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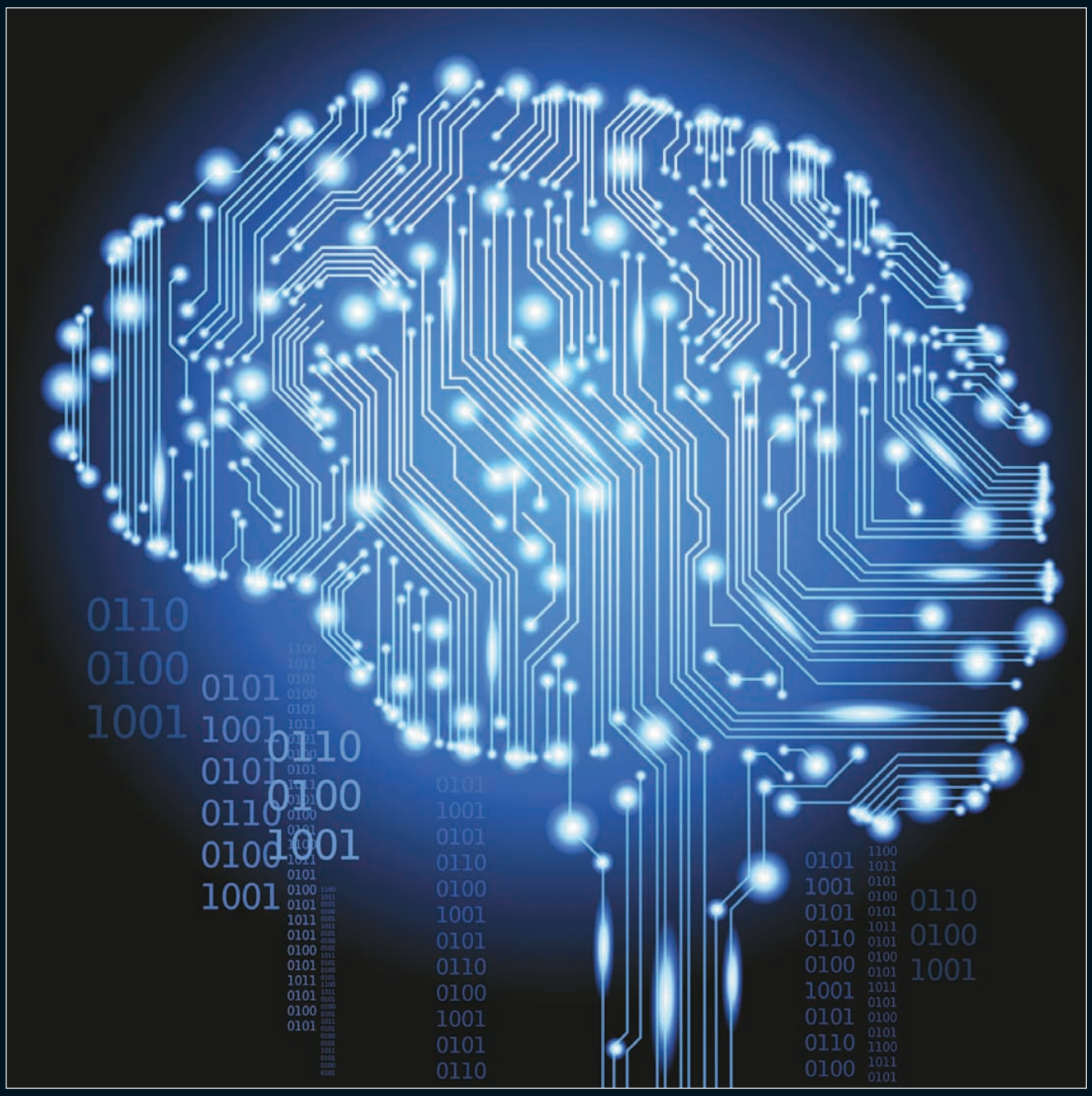
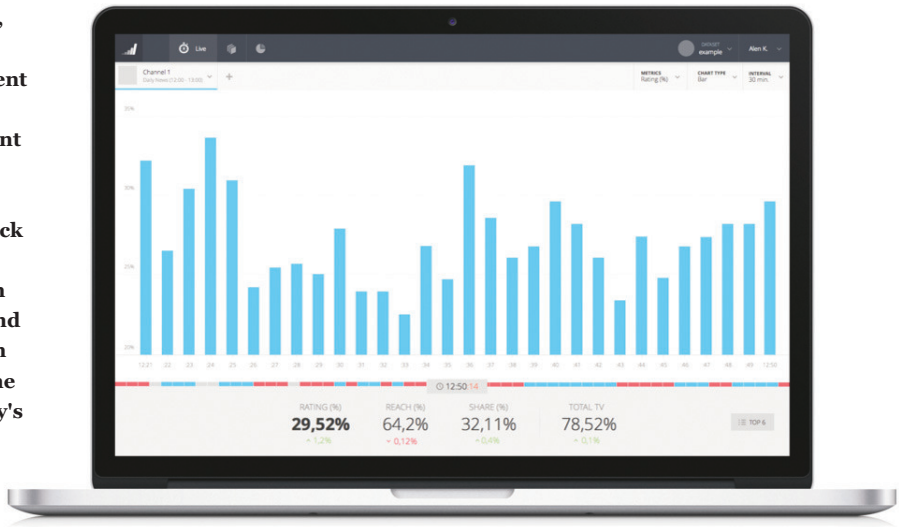
MARCH/APRIL 2015



