AUSTRALASIA SATELLITE FORUM

Four Seasons Hotel, Sydney, Australia
Wednesday, 30 March 2011.

Keynote Address (9am-9:25am)
Prof Reg Coutts, ACMA, NBN, Coutts Communications.
Potential for Ka-band. NBN say only 3% of the population need satellite broadband. Australia lags the rest of the world in Ka development. The cost per megabyte at Ka-band is an order of magnitude less than Ku-band (?).
Examples: Wild Blue USA, Sky Logic (Ka) Germany.
NBNCo interim service starts July 2011, using IPStar Ku-band, with new CPE. New NBNCo subsidy to replace ABG (Australian Broadband Guarantee).
Final service RFS 2015, see NBNCo website and plans. About to let contracts. Fixed wireless service plans.
Little knowledge in the Australian government.
Need independent advice from vendors, service providers, universities (ITR). Part of Comms Alliance, satellite broadcasters.
The public like satellite for broadcast TV but not for broadband?

NBN Discussion (9:25am-10am)
Oliver Stacey, NBNCo Product Manager Satellite, with Petroc Wilson Comms Day Editor.
The long-term solution is two Ka-band satellites, covering only 3% of the population. Policy requires at least 12 Mb/s access. 80 Gb/s per satellite, 160 Gb/s total, only 400,000 customers(!)
Had RFP earlier this year. Doing evaluation now. Contracts by end 2011. Commence service 2015.
Interim service to fill the gap between ABG and final service. Capacity constraints. Change from ABG to a business model that pays for itself. 6M down, 1M up. Availability based on same parameters as ABG constraints. Eligibility criteria.
Will include a class one service, good enough for VoIP (latency, jitter etc).
Wholesaling to RSP (Regional Service Providers). "access seeker" versus "end user". CPE remains NBNCo property, NBNCo responsible for maintenance. Technology is not decided, expect several generations.
Question - Adrian Ballintine – concerned that taxpayer money may be used to set up satellites for remote users, then will compete against the not so remote, for example NewSat services to corporates.
Answer - Stacey – government policy currently sets eligibility criteria.
Question - how soon will they migrate from the interim service to the full-service when available.
Answer - Stacey - will migrate as soon as possible.
Question - NBNCo is seeking new satellite slots and there will be delays in coordination. Can they order satellites without knowing the location?
Answer - Stacey - we will be careful about the process.

Panel Session (10am-11:10am)
Moderator: Patrick French, Senior Analyst NSR – Paul Sheridan, Director Optus – Adrian Ballintine, CEO NewSat– Terry Bleakley, VP Asia-Pacific Intelsat – Glen Tindall, SES World Skies.
Sheridan – 25th anniversary of Optus A1. Just announced Optus 10, will carry broadcast services. See a long-term future.
Ballintine - NewSat different market. Corporates, mining etc, Fortune 100 class customers.
Tindall – some customers of SES are now providing services that will be adversely affected by NBNCo. Ka-band not suited to mesh connections, not suited to mobile, not suited to high availability applications.
Bleakley – Intelsat will launch four more satellites soon. Ka-beams not suited to broadcast. C and Ku will be needed for service availability in some areas. Need to promote satellite broadband. Still have consumer resistance for the wrong reasons.
Moderator – what of your current demand will be impacted by NBNCo?
Tindall – None. Pacific Islands see current high demand for IP trunks. This will drop when they get cables, but then the outer islands will want the same, will see an increase in satellite demand.
Sheridan – Increasing technology lowers the barrier and allows more entrants, so expect an increase in demand. Currently providing a small part of the NBN service, but small.
Ballintine – no encroachment from ABG type NBN, but concerned they will not stick to the ABG and may

