WBU-ISOG FORUM

Tuesday, April 29, 2014

Hosted by NHK

Keio Plaza Hotel
Ohgi Conference Room, South Tower, 4ᵗʰ Floor
2-2-1 Nishi-Shinjuku
Shinjuku-ku, Tokyo, 160-8330
JAPAN

SUMMARY NOTES
(Draft)

Participants:
Please see the WBU-ISOG Forum Registration List.

Presentations:
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

1.0   WELCOME REMARKS
NHK's Akira Ogawa opened the Forum by offering a warm welcome to all participants. He also remarked on the enormous pressure of having taken up the role of interim WBU-ISOG Chair, given the many years that Dick Tauber had provided such effective leadership. He thanked the Secretariat for its support and encouraged those present to participate fully in the discussions that would follow.

In adding his welcome on behalf of NHK, Yasuto Hamada spoke of his company's target date for 8K broadcasting (2020, coinciding with the Tokyo Olympics and Paralympics), noting that planning for major sports events had often led to breakthroughs in television technology. In addition, he observed that while WBU-ISOG's main area of concern is satellite transmission, this Forum would also explore rapidly evolving technologies, and he personally hoped to gain new insights into over-the-top services.

1.1   APPROVAL OF THE TOKYO FORUM AGENDA
On a motion from Tom Gibbon (NHK), seconded by Andrew Steele (BBC):
***   The Agenda for the Tokyo Forum was adopted.

1.2   APPROVAL OF THE SUMMARY NOTES FROM THE RIO DE JANEIRO FORUM
On a motion from Dave Gill (BBC), seconded by Martin Turner (Inmarsat):
***   The Summary Notes of the November 2013 Rio de Janeiro Forum were approved.

1.3   REGIONAL UNION UPDATE
ABU Technical Director Amal Punchihewa provided an overview of the Asia-Pacific Broadcasting Union's key activities, focusing on such matters as: outcomes from the 2014 Digital Broadcast Symposium (e.g., ABU members are to have digital implementation plans in place by March 2015); ABU's work with members and sister Unions on a strategy/case to protect and preserve spectrum for free-to-air broadcasting; campaigning for technology-neutral Smart Radio; leading WBU's work to update the 2007 Digital Radio Guide; and, ABU's Media Summit on Climate Change, ICTs and Disaster Risk Reduction, to be held in Jakarta, June 4-6, 2014.

1.4   REMOTE IP CONTRIBUTIONS – IMPLICATIONS & OPPORTUNITIES FOR SYNERGIES BETWEEN TERRESTRIAL & SATELLITE
The first panel session of the Forum was moderated by Arnie Christianson (SES), who described the objectives to be examined in the session as:
- the latest IP technologies for newsgathering

- the way in which newsgatherers were embracing these technologies
- the impact on the satellite industry

The six panelists were Bob Hildeman (Streambox), Samuel Wasserman (LiveU), Paul Shen (TVU Networks), Dave Gill (BBC), Joe Shimizu (NHK) and Martin Turner (Inmarsat). After each gave a brief introductory statement, the session quickly morphed into a free-flowing exchange of ideas, facts and opinions, often in response to probing questions from the moderator. Some of the key concepts that emerged included the following:

- Bonded cellular was driving this discussion and has had a big impact on satellite newsgathering, especially in regions with highly developed infrastructure.

- There has been a perception that cellular technology would be a satellite killer, but instead, it has become another weapon in the arsenal and there has been a coming together of these technologies, each of which has its own strengths. That said, the relationship between cellular and satellite operators is a two-way street and they need to work together more closely.

- Cellular offers low cost and can be deployed quickly, but in the end, cell towers are not under your control and broadcasters can't afford not to have a guarantee that their content will go through. Satellite, being ubiquitous, is a tool that broadcasters will continue to use. In some instances, bonded cellular has been deployed to get a story out quickly for a couple of hours until satellite trucks could be brought in. Then, the initial lower quality video can be swapped out for higher quality SNG video in subsequent newscasts.