BIG DATA
TV dives in

Data and the viewer experience

Managed network providers are increasingly relying on QoE to stave off OTT challengers and the threat of cord-cutting, with the User Interface and user friendliness of the EPG and recommendation features central to their efforts. Colin Mann takes a look at the role data mining and management plays in viewer satisfaction, monetisation and retention.



According to Dr Neale Foster, COO and VP global sales at ACCESS, content management and metadata aggregation are enabling operators to deliver content tailored to every consumer's needs and viewing habits. This includes video content discovery and playback on mobiles, tablets and operator branded devices. "Metadata's depth isn't limited to content discovery and can also enable advertisers to reach viewers in a highly targeted way," he explains, advising that the company's multiscreen management platform ACCESS Twine can be easily integrated with external metadata sources, allowing consumers to find all their content in one place by collating all locally stored libraries on a single platform.

Roger Franklin, CEO, Crystal, suggests that the need to justify the investments made by companies in content creation and the demands of consumers for personalised experiences, great strides have been made shifting companies and advertisers from content creation to content curation, with the ultimate goal of content commerce. "The challenge for video, which is where all content is moving, must be addressed through the use of metadata to tag and manage the content as it flows through the distribution networks. Video content, unlike static, relies on more than behavioural data to 'get it right.' Context and rights management, for example, must be accounted for to support true engagement, maximise monetisation and understand return on investment." He argues that the ability to create metadata in the blind, with no prior knowledge of the content, is still immature: "Ideally, video content will be automatically tagged with overall summary metadata as well as in-stream descriptive metadata as it is curated. However, this capability, which involves object and people recognition, lies somewhere in the future."

"Metadata's depth isn't limited to content discovery, it can enable advertisers to reach viewers in a highly targeted way."
Dr Neale Foster, ACCESS

Keith Bedford, managing director, EBS, notes that traditionally, with a handful of channels to choose from, video discovery was relatively simple for viewers. "Now, with the explosion in the number of channels and huge amounts of content available through video-on-demand (VOD) and over-the-top (OTT) services such as Netflix, the process is much more complex. To aid content discovery, viewers can turn to a number of different sources, ranging from the traditional such as recommendations from trusted sources including magazines, newspapers and websites, through to new recommendation and content discovery engines. Using algorithms, these new technologies use viewing behaviour to collate and compare viewing habits. As genuinely innovative and exciting as these new technologies are, they are only as good as the data being pumped into them. Quality metadata attached to content for discovery purposes should include fields such as cast, genre, director and year of production and images," he recommends.

CONNECTED. Matthew Huntington, CTO, Freesat, says the platform's belief is that editorial recommendation is a key part of

tvbeat

"Being able to see what viewers are watching across devices is imperative." Laurence Miall d'Août, TVbeat

any content curation solution. "It is what we believe needs to happen as a first step. A lot of what people want from TV is to be 'connected' so they want to watch what other people are watching. With an editorial team made up of telly-obsessed people making choices about what to watch you just get a much better result. In the future, we would, of course, be looking to offer more personalised recommendations, but there is a real need to establish a 'trusted' editorial recommendation service first with audiences before enhancing it with increasing levels of personalisation."

"Today, the vast majority of television consumption is people just sitting down on their sofa and watching whatever they know or find, and we shouldn't forget that. Better content discovery is important so viewers' precious time is spent watching TV rather than finding out what to watch. Another key point is that providing a personalised recommendation capability is one way to legitimise collecting data from and about the audience, both demographic and usage. If we want to use this data in different ways then we need to provide value back to the consumer in exchange and video discovery in itself is just not monetised currently," observes Huntington.

