

**WBU-ISOG Forum
November 4-5, 2013**

Co-Hosted by Globo Network and IAB
Windsor Barra Hotel & Congressos
Avenida Lucio Costa, 2630 - Barra da Tijuca
22620-172 - Rio de Janeiro - RJ - Brazil

Draft Summary Report

Participants:

Please see the WBU-ISOG Forum Registration List.

Summary:

The most recent in a long line of successful WBU-ISOG Forums was graciously hosted by Globo Network and IAB in Rio de Janeiro, a timely location given that much of the world's attention will be focused on Brazil during the 2014 World Cup and 2016 Olympics.

In addition to hearing about preparations for these major events, the 100+ delegates also participated in lively sessions on: the urgent need to protect and preserve spectrum assigned and associated with broadcasting; global progress on interference issues, including inroads into the realm of VSAT interference; and, exciting developments related to new technologies and transmission solutions. There was a healthy balance between presentations that delved deeply into technical details and those that focused on operational issues. Of particular significance were WBU-ISOG's:

- approval and endorsement of the ASBU Satellite Interference Forum Action Plan
- adoption of the document *Proposed Operational Profiles to Streamline Digital Satellite Newsgathering Operations* as a WBU-ISOG operational standard

There were poignant moments as well, as this was Dick Tauber's last meeting as Chair of WBU-ISOG. Michael McEwen (NABA/WBU) thanked CNN for having supported D. Tauber in this role for many years and shared highlights of D. Tauber's long and storied career before presenting him with the NABA Achievement Award, an Inuit Inukshuk, which is a communications marker. In return, Dick Tauber expressed heartfelt thanks and enjoyed the extended applause that delegates offered.

On the final half-day of this Forum, a comprehensive visit and tour of the extensive TV Globo Projac Facilities was scheduled. This main TV center for Globo includes a costume shop for building wardrobe for the many Globo productions as well as a 90,000 item inventory covering 100's of years of period and present costumes. Projac also houses a huge scenery construction shop using the most modern techniques for building sets, props and special effects. And getting back to transmission technologies, part of the tour allowed everyone to witness a live 4K transmission demonstration which included an active uplink transmission from the Intelsat Ellenwood, Georgia USA earth station to the Rio downlink site and fiber connection to the Projac location. The pristine 4K signal was more than eye-catching, of nearly 3-D comparison.

The Forum Agenda and presentations (with the exception of those containing proprietary information) are available for public viewing and downloading at: <http://isog.worldbroadcastingunions.org>

The first day opened with welcome remarks from Dick Tauber. Attendees also heard from Liliana Nakonechnyj, Director of TV Globo's Telecommunications Division, who gave a backgrounder on Globo services and urged all present to take collaborative action to prevent service interruptions that would be caused by the transfer of spectrum to the Telco industry and interference from new services.

Approval of the Draft Rio Forum Agenda

On a motion from Michael McEwen (NABA/WBU), that was duly seconded by Andrew Steele (BBC) and unanimously approved:

*** **The Agenda for the Rio Forum was adopted.**

Approval of the Summary Notes from the Los Angeles Forum (May 2013)

On a motion from Bob Plummer (Fox, WBU-TC) that was duly seconded by Dave Gill (BBC) and unanimously approved:

*** **The Summary Notes from the Los Angeles Forum were adopted.**

Forum Highlights

WBU-ISOG Recommendation for DSNG Parameter Set

This WBU-ISOG project had been initiated by NABA and championed by Guy Bouchard (CBC/Radio-Canada), who was unable to attend this Forum. On Guy's behalf, Steven Soenens (Newtec) outlined the history and objectives of the project, and brought forward the DSNG profiles drafting group's recommendation to adopt the document *Proposed Operational Profiles to Streamline Digital Satellite Newsgathering Operations* as a WBU-ISOG operational standard. Michael McEwen (Head, WBU Secretariat) confirmed that all Unions had signed off on the document's principles, although some editorial tweaks may be needed. It was unanimously agreed, on a motion from Cesar Gerbasi (OTI), seconded by Bob Plummer (Fox, WBU-TC), that:

*** **The document *Proposed Operational Profiles to Streamline Digital Satellite Newsgathering Operations* was adopted as a WBU-ISOG operational standard, with a 15-day editorial privilege accorded to the Head of Secretariat.**

WRC-15 and C-Band and Extended C-Band Update

As a follow-on to the "Spectrum Threats" discussion that took place during the LA Forum, Bob Plummer, in his capacity as WBU-TC Vice-Chair, moderated a panel featuring presentations from Michael McEwen (NABA/WBU), Gonzalo de Dios (Intelsat), Jurandir Pitsch (SES) and Carlos Alberto Santiago (Star One).