- One prediction for the future was for more use of bonding devices that will work over satellite, 4G (or 3G), WIFI and all available modes. This was followed by an observation from the moderator that it's all about IP, and as long as you can interface your device with an IP provider and run it over internet protocol, it does not matter what gear you are using.

- At the end of the day, mobile providers appreciate companies such as Streambox, LiveU and TVU Networks, because they use the uplink (which is less in demand than the downlink), thus putting more money into mobile providers' coffers.

- When planning news coverage/deployments, BBC looks at the areas in which bonded cellular devices have been shown to be successful. This is an ever-changing landscape as 4G is rolled out.

- Journalists in the field expect ubiquitous connectivity to support the hybrid nature of what they are doing now (e.g., they expect to send Twitter and Facebook messages from the Nairobi desert in addition to filing their stories). At the same time, they want everything to be reliable, high quality and easy to use. These field requirements are quite complex at the underlying level, and this means combining different types of connectivity.

- A tremendous amount of R&D is being invested in addressing QoS issues related to cellular technology. In addition, telecom companies are working to expand their ability to offer temporary transmission solutions, when needed.

The discussion shifted gears when the moderator raised the issue of concern, from the satellite operators' perspective, about the implications of cellular build out as it relates to interference and C-band protection. Martin Coleman (sIRG) observed that the issue is bigger than C-band, and is really about how to share bands. He did not want to give away details about the following day's presentation on these matters; however, he emphasized that fact-finding is essential and sIRG is committed to figuring out how services can co-exist, since broadcasters need all transmission methods (including cellular) and International Mobile Telecommunications (IMT) needs satellite. It was noted that education will play a key role and it will be necessary for everyone to use technology to fully utilize their bandwidth.

There was also a discussion about the increase in the use of Ka-band, which Martin Turner said was driven not only by demand, but also by improvements in encoding and modulation technology to cope with variations due to weather conditions. Additional comments included the following:

- Paul Shen indicated that the combination of cellular and Ka has resulted in a dramatic increase in the probability of a successful transmission.
- Samuel Wasserman said the recent big change in Ka coverage and quality has had a huge impact on portable newsgathering.
- Bob Hildeman stated that more of his company's customers have been using SNG paths over the last few years, adding that SNG paths supplement cellular as a go-to when cellular is not available.

Andrew Steele (BBC) wondered if the use of both cellular and satellite has created schizophrenia in news coverage, as extremely high quality is transmitted from the studio but audiences are sometimes asked to accept much lower quality from the field. One view on this was that live broadcast news quality has degraded because the true competition is the Internet and experience has shown that viewers will accept low resolution video as long as they can get their news quickly. The moderator questioned whether this has created a "knee-jerk" reaction to cover everything, just because it's possible. Martin Turner offered the view that news channels need to move away from the imperative that "everything must be live." He suggested instead that decisions about live coverage should be driven by and suited to the content.

Other topics addressed included the importance of metadata when working with files, and the impact of file-based newsgathering on workload. For example, the WBU-ISOG Chair said that 20% of NHK's contribution transmission last year was file-based, and since the Internet is not stable, a ten-minute file would have to be sent in three or four different pieces, the overall result of which was an increase in the workload by a factor of 1.4. He hoped solutions would be developed to address workload issues.

After a brief discussion on infrastructure and device approvals in Brazil for World Cup coverage, the session concluded with panelists describing current best practices related to Internet-connected devices and cyber-security. The parting piece of advice was to "bring your own device!"

1.5   **BEST PRACTICES FOR MANAGING IP/FILE STORAGE SOLUTIONS – HOW BROADCASTERS ARE ROUTING METADATA/MATERIAL COLLECTED VIA IP**
Forum organizers were grateful to Dave Gill (BBC), who stepped in to moderate this session on behalf of Kazimir Bacic, who was unable to attend. To provide context for this agenda item, D. Gill observed that the cost of video newsgathering is enormous and the value of content needs to be protected with sensible metadata management and a clearly-defined route from the front end of the camera to the archive.

