgate oceanographic data on critical infrastructure and cable routes. These maps will be used by HS and others to assess and manage potential risks and threats.
United States Coast Guard and Border Patrol Intervention Planning

On March 1, 2002, the United States Coast Guard (USCG), along with 21 other federal agencies, were combined into the Department of Homeland Security (DHS) to protect American people and critical infrastructure from further terrorist assaults. DHS Secretary Tom Ridge in his January 22, 2003 confirmation hearing testified, “The Coast Guard’s fundamental responsibilities – preparedness, protection, response, and recovery – cut across all facets of the department’s mission.”

As a result of the expanded HS role, the USCG budget has grown to meet the growing HS security demands both at home and overseas, and to meet President Bush’s strategy for maritime homeland security. The USCG Integrated Deepwater System (IDS) implementation is essential to military operations under Title 10 U.S. Code and “to push out our maritime borders, giving us more time to identify threats and more time to respond.” 6

The USCG patrols and protects 95,000 miles of U.S. open shoreline, 25,000 miles of navigable waterways, 3.4 million square miles of exclusive economic zone, and 361 seaports that contribute $750 billion annually to the gross national product. The Port Security Unit of the USCG conducts over 45,000 law enforcement boardings of vessels each year. The USCG has the responsibility of preventing terrorist attacks, reducing maritime vulnerability, and protecting population centers, ocean industries, and critical infrastructures. As this paper states, underwater telecommunications is essential to international communications, affecting all phases of life ranging from bio-medical information flow to financial data transfers to material logistics; therefore, protection of the telecommunications infrastructure is of critical concern to the USCG as well as to industry. Therefore, the USCG provides a multi-layered maritime security defense extending hundreds of miles to sea, to deter, detect, disrupt, and destroy terrorist threats to our highest valued targets, i.e., seaborne commerce that relies on underwater fiber optic communication systems.

To achieve its goal, the USCG must enhance and modernize its security capabilities by implementing the “system of systems” IDS. The IDS force structure relies on helicopters; fixed wing aircraft; unmanned aerial vehicles (UAVs), such as the Textron, Inc. Bell Helicopter Eagle Eye, Island-class patrol boats, such as the USCGC Matagorda; cutters; and integrated C4ISR7 to implement the layered defense structure required for coastal defense, maritime law enforcement, and interdiction. IDS serves as a USCG force multiplier initiative that will allow for increased surveillance of underwater cable routes and other critical infrastructure.

Robert T. Bannon, President, BANNON INTERNATIONAL CONSULTING LLC, IEEE Fellow, Secretary / Treasurer IEEE Sensors Council, IEEE Oceanic Engineering Society - AdCom Member, Chairman- Submarine Cables Technology Committee, Advisory Committee Member to Japan Marine Science and Technology Center (JAMSTEC) and IEEE- Japan Committee on Submarine Scientific Cables Use and Related Technologies, U.S. – Russian Homeland Security Technical Lead (2005), Retired District Manager- AT&T International (Submarine Systems), DMTS Supervisor and Senior Engineer-Bell Labs, Former Delegate to International Cable Protection Committee (ICPC), Pennsylvania State University -BSEE, George Washington University - MSEE, PSU - MBA-Global Business, GW MBA-International Business, Wharton School, University of Pennsylvania - MBA.


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7 C4ISR is a U.S. Navy initiative incorporating command, control, communication, computers, intelligence, surveillance, and reconnaissance (C4ISR) platforms and sensors.
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Overview
For once I have had the luxury of observing competitors tearing themselves to pieces in that well bloodied arena that is the submarine cable market instead of being one of them. I have also worked with various financial groups interested in the sector. These two elements have combined to provide fascinating insights into competitor and customer behaviour.

In the submarine telecoms market cable maintenance remains the most interesting and valuable segment. It is here that we see two distinctly different business models at work - and I am not alluding to that old chestnut ‘Zone’ v ‘Private’ maintenance. I refer to two models that can be framed in a number of different ways – Western v Eastern, or Market Forces v Supported, however, in pure submarine telecoms terms they can certainly be described as ‘New’ model v ‘Old’ model.

The ‘New’ Model (‘Western’ or ‘Market Forces’)
The terminology ‘New Model’ refers to the divestment by almost all western TelCo’s in the last 10 years of their cable ship companies such that marine telecom companies are clear of any TelCo vested interest. The only significant western Telco’s still adhering to the old model are France Telecom (with FT Marine) and Telecom Italia (with Elettra). See Table 1.