Key points emphasized during the presentations and discussions were:

- There are dark clouds on the horizon due to relentless pressure on C-band, extended C-band and UHF from IMT proponents, who are well organized, well-funded and are very vocal in delivering a consistent global message to regulators and ITU-R. In fact, all spectrum is under threat.
- Collaborative action is needed to fight these threats in the lead up to WRC-15. This means taking a multi-layered approach involving lobbying and education on internal, local, regional, and global levels.
- It is important to sensitize government administrations to the issues. Having the numbers at ITU would be enormously helpful, and it was recommended to look for a "White Knight" administration to champion the cause.
- NABA's Spectrum Position Statement, which references all spectrum assigned and associated with broadcasting services, is being considered by WBU-TC, and if approved (with possible tweaks) by WBU SGs/DGs, may ultimately become a WBU Declaration that could be used as a lobbying document. Resolutions, however, are not enough. Action is needed to preserve and protect spectrum for broadcasters' current and future services.
- It is important to do technical studies showing that sharing is not feasible, but it is equally important for broadcaster representatives to show up at preparatory and other ITU-R meetings, including JTG 4-5-6-7, to defend these documents. This will require commitment of resources.
- Actions recommended by the Satellite Spectrum Initiative (www.satellite-spectrum-initiative.com) include: registration of earth stations with local regulatory agencies and ITU; participation in local and international processes leading up to WRC-15; and, lobbying regulators using consistent key messages as noted in the Intelsat presentation (e.g., C-band cannot be "replaced" by Ku or Ka, there are other bands more suitable to IMT, etc.).
- In Brazil, an estimated 16 to 20 million homes are using C-band receive-only antennas to access DTH services. The Brazilian administration is currently proposing no change in the Radio Regulations to frequency allocations for the 3600-4200 MHz band and has approved nationally the identification of the 3400-3600 MHz band to IMT on the basis that technical conditions be established to guarantee sharing of IMT operating in the 3400-3600 band with FSS operating in adjacent band 3600-4200.
- Arguments of IMT proponents should be countered. There is a good study from Russia showing that IMT is not using its current spectrum efficiently (ITU-R Document 5D/118-E, 20 September 2012, entitled: Future IMT Spectrum Requirements Assessment for the Russian Federation).

Also, the fundamentals of the IMT projections should be challenged (i.e., they do not need as much spectrum as they say they do).

WBU-ISOG Chair Dick Tauber noted that the potential audience reach of all broadcasters who take part in WBU activities is 7-billion, which ought to have an impact on regulators. He urged those present to take the above-noted messages home and get their companies to rally around these points by lobbying decision makers and investing in trips to Geneva, or risk losing their money, audiences and businesses.

Union Updates

During the Forum, there were Union updates from Cesar Gerbasi (OTI) and Alexandre Jobim (IAB). Delegates learned about these Unions' memberships and the various key issues they are focused on, including spectrum protection and copyright/signal protection. Both speakers referenced the importance of collaborative WBU action to protect the future of broadcasting. It was noted as well that OTI has a particular interest in sports rights, and IAB is very concerned about freedom of speech.

BBC Live Broadcast Vehicle and Encoding Technology

Dave Gill (Resource Manager, BBC) shared details about rationalization of the BBC fleet into three distinct types of broadcast vehicles. Types 1 (audio contribution) and 2 (simple video contribution) are set up to auto point, and BBC is working with antenna manufacturers to make sure there is a required degree of pointing accuracy. The Type 3 vehicle is more like a traditional SNG unit, except it is a hybrid with a VSAT modem in the RF chain and dual HD DVB-S2 paths. It has a manual point antenna operated by an experienced technician. The vehicles are intended to serve as remote hubs that give journalists enough connectivity in the field to do their jobs effectively as if they were seated at their desk.

