Tales from the Online **Video Trenches**

How technology pioneers in MEA and around the world are moving video to the Web one channel at a time.

Around the world, internet video is elbowing its way to the front of audiences' viewing queues. In the Middle East and Africa (MEA), technological challenges haven't stopped Internet companies working to capture this growing market.

Regionally, Middle East IPTV adoption is experiencing a 40% annual growth rate and sub-Saharan bandwidth is expected to increase 3000% between now and 2011 as the West Africa Cable System readies its $600 million, 5Tbps cable roll out. Free, live African television channels are about to become available over the Internet. U.S. Seattle-based start-up ivi.tv's encrypted peer-to-peer service delivers content from traditional broadcasters as well as independent producers. They have inked deals with 37 channels, the first of which include GTV in Ghana, Channels TV (Nigeria), AfriCable (Mali, Ivory Coast, Senegal, Guinea), Ragga TV (Congo), and KTN in Kenya. "These are all regular air broadcasts 24/7" says ivi Founder and CEO Todd Weaver, "that we will re-broadcast with ivi to the world." DVR-like features including record and rewind are expected to be attractive to local and expatriate audiences alike, as is their upcoming pay-per-view premium content service.

Howard Greenfield is a digital media industry strategist, columnist, and co-author of IPTV & Internet Video (Focal Press, 2nd Edition, 2009). He is principal of Go Associates, a leading consultancy that develops and implements high-tech product marketing and global business development strategies.

Internet video comes of age

Why is online video becoming such a dominant form of TV consumption for viewers around the world? For students who have been raised on Web content it's a natural for entertainment and educational reference, in the workplace employees watch to learn about new products and policies (and goof off a little), while home PC and iPhone users now watch everything from soaps and movies to live sports, news, and arts events. For many, online video finally came of age in 2009. In the U.S. alone, over 80% of all Internet users now watch videos online. October's world-wide YouTube webcast of rock band U2 live from Los Angeles commanded nearly 10 million viewers – the largest webcast in YouTube's history. And the same month, primetime Internet video aggregator Hulu delivered over 850 million streams, and 161million internet users watched 25 billion video clips. But despite the large and growing market, barriers to smooth, wide-spread delivery remain, and that's especially true in MEA. In a recent AV Specialist survey, readers were evenly divided between bandwidth, cross-platform

integration, and lack of business model as the biggest impediments.

Social media in Jordan

We are living in one of the most fascinating and fast-changing times in broadcast history. Yet online video delivery and growth must overcome a dizzying array of technical challenges before anyone hits the jackpot. The fact that much of MEA Internet bandwidth doesn't support proficient streaming of standard video delivery, let alone HD, is just part of the problem. In Jordan, the recently launched social and cultural web TV site Aramram.com exemplifies the dilemma. Like many others in the region, this innovative site faces limited audience bandwidth and PC RAM configurations. Aramram.com produces its own content in-house, then

transcodes and uploads it from its offices to a server in the U.S. In addition to users lacking enough download speed for videos, the site's implementation hit snags due to a lack of interactive web TV expertise in the Middle East, according to AbdelSalam Akkad, Aramram.com's producer and managing partner.

"Implementing the full vision was the main issue" says Akkad. "The technical team subcontracted to implement the architecture delivered half the final result due to the limited budget. Backers tend to seek an early return on investment [two years]" explained Akkad "which I think is the wrong way to approach such a project in an industry still under transformation."

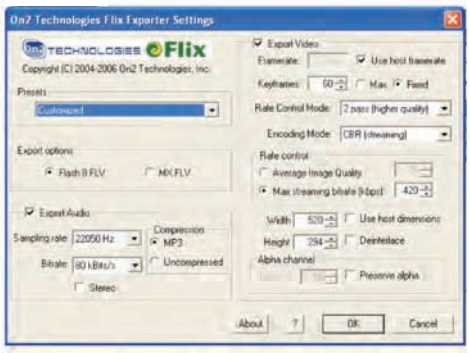
Africa is not for sissies

In South Africa, several companies wrestling with these and other technological issues are pushing the envelope of what is achievable today. Using Izenso Mediacaster, film and broadcast technology vendor Visual Impact uploads content and streams it to their Cape Town and Johannesburg branch LCD TVs. "Showing people a video" says Calvyn Du Toit, Marketing Manager at Visual Impact, "is much more effective than getting them to read

the same information. This must be the reason why our videos are so popular." They also reach their customers with videos published on YouTube and their own website.