<table>
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<tr>
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<th>Marine Holding</th>
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<th>Divested to</th>
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<td>TeleDanmark</td>
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<td>2000</td>
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<td>Global Crossing</td>
<td>Global Marine Systems Ltd</td>
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<td>Bridgehouse</td>
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The ‘Old’ Model (also ‘Eastern’ or ‘Supported’)
Here Telco’s still own, or have significant interests in, cable ship companies. Consequently they deploy their ships in commercial arrangements for the maintenance of cables in which they have a stake. This model operates predominantly in Asia and the Middle East. See Table 2.

Table 2.

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<td>France Telecom</td>
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<tr>
<td>Telecom Italia</td>
<td>Elettra</td>
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</table>

2. Commercial Comparisons
New model (Western or Market Forces)
Subsequent to divesting their marine interests the newly freed-up TelCo’s commenced aggressively pursuing price reductions and applied increasingly tougher contract terms and conditions. Broad ranging and increasingly stringent performance measures also appeared in contracts linked to high levels of financial recompense for service delivery failures.

There are many examples of ethically questionable behaviour and even outright chicanery. In one case a large, global Telco insisted on a contract clause requiring all costs to be reimbursed if a Captain exercised his contractual prerogatives for the purposes of saving life a sea. This meant that if a Captain deviated from a cable repair operation to save life (either on his ship or a vessel in distress) then the cable ship company was required to pay all the costs of the lost time on the repair operation to the TelCo - plus the performance penalties! The contract also required similar reimbursement if the Captain took action under the Safety of the Ship clause that delayed or extended a repair operation. This particular customer thought a good compromise position was to have the right to a second opinion on the Captain’s decision. If their second opinion ‘was of the opinion’ that the Captain’s decision and subsequent actions were unreasonable then the financial penalties would be applied retrospectively. I am
sure you are all beginning to get the picture of the ‘reasonableness’ of the market forces world……!

**Old model (Eastern, Supported)**
Under these arrangements there has been nothing like the bloodbath of the market forces world - quite the opposite in fact. In recent years, under the same macro market conditions, we have seen many of the ‘eastern model’ marine operators increase their market positions, often doubling them, at the very real expense of their ‘western’ competitors.

Where maintenance contracts have come up for renegotiation customers have generally recognised that a balance is required between the need for cost reduction and the desire for stable, effective marine operators. Any pressure for a market driven ‘bottom dollar’ approach has come predominantly from western style TelCo’s with stakes in ‘eastern’ cable systems. Such pressures have been resisted and more harmonious outcomes achieved. The results become more apparent when the commercial and financial implications for each model are investigated.

By way of a counterpoint to the example provided above I recently met with a senior director of an ‘Eastern’ model TelCo. He was delighted with the way the ‘western’ model had operated because it had enabled him to more than double the fleet of his marine company extremely cheaply. It had enabled him to buy assets from distressed ‘western model’ competitors at bargain basement prices. He was also delighted that ‘western’ TelCo’s were paying their portion of the ‘supported model’ prices for these same ships that were now maintaining cables in his region.

3. **Commercial / Financial Implications**
In assessing the movement of ships during the boom years it is quite clear that it was almost exclusively the ‘western model’ marine companies that massively expanded. Tyco doubled its fleet, Global Marine almost trebled its fleet (driven by the expansion plans and demands of its parent company) and Alcatel built a completely new fleet going from no ships to around eleven at the height of their expansion.

This did not mean that the ‘eastern model’ companies missed out on the highly lucrative golden years of the system installation boom – quite the opposite. Cleverly, by virtue of the cable ownership positions and political power of their parent’s, they were able to take leading roles in very high value contracts. They achieved ‘project scale’ by chartering many of the western model ships for short term contract execution and extracted excellent margins from these arrangements).

More tellingly they were also able to use ‘parent power’ to ensure much lower contract risk positions in the installation contracts. As an aside, it is interesting to note that while a number of installation contract disputes originating in the boom years still rumble on between TelCo’s, System Suppliers and Marine Installers none of these appear to involve a single ‘eastern model’ marine company.

However, it is in the long term contract business of cable maintenance that there are the most marked commercial differences between the models. While we have seen a number of major changes over recent years renegotiations and events just in the last twelve months have highlighted the significant commercial differences between the two models. This is best shown by assessing for each model the assets being directly applied to maintenance contracts against the value secured plus the impact of ‘indirect tonnage’. See Tables 3 & 4

<table>
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<th><strong>Table 3. ‘Value’ of New/Western/Market Forces model</strong></th>
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<tr>
<td>Current global value of ‘competitive’ new model maintenance contracts</td>
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<tr>
<td>Total No. of cable ships directly employed on these contracts</td>
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<tr>
<td>Total No. of cable ships available in ‘western’ model companies</td>
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<tr>
<td>Average earnings per ship engaged directly on maintenance contracts</td>
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<td>Average value per ship if total fleet has to be supported</td>
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<table>
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<tr>
<th><strong>Table 4. ‘Value’ of Old/Eastern/Supportive model</strong></th>
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<td>Current global value of ‘supportive’ old model maintenance contracts</td>
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<tr>
<td>Total No. of cable ships directly employed on these contracts</td>
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<td>Total No. of cable ships available in ‘eastern’ model companies</td>
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<tr>
<td>Average earnings per ship engaged directly on maintenance contracts</td>
</tr>
<tr>
<td>Average value per ship if total fleet has to be supported</td>
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</table>