During the Q&A session, Dave Gill noted that:

- In the UK, they are operating entirely in Ku-band, although they are making inroads into Ka spectrum.
- BBC has built a sophisticated earth station with a 9-metre antenna for news contribution.
- Future spectrum needs associated with the use of the rationalized fleet will have to be evaluated. There is a trend towards transitioning to dynamic allocation of spectrum as needs change throughout the day.
- So far, BBC's experience with 16 APSK is limited, but D. Gill is willing to provide details when more is known.
- BBC will adopt carrier ID for the fleet when the equipment allows them to do so.

On this last point, Dick Tauber noted that new encoding equipment should already have CID built into the hardware that can be implemented when the Space Data Association has completed development of its CID database, which he believed was moving right along.

Equipment Shipping & Customs Issues for Large International Events

Rodrigo Lalli (Podium Global Sports Logistics) outlined special customs procedures for international events in Brazil, focusing on the federal laws and normative rulings as they relate to the FIFA 2014 World Cup and the 2016 Summer Olympics. He also recommended hubs for air and ocean freight, and provided answers to frequently asked questions (average customs clearing time, etc.). WBU-ISOG delegates are encouraged to contact Rodrigo Lalli directly for further information. The action item arising from this session was:

*** **When details become available (expected in the next few months), Rodrigo Lalli (Rodrigo@podiumlogistics.om.br) will share information regarding the Normative Ruling on Customs Procedures for the 2016 Olympics.**

Brazil and the Hosting of the 2014 World Cup

This session, moderated by Fernando Wiktor (TV Globo), featured comprehensive presentations from Sven Schaeffner (World Cup Office Brazil), Michèle Naili (FIFA 2014 LOC), Reinaldo Pargas (FIFA 2014 LOC), and Daniel Freitas (Telebras), as well as two compelling videos on broadcast requirements and IBC operations. The panellists covered such topics as: the decision to offer 4K; the benefits World Cup will bring to Brazil (e.g., tourism uptake, knowledge transfer to local broadcasters); the structure of the nation-wide fibre optic backbone to support data and live video transmission between stadiums and the IBC; and, the role played by Telebras in building broadband infrastructure in Brazil.

In discussion, Sven Schaeffner advised that 4K is being offered, at this point, only for the final in Rio, although this could change as the situation evolves. Technical details on the transmission of 4K into the network were not yet available.

The remainder of the questions from delegates led to the following points of clarification:

- The national backbone for the World Cup is owned and operated by Telebras, although the fibre optic cable is owned by the power company and leased by Telebras.
- The backbone will support data for broadcasters' business applications as well as video and audio contribution. Everything will be segregated and protected through several levels of security. The Internet connection itself will be provided by FIFA's official ISP partner (Oi), while Telebras will do the connection for the contribution network.
- Telebras has not been asked to provide services to broadcasters at other venues (e.g., hotels) during World Cup, but could possibly provide such services, depending on whether the necessary infrastructure is in place, and if it is not, whether there is time to build it.
- The contribution network requires a great deal of capacity, and the legacy of this capacity will be used for the national broadband program. After the World Cup, Telebras intends to use the fibre connections at the stadiums to build a contribution network for local broadcasters. The infrastructure could also possibly be expanded, in stages, to offer broadcasters services in other points around Brazil, depending on market conditions.

New Technology Session (including 4K & 8K)

Tom Gibbon (NHK) brought together a diverse group of panellists who offered varying perspectives on a myriad of topics related to 4K and 8K/Super Hi-Vision, ranging from basic tutorials on these technologies, to the various standards that have been developed, the impact of HEVC, trialling that has been done in various venues, implementation plans and schedules for production and broadcasting, and the drivers behind implementation. The presentations were given by Matthew Goldman (Ericsson), Paulo Castro (TV Globo), Jurandir Pitsch (SES), Mike Antonovich (ATEME), Yoshiaki Shishikui (NHK), Masataka Tsuchiya (NTT Electronics) and Michel Chabrol (Eutelsat). The Hispamar representative was unable to participate due to illness, but had forwarded his presentation on bandwidth optimization.