Like many parts of MEA, the comparative low quality of bandwidth, support, and associated costs push organizations to innovate. Some seem to relish the challenge and are thriving online and in the bush. Earth-Touch, a wildlife documentary company, delivers nearly one million HD episodes a month from their office in Durban, South Africa. "As Africans" says Brian Palmer, founder of Earth-Touch, "we have a wonderful ability not to read the instruction manual and cowboy solutions that our suppliers could not even think of."

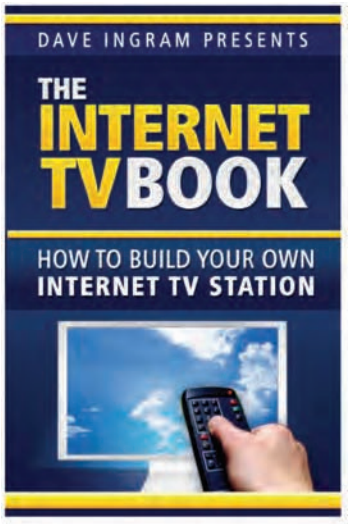
To some, the telecom companies are seen as an Achilles heal to today's online video business, some even refer to them as a government bandwidth monopoly that controls the data flow. Earth-Touch's work-around was to pioneer a system with a local line-of-sight company using Verizon's backbone for content transport. The existing telecoms infrastructure was built for smaller voice-orientated networks, as Palmer puts it, so even running SD video within Africa is problematic. Earth-



Touch's private network and relay servers enable the company to reach its goal of providing audiences with near real-time footage of everything from elephants, wildebeest, and lions to entire coral reef ecosystems. "Africa is not for sissies" says Palmer. "The competition's a bit stiffer, and, to my knowledge, we engineer things over much lower bandwidth than anyone else in the world."

The World Cup online

Sports are another bellwether of global Internet TV momentum. During the 2008 Beijing Olympics, U.S. broadcaster NBC, which paid $894 million for exclusive broadcast rights, attracted nearly 5 million online video viewers in one day, four times the peak viewing of the Winter Games in Torino, Italy, just two years prior.



FIFA debuted the German World Cup with over 125 million mobile phone video streams in 2006. Four years on, we can expect significant advances in online programming for the 2010 South African FIFA World Cup. In Johannesburg alone FIFA, the official international governing body, has required a 20Gbps data connection between stadiums and their broadcast network operations International Broadcasting Centre (IBC). Millions will be tuning in by TV, PC, and mobile phone. With nearly eight times as many mobile subscribers as Internet users in South Africa, mobile video is sure to command a lead as the new "third screen."

Technology issues

For most viewers, the technical complexity of online video remains out of sight, under the hood. But a successful platform must support seamless encoding, encryption, and play-back. Adaptive bit-rates for example, determining the viewer's display quality based on their ISP connection speed, is one key to successful streaming. MediaPlayer's multi-bit-rate format