compete for corporate customers etc.
Bleakley – Intelsat Ku spot provided broadband, helped IPStar with capacity on Intelsat Ku-band for interim services. Have some broadband now, but not ABG. IPStar will be most directly impacted.
Moderator – initial NBN satellite will be just for remote users. What about creep? What about disaster response etc?
Ballintine – there is a lot of discontent in the industry about how NBNCo is progressing. We have some customers saying they've been promised better services than others, to non-remote users. They may compete with private companies using government money, as stated already.
Sheridan – competition is to be expected. Innovation will take over and help. But still concerned about subsidies.
Tindall – satellites cost a lot. SES is ordering more satellites now. NBNCo will impact whether new SES satellites will have Australian beams.
Bleakley - competition is good, it promotes new technologies. Possibly Ku COTM services etc.
Question – how to stop NBN encroaching?
Ballintine – market forces. If the taxpayer subsidises, voters won't like to subsidise oil and gas and mining etc.
Bleakley – Where access to broadband is governed by income, the subsidy will help. But it will be hard for NBNCo to keep among the 400,000 proposed users.
Question - what is to stop NewSat reselling NBNCo wholesale services?
Ballintine – NewSat is not interested in selling to consumers, just expressing caution about encroachment. It took 18 months to sort out the orbital slots for Jabiru, so we got 7 slots.
Tindall - SES are satellite operators, not NBNCo resellers. This is a job for retailers such as Harvey Norman etc.
Sheridan – Optus would probably be an NBNCo reseller.
Question - what non-NBNCo services do you have?
Tindall - SES has lots of C and Ku-band satellites, some investments in hosted payloads, S-band to mobiles, non-GEO sats, etc.
Sheridan - new Optus satellites, more flexibility and opportunity. Wide opportunities. Hosted payload on C1. Any customer.
Ballintine - NewSat has major teleports. Runner-up best in the world. US military think the Adelaide Teleport is very good. We have services to Afghanistan for USA remote mining pipelines etc. Two new satellites planned, considering four more, targeting Fortune 100, and have partners with sophisticated value-add.
Bleakley – IS19 will replace IS8 with new Ku and C-band over Australia. Biggest provider of iDirect hubs worldwide. MDA has a contract to service satellites, refuelling six satellites. Will maybe add six years to a satellite. They will refuel using a robotic arm. Looking at hosted payloads, for example IS22 72°, has ADF payload included.
Sheridan - interested in MDA, watching brief.
Moderator - what about launchers?
Tindall – concerned there are not enough launch options. SES has given SpaceX a contract for satellite launch. This is an augmentation satellite which will be co-located, so not quite as critical as a new satellite.
Moderator - what about O3B?
Tindall – O3B will have an equatorial orbit but not GEO. It will have lower latency. But there will be a need to track. Question lower cost than GEO? Low risk technically, but there are financial obstacles. SES had to step in and bail it out. RFS 2013.
Moderator – what about DTH?
Sheridan – VAT (Viewer Access Television) is a free to air service to people who can't get terrestrial television. Also provide services to Foxtel/Austar, Globecast etc.
Ballintine – not a DTH player. Part of NewSat's first satellite will be used for some DTH over south-east Asia. For their planned 7 slots they have had enquiries from DTH players.
Bleakley – Intelsat currently 30% video, 20% government. Phenomenal DTH growth in India, seven operators and a shortage of Ku capacity there. 60 transponders currently. ISRO control supply. They supply 20 transponders on their own satellites, and get 40 transponders from others. Expect requirement will grow to 100 transponders by 2018. RPU in Australia $50 per month, but in India $3-$4. Indonesia and Vietnam are expected to grow. Foxtel in Australia is dominant, but some other ethnic services exist. Also distribution of channels on C-band, Discovery etc. Expect more localised channels, conversion to HD, etc.