In discussion, C. Gerbasi outlined challenges terrestrial broadcasters face in moving to 4K and asked whether terrestrial broadcasting in Japan could accommodate 8K. Yoshiaki Shishikui noted that the NHK lab is developing terrestrial transmission technology over 6 MHz, adding that there are more issues related to spectrum than to the technology itself. Matthew Goldman's view was that you can do 4K UHD TV in today's terrestrial broadcasting bandwidth, and with the new modulation that's being looked at, hopefully you can simulcast HD and UHD (4K) together.

Mike Antonovich observed that terrestrial broadcasting is always driven by the appliances in consumers' homes, adding that there will not be one implementation worldwide or one global standard for UHD TV. Instead, everyone will operate differently (under a body of standards) based on local market conditions, demographics, consumer income, etc.

While he admired the technology, Michael McEwen (WBU/NABA) wondered what the business case was and questioned whether broadcasters have enough spectrum to broadcast UHD TV. Mike Antonovich said the most interesting spectrum for this is called the Internet, and that broadcasters will be chasing broadband in the marketplace as this market will be too important to ignore.

Michel Chabrol weighed in on business issues, noting that UHD TV will be a good solution for pay-TV operators who want to make their bouquets attractive again and avoid being completely beaten by terrestrial TV. He pointed out that satellite operators, pay-TV operators and encoder manufacturers are promoting UHD TV together to protect their businesses. He hoped that UHD TV would also bring additional demand for capacity, although with HEVC, demand will not go up as much as it would if MPEG-4 was still being used.

Tom Gibbon thanked panellists for having provided important information instead of pitching their products and services, and Day One came to a close with Dick Tauber thanking the co-sponsors, Embratel/Star One, Eutelsat, Newtec, and SES, for the evening reception delegates were about to enjoy.

Day Two began with welcome remarks from Michael McEwen (NABA/WBU) and segued into another series of interesting panel presentations and discussions.

Transmission Solutions

The panel assembled by Cesar Gerbasi (OTI) included: Eusebio Pereira da Costa (Claro), who spoke of his company's solutions and tools for achieving high-speed connectivity and content delivery in a mobile world; Martin Turner (Inmarsat), who outlined the benefits (e.g., higher video quality, guaranteed cellular data solutions) of the BGAN HDR service; and Eldad Eitelberg (Ucan Digital Transmission), who focused on the LiveU 3G/4G LTE bonded portable cellular-to-uplink solutions.

Following the presentations, delegates' questions resulted in these remarks from panellists:

- On the subject of steps taken to avoid interference with broadcast servers, Eusebio da Costa noted that all of the spectrum used for customers is spectrum dedicated to the cellular network and assigned to operators. He noted as well that the best results are achieved in LTE. In addition, they use the best available architecture to provide coverage from inside the stadium and do not try to cover the stadium from outside. The more they use proper coverage where the actual demand is, the less interference there will be.
- Responding to questions on download speeds and tariffs, Martin Turner said broadcasters can have HDR symmetrical service (600-700 kps up and down) at a premium rate, or they can have asymmetrical HDR service (600-700 kps up and 64 kps down) for a tariff that is only 6-7% higher than what they pay now.
- When asked to elaborate on the experience of customers in accessing 3G & 4G using the Ucan LiveU system, Eldad Eitelberg advised there were good reports regarding the London Olympics and also the Confederation Cup in Brazil, where the seven cities sponsoring the games were very cooperative. He noted however that there are concerns regarding some of the 12 cities hosting the World Cup matches (e.g., no 3G/4G in Florianópolis), adding that some operators do not want to say what their plans are. His company's idea for the west part of the country is to use Inmarsat BGAN stations or have Ka stations available. They are also working with a private company to offer WIFI hot spots close to the stadiums in the host cities.

After commenting on regulatory challenges in Brazil regarding installation of cellular towers and related matters, Eusebio da Costa indicated he would like to exchange ideas with Eldad Eitelberg, as he could provide him with special modems/special access to the network and could also investigate why Florianópolis does not have 3G coverage. It was noted that among the many benefits of participation in WBU-ISOG is that it has a long tradition of bringing people together to solve problems.