The first panelist, Shigeyuki Sakazawa (KDDI), focused on such matters as: the penetration of cloud computing; the need for standardization of data format, protocol and systems, plus the work being done by ITU-T SG9 in this regard; use cases for file-based workflow, the problems that may occur, and the solutions to these problems (e.g., adaptive bit rate to manage fluctuations in available throughput). He also referenced the way in which KDDI implements these solutions (e.g., VistaFinder Mx).

Next, Makoto Tanaka (SoftBank Telecom) illustrated, through video and slides, a series of use cases showing how various types of customers (e.g., retail shops, a Board of Education, a beverage company and a broadcast station) are able to benefit from that company's White Cloud Distributed Storage. D. Gill wondered whether broadcasters may have reservations about cloud storage, given that it is not under their control. M. Tanaka replied that his company currently provides cloud storage to broadcasters, but he was not in a position to be able to share the details.

The final presenter, Andrew Steele (BBC), demonstrated how a video file from his computer could be sent live, and easily, over the public internet to the BBC server system, which was developed in-house

and is called the Jupiter File Exchange. More than half of the material coming in for BBC news bulletins now goes through this system. At a certain point in the process, system users are prompted to add metadata, which A. Steele indicated is a key step. Although it usually works, the metadata transmission was not completed during the demonstration; however, this gave A. Steele an opportunity to explain that if it becomes necessary in the real world, the metadata can be transferred verbally via telephone and then manually typed in at the server location.

In discussion, A. Steele described other BBC tools developed by people working in the news environment, including one that can search the Jupiter database for thumbnails of video needed for stories and send the files to journalists' computers so they can edit in the field. Responding to a question from Daisuke Yoshida (NTT Electronics), A. Steele noted that security measures for the files being transferred are applied just before the "final mile." In closing the session, D. Gill observed that IP can do amazing things for journalists but brings with it a very complicated workflow.

1.6   THE INTERNET AND BROADCASTERS: A PERFECT MARRIAGE? (SESSION A)

Moderator Tom Gibbon (NHK) set the scene for the panel presentations by outlining a number of broad trends in the industry for distribution of video, such as: linear TV is moving to VOD via applications; viewers are no longer wedded to their TVs and watch video on many different devices; channel packages are giving way to à la carte channels and even individual programs ("extreme unbundling"); while you watch TV, TV is watching you due to the data that OTT provides; and, although cable and DTH "own" the relationship with viewers today, that is changing and for broadcasters, OTT means one-to-one, not one-to-many.

The five panelists, including John Ball (Turner Broadcasting System), David Habben (Akamai Technologies); Kenichi Miyazaki (Dwango); Masayuki Motoshima (Ustream, Asia) and Ralf Jacob (Verizon Digital Media Services) thoroughly explored these themes and raised others by providing details on such matters as:

- Turner's "TV Everywhere" strategy, its product management principles (including the importance of protecting brands) and steps taken to ensure operational success (e.g., encoding as few times as possible, the importance of metadata, authentication to protect rights, providing support to the platform instead of to customers, because customers are savvy and can find the content they want, etc.).
- Akamai's views on the impact of OTT ("the most disruptive thing to have happened to business models in the past 15 years"), the company's findings on what customers expect online (e.g., the impact of startup delay on whether users will abandon online video), the dramatic growth of internet video traffic and the role played by second screen devices (tablets, computers, mobile phones, etc.).
- Dwango's interactive Niconico video site, where comments posted by users scroll across the screen of user-uploaded videos and can be seen by other viewers. Synchronous and asynchronous communication between webcasters and viewers are both possible because VOD and live streaming are supported. Niconico's envisioned future is unicasting via the optimization of streaming video quality (bit-rate, frame-rate, format, etc.) that complements each viewer's unique environment.
- Impressive statistics related to Ustream's social video platform (e.g., 2 billion viewer hours since launch of service in 2006, with 391 million viewership hours in 2013), the company's focus on live broadcasts, its recent traffic trends and the importance of traffic management, (e.g., the "worst headache" is how to handle peak times) and, the role of 24x7 monitoring to ensure that copyrighted or inappropriate content is taken down.
- Verizon's efforts to simplify workflows for broadcasters, as illustrated by the use case of linear streaming for hundreds of local affiliate stations (in multiple time zones) that must be able to combine national and local programming into a single feed, while navigating the complex content rules and rights required for IP delivery. The pricing model for the "upLynk" solution is based on the hours of content encoded, hours of content stored and hours of content streamed (as opposed to charging by gigabytes transferred).