Tindall - No one ever has fast enough broadband, and no one ever has too many TV channels. So expect growth. There will be HD conversion, and some 3D but that is not standardised enough yet. Expect massive growth.
Question – what will be the impact of IPTV?
Sheridan – expect growth in HD TV and now talking about Ultra HD. This will not compete but will be complimentary, quality etc.
Tindall - still need to distribute IPTV, so expect IPTV on satellite, but not a big customer.
Bleakley - big in Asia, but the challenge is the broadband build-out and access. Backbone backhaul, possible satellite role. But IPTV is not suited for spread-out countries. Fetch is coming to Australia.
Moderator – what about Ku-band use? Frequencies, military versus commercial, spot versus wide beam, etc.
Ballintine - frequencies of our new satellite are set by constraints of the slots available. Not something we can control. It is dictated by what neighbours are doing. The US military are ambivalent about frequencies for services NewSat is selling them. But we do need some military frequencies, for UAV control etc.
Question – Bill Barrett – what is the status regarding availability of spectrum and slots?
Tindall – in Europe the Ku frequencies and slots are full. The new satellites are going to Ka-band. O3B will step outside the GEO arc. AMC 15 and 16 in USA have large Ka spots, built for localised TV, but used instead for broadband such as Wild Blue. They had to predict 15 years ahead.
Sheridan – it's not just a matter of slots, but about coordination. There are recent examples of uncoordinated sats launched and had problems.
Bleakley – Intelsat ITU group is very strong. Expect more Ku, Ka, and on-board switching is in the design phase and three years away. Intelsat is ahead of many in filing priority, more efficient use of capacity.
Question – what about on-board switching? For example IRIS, Spaceway 3 etc.
Sheridan - for the long-term we continue with bent pipe, but have a watching brief.
Tindall – it depends on the forecast customer needs. No on-board switching planned yet. Not going to build on speculation, need a customer.
Bleakley - we have definite plans, but subject to non-disclosure.

coffee break

General Discussion (11:45am-12:20pm)
Patrick French, Senior Analyst NSR (Singapore-based, US accent), - Kevin French, Publisher Talk Satellite (UK based, English accent) (not related)
Patrick – do not mention Ka band, don't think it's relevant, call them "High Throughput" satellites, not dependent on frequency, multi-spot beams. See KaSat or Viasat 1 beam patterns, big holes, not full Conus coverage, consider coverage areas and number of beams. When looking at NBNCo it's not important whether it's Ka-band etc. More important what beams and where they cover. The top-line speed is not what is talked about, more about quality of service, the throughput you can get, and how many people have to share. ADSL 4Mb/s can be better quality service than a shared 100 Mb/s satellite.
Kevin – Can NBNCo learn from what has happened elsewhere?
Patrick – Yes and no. They are in the lead in saying that satellite is part of an integrated service. Space segment wise IPStar is good quality. The problem is with the ground equipment, they use 10 year old technology. If the satellite operator has a customer who will pay for on-board processing then go ahead, otherwise keep the satellite simple, use the latest technology on the ground and update as necessary. The NBNCo numbers do not stack up to pay for itself. If the government can subsidise into the future, fine. Or if NBNCo terrestrial can subsidise the small number of satellite customers, fine. But if it doesn't, they risk future government creep into other markets. NBNCo will define which areas will be served by fibre, which by wireless, which by satellite, with no competition between the technologies. High bandwidth satellites also service GSM backhaul, corporate VSATs, contribution SNG etc. But there are issues if they are limited to one single ground service equipment provider, for example the issue with IPStar. The quality issues we hear about ABG relate mostly to equipment, the 10-year-old IPStar equipment. Expect that many users will be happy with the existing service until 2015. Need to address the high end users more.
Question – the government have said they will privatise NBNCo in 8 years, how to stop creep?
Answer – Patrick – Good question.
Question – NBNCo satellite is only for the consumer at home. what about backhaul? What about disaster recovery? What about mobile?

Answer – Patrick – Government policy of today is driving the design and purchase of the NBNCo satellites. They may find later that the policy changes, but then it will be too late.
Question – NBNCo offers CIR of 300 Kb/s, most current satellites in the USA and Europe only offer CIR 30 Kb/s ?
Answer – Patrick – True. NBN is trying to future proof. There have been bad problems due to over-subscription in the past, they are trying to avoid this.