Coverage of 24/7 Events

Andrew Steele (BBC Newsgathering) began with a video that offered a taste of what it is like to provide 24/7 news coverage on all continents at all times. He then focused on such subjects as: the range of tools one needs in the toolbox to make things work; the impact of increased demand for content, including more content in HD; the benefits of using simple solutions, including hardware and software that can be operated by journalists rather than technicians; a look at what's next (equipment weight reductions, greater compression, etc.) and, the way in which viewers are shaping their own preferred viewing patterns.

In discussion, Michael McEwen wondered whether BBC reporters feel they are part of a whole in context of the newscast, or if the new technology tools make the editorial process an isolated one. Andrew Steele replied that the simplicity of the technology generally makes journalists feel connected and also gives them more time to find out what the story is, although some of the senior correspondents have a residual fear of button pressing.

Overview of Satellite Capacity in Brazil

This session was structured somewhat differently than the others, as the moderator, J.R. Cristóvam Nascimento (UniSat) gave panellists not only dedicated time for formal presentations, but also a one-minute opportunity apiece to pitch the value proposition of dealing with their companies for World Cup 2014.

The panellists were Eloi Stivaletti (Eutelsat), Tiago Tebaldi (Hispanar), Estevao Ghizoni (Intelsat), Abel Souza (SES), Lincoln Oliveira (Star One) and Mauro Wajnberg (Telesat). The topics addressed included: the composition and orbital locations of current fleets; plans for future construction and launches; the extent of available capacity in C, Ku and Ka bands (in general and in relation to World Cup 2014 and the 2016 Olympics); the one-stop end-to-end solutions offered to customers; and, the overall good health of the global satellite industry.

Responding to a question from Tom Gibbon about Intelsat One fibre connectivity in Brazil, Estevao Ghizoni noted that the slide in his presentation had illustrated a connection from the BT PoP in Rio to a customer site in Sao Paulo, and was not meant to imply a PoP in Sao Paulo.

There was also a brief discussion about the demand for satellite capacity for telephony. Lincoln Oliveira said he thought demand was decreasing mainly due to fibre, adding that today, telephony uses satellite mainly for remote areas. Estevao Ghizoni disagreed, saying he thought demand had been growing over the past few years due to expansion of the cellular network and governmental obligations that telecommunications operators must fulfill. Abel Souza endorsed the view that demand for telephony over satellite was not decreasing, adding that demand could grow if satellite operators could offer lower costs, which will happen with high throughput satellites.

Interference Issues

This upbeat session focused on progress in mitigating and preventing interference, and was moderated by Martin Coleman (IRG) via Skype. The centerpiece was Mohamed Abdalla Elsadig's presentation of the ASBU Action Plan developed during the Union's Satellite Interference Forum in Tunis in October 2013. The plan outlines specific actions to be taken in five key areas: awareness, training, earth station approvals, carrier ID, and, regulatory and political actions. Items in this latter category included drafting definitions of intentional and unintentional interference to the ITU for adoption within the Radio Regulations. ASBU's Technical Committee had adopted the plan, which will be put to the ASBU General Assembly for ratification in December 2013.

Delegates also heard from Dick Tauber about the achievements of the Working Groups established by the RFI End Users Initiative (RFI-EUI, soon to become IRG-EUI). In addition, Martin Coleman gave a status update on IRG, including details on the way in which IRG and RFI-EUI will merge, and J.R. Cristóvam Nascimento (UniSat) shared information about strides made in relation to GVF activities, including specifics on the various self-paced training courses available online, including the newest training program for SNG operators.

In addition, Steven Soenens (Newtec) unveiled the key results of a Carrier ID Industry Survey conducted by IRG and Newtec, which elicited close to 500 responses. Some 55% of respondents believed that training and carrier ID will reduce interference, while 44% had heard about CID from IRG or manufacturers and 86% believed open standards, such as DVB, are important. CID implementation plans are on track and it is clear that the Carrier ID initiatives are moving forward as planned.

Steven Soenens also shared initial data (still under review) from an IRG initiative looking at interference caused by VSATs, which showed that roughly 40% of tickets on interferences are caused by VSATs, causing an estimated 50% of service outage time. Next steps will include IRG, GVF and others working together to agree on the data, the causes of VSAT interference, and proposed solutions.