It should be noted that both tables ignore small, domestic type contracts that exist in some areas of the world. Second, while some installation work will be undertaken and will generate earnings it is likely to be relatively low volume/low value for the foreseeable future. Therefore, since most of these marine companies will survive based primarily on the quality of their maintenance revenue, the assessment of the total fleets against maintenance value is a meaningful comparison.
4. Conclusion
I conclude with three main points.

First, the simple conclusion is what you all intuitively know to be the case – that the old/supportive model provides higher and more sustained earnings for the marine supplier. However, most revealing in this assessment is that earnings are more than 60% better than in the western model, (and over 100% if all ships are taken into account). Also key is just how little ongoing exposure companies in the ‘old’ model have to idle ships and the need for installation work.

Second, not only did the market forces, expansionist strategies of the boom years create massive structural weakness in new/western model marine companies but the continuing market driven style of renegotiating long term maintenance contracts is further weakening these companies exposed to such customers and contracts.

Third, three years into the telecoms market collapse, both models have failed to flush out inefficiencies and oversupply in the market. Despite cutthroat competition in the ‘western’ market the Atlantic still remains heavily over supplied with ships. In those regions where the eastern model predominates we see the encroachment of ‘western’ model competitors that is creating oversupply even in these ‘managed’ areas.

It is inevitable that further and significant market rationalisation will happen and probably very soon. I am prepared to take substantial bets that it won’t be the old, eastern, supportive model that takes the brunt of this. What price market forces.....!?
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## THE CABLESHIPS

A global guide to the latest known locations of the world’s cableships*, as of January 2006. Information Provided by Lyods list.

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* Over 1000 tons
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My Dear Friend

My dear Chinese friend Lim.

As I am sure you remember very well Lim, we get to know each other through a China- Korea submarine cable project. I was at that time – must be around 1989 – in charge of ASN ( Alcatel Submarine Networks) and you were the key person within China-Telecom. We had made a major move-being a European company- in implementing a factory in Australia to address the Asia-Pacific market. My own corporate management had “supported me” in this strategy but somewhat like the “rope supports the hanger!” They were more than sceptical! I had myself discovered Asia through the “Chinese world.” My very first submarine contract was for a small project in Taiwan to connect Taipei with Matsu Island. A very hot subject between Taiwan and mainland China! Sorry Lim.

But when our competitors were addressing Asia through or from Japan, we at ASN approached Asia through these “Chinese” experiences. I decided that this China- Korea project was the opportunity to demonstrate to the world and more precisely to my own corporate management that “my” strategy was right. And you, my dear Lim, you were very quick to understand the advantages you could gain from this ambition. The Japanese industry could not easily accept to see ASN walking in their “garden.”

So you get this small but challenging shallow water project at a very competitive price and I had no choice but to make sure we were delivering the best possible service to such a strategic forthcoming customer.

Few years later, actually in 1997, I was extremely proud and moved when we signed in Beijing the contract for the Singapore to China SMW3 extension. You, Lim, you stand up, during the huge banquet, to translate into Chinese, my few public words. I remember saying that this contract was allowing me and my company to enter the “forbidden city,” inviting me to pass through “the door of the perfection” and that after this very tough competition it was now time to enjoy “peace and harmony.” Later on, as Tyco, I was glad to participate to the construction of the China-US loop, where you forced all the suppliers to cooperate for the best of your project.

The Pacific route will soon overpass the Atlantic as the thicker route and than the leading one. We all expect a new cable to be built there soon, a new transpacific highway, a collaborative effort associating all the Asian countries.

Today, Lim, your country, your continent is really the “Empire of the Middle of the World.” You are at the very heart of the Asia-Pacific region, now the centre of gravity of the world. We Europeans are slowly understanding this even though not yet seeing what it really mean for us. Shanghai is the new Athens or the new Venice and the Pacific Rim is the Mediterranean basin of this 21st century. But this is putting on your shoulder a huge responsibility: Our common future is in your hands. You need to invent our future. I definitively need to attend PTC.06! See you there Lim.

Jean Devos
Submarcom consulting.
## UPCOMING CONFERENCES AND EXHIBITIONS

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<td>15-18 January 2006</td>
<td>Honolulu, Hawaii USA</td>
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<td>Underwater Intervention 2006</td>
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<td>4th International Workshop on Scientific Use of Submarine Cables and Related Technologies</td>
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