Next Generation Satellites (12:20pm-1pm)
Garry Hale, Global Lead Media Satellite and Broadcast (MSB) Cisco – Tony Colucci, VP SS/L
Colucci – around 1980 satellite power was about 2 kW, now they're building some 20 kW. Forecasts since 2008, see Comms FSS, military, DBS etc no change %, but broadband increases. Next generation satellites, 25 to 30 kW now, 30 to 40 kW soon. More and smaller spots, reconfigurable flexible bent-pipe, no customers want on-board processing.
Hale – there is a lot of talk about bigger and faster satellites, but will we build network the same way? $10 billion satellite industry only part of a $3 trillion telco industry. Existing video etc work well, but most on short term contracts.
Why do anything if all is doing well?
Reference book "*Innovators Dilemma*" by Christensen. New technologies start small, but by the time customers demand them it's too late to catch up.
What about IRIS, on-board?
(IRIS = internet routing in space = intelligent real-time in-line services?)
Customers concerned about bandwidth and latency. They want a fully managed service, they don't want to be satellite RF experts. The legacy model that sells megahertz is under pressure. Proprietary CPE has a problem with interoperability. Need to seamlessly converge IP and satellite.
Cruise ships say that the second biggest cost behind fuel is communications.
Evolved packet core, scalable CPE, managed services.
IS14, AOR, put a Cisco router on-board for US military, now expect all will be fully sold by end year, 3x36 MHz.
What about future changes?
Software defined architecture. On IS14 they have upgraded the waveform twice, IOS twice, more to come. Half the RF hop, better link budget, smaller antenna BUC, better reliability SLA, reduce opex and capex, RF bandwidth savings, no power balancing issues, reduced latency, inter transponder routing, full mesh, gateway fail-over, reduced deployment risk, quality of service end to end.
Question - Glen Tindall, SES - Spaceway 3 had on-board processing, but they turned it off?
Answer - Hale – Spaceway called it a router, but it was really a switch. Payload needs to be software reconfigurable.

lunch break

Maritime/Aeronautical/Comms on the Move (2:05pm-2:55pm)
Moderator: Patrick French – Pierre Jean Beylier, CEO SpeedCast
– Todd McDonnell, CEO TC Communications – Ian Ford, VP and GM South-east Asia, Caprock.
McDonnell – TC Communications is a 24/7 service provider.
Ford – Harris Caprock provide services to oil and gas, comms on the move, now with Harris oceanographic monitoring, and cruise ships.
Beylier – SpeedCast headquarters is in Hong Kong, general satellite provider, 16 VSAT platforms, 10 different teleports, comms on the move to ships, iDirect, includes satellite switching per region, opportunities to trains and business jets.
Moderator – what about Inmarsat Global Xpress, will it compete with C or Ku VSAT services?
Ford – now selling Inmarsat BGAN. Global Xpress will have a niche for comms on the move, UAV, trains etc. Will not clash with C or Ku VSAT. The Inmarsat plan is to offer 50 Mb/s in three years, we can already do that.
Beylier – Inmarsat said that VSATs onboard vessels had no future for comms on the move, but now they plan the Global Xpress VSAT system! Just at a different frequency. Not enough detail on service, price etc. Expect global RFS after 2014. Forecast 3000 VSATs per year on ships for the next few years, even before Global Xpress arrives. Expect there will be more non-Maritime than planned, steerable beams suitable for conflict zones and UAV, aeronautical. We will continue C and Ku with more demanding