In discussion, the ASBU Action Plan was lauded, and it was unanimously agreed on a motion from Andrew Steele (BBC), seconded by Liliana Nakonechnyj (TV Globo) that:

*** **WBU-ISOG approved and fully endorsed the ASBU Satellite Interference Forum Action Plan.**

There was a brief discussion on the prospect of adopting the ASBU document as a WBU Action Plan. It was noted that various groups could work towards the points referenced in the plan; however, it was decided not to usurp ASBU's work, as this Union deserves full credit for having developed the plan.

*** **WBU-ISOG would draw up a short document indicating its full endorsement and approval for the ASBU Action Plan to go forward. This document could be appended, as appropriate, to the ASBU Action Plan. (DONE)**

Tutorial on HEVC and UHDTV

The keen interest delegates had shown in the previous day's session on new technologies was carried over to this high-energy and information-rich dual-topic tutorial delivered by Matthew Goldman (Ericsson). In discussion, several delegates remarked on the outstanding quality of this presentation, and Tom Gibbon sought and received clarification regarding technical information on one of the slides on HEVC. In response to a question from Michel Chabrol, Matthew Goldman advised that if you want to do true 4K UHD live for World Cup, it's borderline to do it with HEVC in an end-to-end ecosystem, adding that no receive device can do it now in real time. However, he noted as well that decoders may be available by next summer, so he cannot say it would be impossible.

After observing that NHK is going to 8K, Cesar Gerbasi asked about the compression algorithm and mechanism for this. Matthew Goldman replied that HEVC will do 8K, but it means using a lot more bits and will also take more processing power. He said there are other issues as well. While 8K provides an incredible experience in sports pubs and movie theatres, the 0.75 picture height viewing distance requires audiences to sit very close unless there is a huge screen, and this may not be practical in living room situations. Approximate proper viewing distance (in picture heights): for 16x9 displays, for these screen resolutions:

- HD (1920x1080) = 3
- 4K UHD (3840x2160) = 1.5
- 8K UHD (7680x4320) = 0.75

Brazil and the Hosting of the 2016 Summer Olympics

The final panel, moderated by Fernando Wiktor (TV Globo) featured a general overview from Mario Andrada (Rio 2016 Committee) of what the games will entail and the planning that is required, and an overview of technological preparations from Roberto Dantas (Rio 2016 Project, Embratel). They spoke of such matters as: transportation improvements underway in Rio; the way in which the clusters housing venues will be connected technologically; the ability of the games to generate legacy (e.g., after the games, an Olympic Hall will be transformed into four schools and transported to different areas in Rio); the importance of factoring sustainability into planning; training of personnel, including volunteers; and, improvements underway to ensure there are no telecommunications failures, as billions of people will be watching Olympic events.

Responding to a question from Fernando Wiktor, Roberto Dantas noted that although Embratel has obligations to the Local Committee and the Olympic venues, the company has strong infrastructure and stands ready to provide any kind of service to all customers, both in Rio and in other parts of the country. Mario Andrada addressed a query from Michael McEwen about infrastructure and deficits by stating that the Olympics are being seen as a catalyst and accelerator for investments that Rio has needed for many years. He also noted that deficits have been part of the Olympics now for a number of years, and final negotiations are underway on the matrix of responsibility, so everyone will know what they have to pay for in terms of expenditures for the 2016 Games.

Closing Remarks & Adjournment

In his final remarks as WBU-ISOG Chairman, Dick Tauber thanked IAB and TV Globo for hosting the event, which he called the best Forum ever. Special thanks were extended to Liliana Nakonechnyj, Cintia Leite and the on-site A/V team, as well as the WBU Secretariat. Akira Ogawa (NHK) said he was honoured to have been chosen as interim Chair of WBU-ISOG going forward, although he suspected Dick Tauber would be a hard act to follow. He also announced that NHK would host the spring 2014 WBU-ISOG Forum in Tokyo.

There being no further business, the meeting was adjourned on a motion from Bob Plummer (Fox, WBU-TC), seconded by Dave Gill (BBC).