To open the discussion, T. Gibbon asked if there was any technical reason preventing Turner from delivering its OTT stream directly to viewers without going through a cable or DTH company. J. Ball replied this could be done technically, as had been proven with the CNN product. That, however, is a free offering, and Turner does not have the infrastructure to offer its pay products directly to consumers. Furthermore, from a business standpoint, it is reluctant to do so because the company's presence is based on platforms, like cable, where they got their start.

When queried on the quality of OTT video versus what is seen on DTH and cable, D. Habben observed that cable and DTH are consistent and reliable (barring a weather event), while OTT quality can be variable. He also noted that reliability for OTT is solved, and there is a technology that allows them to vary the quality in order to avoid the "spinning wheel of death" (i.e., during buffering), which starts to drive audiences away in as little as two seconds. By using such tools as adaptive bit-rate streaming, OTT is getting close to the consistency of broadcasting, but "it's not there yet." His advice to broadcasters was, "I'm your worst nightmare. Innovate or die, because your market will be increasingly preyed upon."

After acknowledging that K. Miyazaki had demonstrated the power of IP and how disruptive it may be to some of the people in the audience, T. Gibbon asked how the Niconico video site generates revenues. The reply was that this video site is a premium service, so there are member fees and ad revenues.

T. Gibbon obtained clarification from M. Motoshima that the 68 million Ustream views during the 2011 Tohoku earthquake were in Japan alone. This segued into a discussion about capacity planning and flexibility (e.g., whether the company has to limit viewership, or if it can take as many viewers as wish to see whatever is going on). M. Motoshima indicated that Ustream does not limit viewership on its platforms. The company has partnerships with multiple CDN companies, and if there is huge traffic, they use not only single CDNs but also multiples to cover this traffic.

Referring to the use case presented by Verizon, a participant asked how the SLA can be guaranteed over the public internet. R. Jacob said there was no easy or set answer, adding that the approach he had described was a pure over-the-top delivery model, so there are certain concessions that the affiliates, trying to get a broadcast feed, are making, on the understanding that sometimes network connectivity is beyond anyone's control. Negotiations that Verizon has seen between major broadcasters and their affiliate groups are taking this into consideration.

1.7   **THE INTERNET AND BROADCASTERS: A PERFECT MARRIAGE? (SESSION B)**
Martin Turner (Inmarsat) observed that this last session of the day would delve deeper into the way content is consumed once it gets into the home and would also look at what is behind the encoding technologies. But first, he provided details on Inmarsat's entry into the field of content distribution through a new product for the maritime market called "Fleet Media," noting that this represents yet another challenge to the notion of sustaining the business models of the past.

The first panelist, Hans Rummert, described Media Broadcast's Hybrid Broadcast Broadband Television (HbbTV) product, "multithek" and the benefits it provides to consumers (e.g., no installation of aps needed, seamless switching via remote control between broadcast and broadband on one device, etc.) and to broadcasters (e.g., TV channel in EPG of DTT, the ability to analyze user behavior, including when they watch, when they get out, and why). M. Turner noted that a great deal of information about viewers can be derived, and wondered whether this information can be used to insert targeted advertising. H. Rummert indicated his company *could* do this, but is not allowed to according to German law. For example, they can track geographical data but not the income or status of viewers.

Next, Eunsook Wi (ATEME) addressed such topics as: OTT technology and market status; the difference between OTT and IPTV; the emergence of OTT actors, including content delivery platforms (e.g., YouTube), content aggregators (e.g., Google Chromecast) and VOD non-linear service providers (e.g., Netflix); broadcasters' reactions (e.g., TV portals for "catch-up viewing," and near-simultaneous

broadcast of content to protect against piracy); technology changes and the MPEG-DASH initiative to standardize the adaptive streaming profiles; and, ATEME's role ("the processing part") in the OTT delivery solution and its multi-screen solution offering (TITAN). One key point noted was that OTT delivery gives broadcasters a new opportunity to directly reach their audiences by using telco infrastructure.