availability/complexity applications. Growth in recent years for oil and gas related vessels, exploration, resupply etc. As the economy picks up general shipping will increase.
McDonnell – Inmarsat services so far have been easier to set up and use, so if Global Xpress is the same it could bring about significant changes.
Moderator – what about choice of market and frequency bands?
McDonnell – mining, oil and gas see growth. Maritime sees a bigger uptake in the leisure market, segmented, big guys spend, smaller guys want Internet but very small dish.
Ford – see oil and gas growth, bandwidth and requirements, number of customers fixed but each needs more bandwidth. Next biggest is Maritime commercial shipping, freighters, cargo ships etc 3000 per year.
Beylier – commercial shipping, crew welfare. The more technical ships, where they need to retain trained crew, are more likely to take up early. Needs customer education and trials, before get any long-term contracts.
Question – will Global Xpress compete with WGS? Commercial land based?
McDonnell – Australian government paid big money for WGS, so it will not compete, but the US DOD has a shortfall of needed services, especially welfare services which is not part of WGS.
Beylier – definite land market beyond military. Global Xpress will be global. Just turn on, don't need to worry which satellite or coverage etc.
Moderator – do we need to educate end users about what satellite can do?
McDonnell – some high-end users are easy. But we need a simple message for the wider market.
Ford – needs a big education commitment.
Beylier – there is big shipping demand in Europe and Japan. It is a sophisticated market, with more concern for crew welfare. If customers want service, at $2000 per month per vessel, they don't want to buy equipment $50,000 per vessel. Issues of leasing and financing.
Moderator – Aero market, is it similar to Maritime three years ago?
Ford – for the big companies any extra income on flights is good, if the business case is positive. Service versus capex. Some say they will use 3G instead of satcom, but there is not the coverage with 3G, and there is a possible congestion issue, at events etc.
Beylier – thinks there will be a Ka band market for commercial, private jet market. China today has 50 business jets, next year there will be an open market and expect a boom.
Moderator – what about comms on the move, military, disaster, media etc?
McDonnell – not just military, media, etc. Corporate want data for resources, transport, etc. CPE will get cheaper.
Ford – will see an increase. Expect military to be the main driver initially. Commercial will follow after. Maybe will compete with NBN?
Beylier – we currently do links to bases for non-military, welfare etc. Also the Island market. New market high-speed trains. With 1000 km about the time/cost crossover between high-speed train versus planes. Now big in Europe/France, expect growth in China especially.
Question – what about container tracking services?
McDonnell – all customers want to track, but they don't want to pay. Only for very expensive assets. Need more R&D into RFID clouds etc.
Beylier – very low data applications. Expect GSM network will play the main role. Ship identification is also low data rate, except crew welfare, only when you throw many apps together can you justify VSAT.
Ford - depends on the cost per container

A Service and Application Game (2:55pm-4:20pm)
Moderator: Kevin French – Ramesh Ramaswamy, VP Hughes Communications (replaced by colleague Vaibhav Magow) – Mike Kenneally, COO, Jabiru – Eddie Kato, Senior VP, Thales Alenia Space – Andrew Taylor, CEO PacTel International – Sandeep Kumar, Business Development Manager, Telstra International
Taylor – Initially PacTel were serving just pacific islands, now into Australia, Indonesia, for Corporates and Telcos. For resources sector (oil, gas, mining), welfare networks consume bandwidth. It's not just about what they need, it's what they want. Video streaming, Skype, Facebook, etc. Not just providing a pipe but a managed service. Includes optimisation, acceleration, cache, prioritising for: Skype, Facebook, Video. Extra labour supporting. P2P and YouTube caching special especially, software updates. More complicated to maintain, with analysis of traffic flow. P2P needs to be closely managed, allow at night and throttle during the day etc. Monitor throughput per protocol, per user. Not just selling a pipe but selling a user experience.

