



# The Future of the Consumer Video Experience: Big Data and Real-Time Analytics

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## VIDEO, DATA STREAMING AND ACTIONABLE ANALYTICS

Big Data and actionable analytics are becoming increasingly critical for video service delivery, and cover a vast array of different aspects from advanced service assurance techniques to better targeting of new content. But for the general public, there is an unhelpful stigma attached to video analytics that says 'big brother'. Although there is an element of knowing which content is being watched in which demographics for better recommendations and provisioning of content, it is relatively unrecognized that a vast quantity of those analytics are needed to improve the customer experience by providing the best delivery infrastructure possible. Delivering multiscreen video is hard. For traditional linear cable and IPTV, the move to IP networking was a challenge to be faced within a 'walled garden' infrastructure, where the operator providing the content also owned the video headend, core network, access network and the customer premise equipment (gateway, set-top box). It took several painful years for the industry to work towards common methods for video analytics for end-to-end video service delivery, culminating in the SCTE 168 recommended practices that formed a 'best-of-breed' set of recommendations from operators and equipment providers across the industry, and finally brought a common language of sanity to video delivery and analytics through the concept of program availability.

Now we are at that point again for multiscreen video, but the challenge is so much greater. Instead of a walled garden infrastructure for end-to-end video, the delivery of adaptive video can involve on-site or cloud video head-ends, multiple delivery protocols, multiple content delivery networks, multiple access networks (fixed and mobile), multiple end-point connections, multiple devices and multiple different operating systems and players. To add fuel to the fire, most of the elements in the above list are even provided by different companies.

This leads to two major issues for streaming analytics. Firstly, from an operational or service assurance perspective, there is no common language for video quality assurance across all the companies involved, leading to an incredible amount of blame and finger-pointing across the industry when major customer-impacting events occur.

Secondly, the mass of data these entities are providing goes into data silos that cannot be bridged and correlated in a timely manner due to the lack of common actionable key performance indicators (KPIs), a shortage of data scientists and an even greater shortage of data scientists with intimate video knowledge who can actually make sense of the data. Content providers end up with a mass of conflicting information from the different network providers, and find it incredibly difficult to get to the root cause of issues and prevent major failures that lead to customer complaints and can adversely affect the company brand and revenue streams.

The good news is that comprehensive video head-end analytics and independent monitoring at demarcation points in the network and cloud have provided some relief and helped to stop the blame game for many operators; but the lack of common ground and need for 'visibility' has driven the adoption of client analytics in the playback devices themselves.

These client analytics can provide a huge amount of insight into how the video is being delivered, as well as what is being watched on which networks and devices. But, as with the early days of IPTV, knowing that the video is not good at the end device just tells you that the video is not good at the end device, and provides limited visibility for operations into 'where' the error occurred. To do this, we need to provide much more intelligence on the root cause analysis in real time, because taking an hour to find an issue is no longer acceptable during live streaming or a series launch/finale event. The industry must embrace real-time streaming analytics with advanced customer experience management (CEM) which supports immediate impact analysis and proactive interaction with the affected customers.

Fortunately this is all now possible with recent linking of operational (infrastructure) and behavioral (end client) analytics in real time, and the Big Data streaming engines are becoming much more capable of linking this data to customer service systems and billing systems that can profile affected customers and determine the right course of action, especially if those customer can be immediately identified as high revenue or 'VIP' customers. The more advanced systems will also be able to cross reference the impact analysis data to social media for additional correlation and notifications

The ability to provide instantaneous analytics feedback into real-time data processing engines should shorten the time taken to resolve issues and provide much more efficient customer experience management moving forward. It will also couple nicely with the industry move to Network Function Virtualization (NFV) and Software Defined Networking (SDN) for better provisioning of video delivery services – the faster the issues can be isolated and impact analysis executed, the faster backup systems or additional delivery resources can be brought to bear on the issue. There are many factors content providers and operators use to try to predict load for major events, but there are still many high-profile failures that take far too much time to resolve, and faster data processing can only improve this and allow for dynamic (and predictive) corrections/failover.

The net result for providers should be greater issue prevention, and faster issue identification and time-to-resolution, supporting proactive communication and resolution with the customer/viewer. For the customer, this will impart a greater feeling of importance, which can yield greater brand loyalty, and more (positive) word of mouth marketing. The longer-term profiling of the data for viewing habits and demographics may also continue to be used for better recommendations and marketing exercises, but there is a growing trend for customers to accept recommendations and watch adverts as long as they are relevant to them.

From an end-to-end collaboration perspective, industry consortiums like the Streaming Video Alliance are also heading down the right path to try and unite thinking around end-to-end video delivery and actionable KPIs, and I encourage the development of recommended practices for multiscreen video delivery following in the footsteps of the SCTE 168 recommendations from 2010.

Making sure that any recommendations also consider mobile operator needs will also be important as faster 4G and 5G mobile networks deliver more video content and become a primary path for video consumption.

Advances in Big Data and real-time data processing will make a huge difference to the consumer video experience in the future. 'Real-Time' is the cornerstone of this improvement. Real-time data processing for actionable KPIs, real-time CEM and real-time provisioning of networking and processing resources should all improve brand loyalty and additional packaging opportunities for new services. With 360-degree viewing, virtual reality and augmented reality just around the corner, it's going to be absolutely essential to get these foundations right before the next leap in video can move into the mainstream.

#### ABOUT STUART NEWTON



Stuart joined IneoQuest in 2006 to build out the business for video service assurance across the service provider, broadcast, content provider, and equipment manufacturer market sectors. IneoQuest now has over 700 video service clients worldwide, including leading IPTV, cable, satellite and content providers, and continues to drive innovation in video Customer Experience Management (vCEM), service assurance and behavioural analytics for multiscreen video delivery. Stuart has driven solutions for video initiatives such as Program Availability for operational reporting and service level agreement (SLA) compliance, and is currently focused on the challenges of delivering and monetizing multiscreen/OTT video services and streaming video analytics across converged fixed and mobile video infrastructures worldwide.

Stuart is a chartered engineer and holds an Honours degree in Electrical and Electronic Engineering from Loughborough University. He has represented IneoQuest on industry bodies such as TM Forum and has held several market and business development positions for global technology providers.



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