system, for example, encodes a single video file for playback at different speed settings. This way a single file caters to viewers connecting at various speeds. "What we usually do" says Dave Ingram in his Internet TV Book "is encode one multi bit-rate file at 100, 200, 350, and 500kps, and then separate files for the high bandwidth streams - 700kps 1200kps, and maybe 1800kps". A related step is to allocate for audio, and to indicate display width, height and aspect ratio. Fortunately, encoding cards and software make this a straightforward process. Adobe's Flash, a fixture in the world of online video has nearly 99.6% market penetration. Adobe's aim to facilitate world-class Web video delivery to all devices is a common industry goal. In 2010, Flash will deliver "unification…across all platforms, whether you're on a set-top box, mobile phone, or computer PC" says Kevin Towes, Adobe Flash Media Server Product Manager. The simple goal is to make it easier and cheaper to deploy online video by eliminating quality of service issues for content providers who shouldn't need to worry about server and CDN connectivity code or fail-over if playback is disrupted. These and other advances are part of a technology wave pushing things forward as the Web video sector comes of age. Ankeena's Media Flow Director, claims to consume less bandwidth in delivering video by preventing buffering issues. Dyyno.com, a video sharing platform, lets users quickly build their own brandable channel ("one click to broadcast, one click to view"). Personal channels are free, business channels serving up to 10,000 concurrent viewers and are priced at $100/month. Finally, from Hollywood, Clicker, a TV guide for the Web that covers 450,000 episodes from over 1,200 networks, is available today in the U.S. as the company explores editions for other countries.

One channel for the future

The forces behind online video growth are getting stronger and over time online video quality, accessibility, and navigation will continue to improve.

"Moore's law is a wonderful thing" says Reed Hastings, CEO of U.S. DVD and streaming rental giant Netflix. "What we've seen" says Hastings "is bandwidth costs dropping over the last several years, with competition between Limelight, Level 3, and Akamai. What's fueling the whole system are the end users who are paying $40-60 to their ISP. So, broadband costs are falling steeply. If you look at Amazon who publishes their cloud delivery rate card, it's a nickel ($0.05) per gigabyte, or think of it as a nickel per movie. That's pretty cheap!" It is expected that in four years, the volume of global IP traffic will reach nearly 700 billion gigabytes. Put another way, 90% of all consumer web data and nearly two thirds of all mobile data traffic will be video, according to Cisco.

What we will soon see, irrespective of geography, are new features that leverage the social space, capabilities previously unavailable on traditional linear TV. CBS Interactive today allows you to 'watch and chat' with other viewers. Shared viewing tools enable viewers to draw on the video, share live laughs and comments, and integrate with social networks like Facebook, all just an inkling of what's ahead. "You can't watch TV all the time" says YouTube Hunter Walk speaking at the November Television Reinvented conference in San Francisco, "so we try to answer the question 'what should I watch today?' Tomorrow" adds Walk, "will not be defined by a million channels. In the future there will be just one channel – the personalized viewing experience."

South Africa selects MHEG-5 for digital switchover

IMPALA, the International MHEG Promotion Alliance, is pleased to announce that South Africa – via its Digital Dzonga Advisory Council – has selected MHEG-5 as the interactive TV middleware for its digital switchover.

Following on from a successful DTT trial that began last year, the SABC, South Africa's public broadcaster, led the process of developing a MHEG-5 profile for South Africa to meet some of the unique needs of the South African market. The South African MHEG-5 profile has now been finalised and can be obtained from SABC while the overall receiver specifications are now also being completed. The MHEG specification includes a platform-wide EPG that will allow consistent listings and onscreen branding. The profile also includes support for the delivery of a wide range of interactive services.

The Digital Dzonga Council is an advisory body appointed by government in 2008 to oversee South Africa's migration to digital terrestrial broadcasting. Government has taken an inclusive and transparent approach to the

development and implementation of the digital migration process, and the Digital Dzonga Council includes representatives from both the public and private sectors. Council members include government (Department of Communications), consumer groups, broadcasters (SABC, e.tv, M-Net), manufacturers, the national signal distributor (Sentech) and the regulator (ICASA).

Aldred Dreyer, SABC Technical Project Manager, DTT, says, "We selected MHEG-5 because it is cost-effective with lower royalties than other middleware solutions and it is an open standard and not proprietary to any one vendor. In addition it uses little memory."

Giri Valliappan, Director of Market Development with IMPALA, says, "It is very pleasing to be able to announce that another countrywide project has chosen MHEG-5 as its interactive middleware. 2009 has seen a host of developments for the technology including the IP-based MHEG Interaction Channel and significant HD advances, both now with ETSI for its approval."