Kato – A satellite manufacturers view: we make satellites, ground systems, end to end one-stop shop, sell the whole system to the satellite operator, not just the satellite. New innovative services have difficulty crossing borders, issues of regulatory, itu filings etc. In the 1990s there was an interest in big satellites, now smaller satellites are more common. Shared satellites and hosted payloads more common due to the impact of regulatory and filings etc. New satellite operators. For example: NBNCo, government not driven by business case, paid for by taxpayer. Jabiru, more business case-sensitive. Australia has opportunities for involvement in satellite remote sensing, R&D etc.
Kenneally – Jabiru is a wholly owned subsidiary of NewSat. Aimed towards the top end, mining, oil, gas, government. Value partner, high-end customers, teleport, and terrestrial backhaul, and optimisation. Adelaide teleport is us military certified, with current services to Afghanistan. Partners Proactive, Cisco. The Jabiru satellite will be good for remote, for comms on the move, also for push content. For example Woolworths push content to stores overnight and played back in-store during the day, each in own time zone etc. Partnering to do networks and value add. Jabiru is a step up the food chain to become an operator. Bent pipe for military. Regional beams for country/theatre. Mobile strategy Ka spot beams. Don't think NBNCo satellite services to consumers will be a good business model, but will be an issue if they step outside. NewSat are happy in their niche.
Kumar – Satellite is probably not even 5% of Telstra business. Satellite operators and equipment suppliers all want to make a profit, but the customer wants to pay less, and the service provider is stuck in the middle. Customer types - Corporates: less knowledgeable and need more support, price sensitive. Issues: latency, cost, delivery and site access, availability and uptime. Government customers: have some knowledge and not as price sensitive, don't need so much support. Issues: security (physical and network), anywhere any time, local Backhaul. Carriers and service providers: have a good technical knowledge, price sensitive, require no support. Issues: extreme reliability, flexibility, cost, seamless links to terrestrial network and submarine fibres.
Magow, Hughes – Hughes Asia-Pacific, from India. Fair access policy. Hughes system allows users to buy extra capacity for short-term need. See governments as the biggest market spender since the financial crisis, military, civil, education, comms on the move. For the future, see growth in SCADA, smart networks for power, etc. Expect growth in consumer, social networks, video-conference. Spaceway 3, full continental US coverage, 10 Gb/s, expect to fill by mid-2012. Next satellite Jupiter to launch 2012, 100 Gb/s, coverage more focussed on high-density coastal. Cost of satellites is the same, so cost per megabit per second will be much lower(?). Hughes to supply Avanti Ka-Band, ground segment for Hylas 1 and 2. Hughes to supply Yahsat 1B ground segment for Middle East and Africa.

Coffee Break

Roles and Capabilities of First Responders Comms in Disaster Zones (4:40pm-5:30pm)
Moderator: David Ball, GVF – Nick Leake, GM Wireline and Satellite Marketing, Optus – Paul Kroystoszek, MD, ASC – Jack Scott, Key Account Manager, Thales Australia
Moderator – mobile, picocells, battery operated because no local power, satellite operators offer bandwidth, but no good, need equipment?
Leake – need to encourage forward planning. Buy equipment before the disaster, preparedness, for Telco networks resilience is most important. New Optus 10 will provide backup capacity and flexibility, an in orbit spare. Optus C1/D3 are co-located, NZ payload on both D2 and D3. Recently used inclined orbit B3 and quick deploy VSATs to get 3G up again after the floods. Satellite trailers, fempto-cell 200 m, easy deploy and reliable.
Kroystoszek – first response needs to be fast cheap portable, like sat phones etc. Then for next recovery phase need video, higher bandwidth. Then rebuild phase, need for interoperability between different agencies. Portable battery or genset power. ASC has a product called Ready Connect, uses Cobham equipment, using GE-23 satellite, Adelaide teleport, and IP-based iDirect. Provides VPN, multi-session video-conference, VoIP, access to ERP. Used by residents and army during cyclone Yasi and Christchurch earthquake.
Scott – Earth observation satellites used for disaster assessment, clouds and smoke can be a problem. SAR (synthetic aperture radar) is available day and night, all weather. An ADF white paper recommends Australian radar sats. Cosmo SkyMed. NBNCo targets 99.99% availability for its network and VSATs (?).
Moderator – presented a presentation from David Hartshorn GVF, about their plan to be a clearing-house for requests for emergency disaster satellite systems.
Close.