Toshiya Takahashi (Panasonic) outlined that company's history in developing smart TV and illustrated the ratio of Internet-connected televisions in the U.S. (65%), Europe (40%) and Japan (30%) as of 2012; however, the focal point of his presentation was the way in which Panasonic is combining 4K with cloud technology to go beyond traditional Smart TV to the "Life Screen," which incorporates such features as "My Home Screen" (a user-managed personalized gateway for fast and easy access to content) and "My Home Cloud" (cloud-based services for saving videos, memos and other data and sharing it with other devices, such as smart phones). M. Turner wondered if Panasonic was interposing itself between broadcaster and viewer. T. Takahashi replied that the company is cooperating with broadcasters, rather than competing with them, and hopes to assist them in becoming more interactive.

In his presentation, Mamoru Kamikawa (Sony) reflected on the impact of the digital revolution, noting that companies like his cannot simply sell products but must also consider ways to improve the user experience on all of their devices. He also observed that despite the fact people talk a lot about "Smart TV," devices such as iPhones and tablets are actually smarter in terms of interactivity, multi-tasking, etc. After showing a video to demonstrate what is available on the Sony Entertainment Network (e.g., VOD, music services, Play Station, etc.), he closed by describing two examples of good marriages between broadcasters and the internet, including the capability to: insert the address of a local dealer during a car commercial; and, offer viewers of a live broadcast the opportunity to vote or play games during a program being consumed through connected devices.

M. Turner wondered if the comparatively lower penetration of Smart TVs in Japan is due to the very high penetration of smart phones in use there. M. Kamikawa replied that what is low in Japan is not the penetration of Smart TVs, but the number that are actually being connected to the network. T. Takahashi agreed, noting that terrestrial broadcasting in Japan offers very attractive content and as a result, is very popular. He indicated as well that penetration of internet connectivity for televisions is on the rise.

The four panelists were asked for their views on what will happen to linear television in the next five years. The following is a summary of their answers:

- H. Rummert observed that in Germany, there is still steady use of the first screen, so traditional broadcasting will remain for a long time. However, OTT is coming, and with it, the sharks, so be prepared to give your customers what they want (e.g., demand services).
- T. Takahashi said that although subscriptions are decreasing, television broadcasting is still a top content provider, and will remain important in five years. When asked if he watched linear TV, he said "sometimes."
- E. Wi said she also watches linear TV "sometimes" and predicted it will survive over the next five years, as most homes have at least one television set.
- M. Kamikawa remarked that linear and non-linear television each have their own strengths, adding that he expects they will both survive and co-exist.

In the final presentation of the day, Lauri Korts-Pärn (Cyber Defense Institute) alerted Forum attendees about the necessity of raising situational awareness to boost cyber defense capabilities, and outlined the steps his company takes to help clients find and resolve vulnerabilities. After sharing information about various types of attackers that pose threats (e.g., people conducting R&D or military espionage, criminal gangs, disaffected youth, etc.), he outlined several case studies, including a summary of the attack last year that wiped the computers of a broadcasting company in Korea. The post-attack analysis showed that the team attacking that target had been operating since 2007 without having been noticed. L. Korts-Pärn encouraged those present to contact him via email with their questions.

In thanking the panelists, M. Turner remarked that everything they had said indicates the requirements for connectivity have only just begun to be scratched by the demand for distributing content, adding that this, coupled with other developments (e.g., what Amazon is doing with drones and what Google is doing with balloons) points to a world in five years' time that could look very different and could have a dramatic impact on the part that satellite operators play in connectivity.

CLOSE OF DAY ONE
Interim WBU-ISOG Chair A. Ogawa closed Day One by thanking all participants for their contributions to the stimulating discussions that had taken place. He also expressed gratitude to AsiaSat, Inmarsat, Intelsat and SES for having co-sponsored lunch.

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