"If you go into emerging markets, metadata is nowhere," advises Giles Cottle, director consumer insight products, Genius Digital. "Many channels have no EPG and those that do are frequently unreliable or incomplete. You commonly get information bunched into the show title (for example the show language) which makes it incredibly hard to navigate across different platforms. In western markets, the key movement is more detailed categorisation of shows. Historically, shows have been put into a single category, but increasingly, it's clear that assigning multiple categories to a show can help in terms of discovery, and particularly categorisation. For example, if you look on Netflix, The 2012 movie Flight is categorised as 'Social Issues Dramas, Dramas, Action & Adventure, Dark, Full of suspense, Emotional'. However on IMDB, it is classified as Drama / Thriller. While this is fine for a simple EPG, Netflix's approach is clearly much richer for search and recommendations."

GENOME. Yossi Glick, CEO, Jinni, advises that his company has demonstrated a development in content curation providing an operator with content acquisition services by using its Entertainment Genome to select the most suitable titles for its Spanish speaking audiences, which included Spanish and Latin American productions such as the famous terra novellas. "The content was selected based on dominant tastes from active subscriber consumption data, top-rated films in theatres and the most popular movies viewed on television. This is an example showing that people from a different country with a unique culture will tend to have a common taste in specific types of content such as films in their native language. By leveraging this data, operators are able to purchase the most relevant titles for the audience," he notes, adding that metadata alone is very shallow but smart data is the key for discovery as it builds trust with the end user, thereby increasing satisfaction and consumption. "The basic metadata is not enough and it needs to be supplemented with modern technologies in order to analyse the data."

"With the volume of available on-demand content increasing, we are seeing a definite demand from service providers to deliver better targeted content across multiple screens to their subscribers," notes Simon Trudelle, senior director product marketing, at NAGRA. "Curating and aggregating content using rich metadata is also becoming more important. And new content catalogues can be more easily created and made available for OTT delivery, raising the bar for accessing relevant content. A NAGRA OpenTV partner, Wurl.com, is an example of a next-generation content provider that has specialised in content curation and metadata enrichment, bringing thematic, updated content sources to service providers, in effect delivering OTT channels," he advises. "Down the line, as is the case for e-commerce in general, broader choice calls for better data to help provide access to what viewers really want to watch. When done right, this results in positive impact on monetisation and churn reduction."

According to Steve Plunkett, CTO at Red Bee Media, there is a lot of industry activity today focused on personalisation. "This is a broad topic that covers algorithmic content recommendation, custom viewing experiences and much more. This requires rich metadata and increasingly sophisticated metadata platforms. The depth of metadata is used to both power the predictive analytics that drive a content recommendation and populate a modern UI or EPG. Content discovery is absolutely essential to any content publisher today. Whether it's a more relevant VoD recommendation, a more personalised linear channel or a more targeted ad, the use and quality of video discovery is a key differentiator in attracting and retaining viewers," he states.

COMMUNITY. Charles Dawes, senior director, product marketing, Rovi Corporation, suggests that content curation and metadata continue to play a more important role in the entertainment ecosystem as we see more and more immersive, visually-rich discovery experiences roll out to consumers. "Providers are increasingly looking to offer a service that can collect, normalise and enhance metadata across TV, films, music and even games and books to give customers the very best experience. At Rovi, we've now expanded our coverage to over 70 countries alongside making more investments into the depth of our data. The recent acquisition of Fanhattan and TMDB.org, will further enhance coverage with metadata that's created by a huge community of movie fanatics."

Jean Moonen, VP business development and product management EMEA APAC at SeaChange International, suggests that viewer habits can be monitored at several levels in an end-to-end system – client-side, inside the network, and in the data centre. "However, many system vendors only see a 'slice' of what is happening in their specific

products. Key insights can be obtained via linking together analytics from different systems, into an overall dashboard and Big Data engine. Content recommendations and targeted advertising are amongst a range of ways for video service providers to improve monetisation of their offering. Both applications, however different, hinge on knowing the viewer's behaviour and preferences. Service providers that have all of their subsystems interconnected so that they can share and utilise this data are best positioned to accurately serve their subscribers. The more targeted an ad is, the more valuable it is. So when more data is available about a viewer, the better the ad revenue can be optimised. What data can be used depends on technical possibilities as well as legal and regulatory constraints," he advises.

According to Peter Docherty, founder and CTO at ThinkAnalytics, metadata was once seen as simple plumbing - people used to only think of the value of metadata from a display perspective. "But now there is a realisation that what you display is just the tip of the iceberg and the quality of the metadata impacts the entire user experience. With good quality metadata and ThinkAnalytics Recommendations Engine, operators and content owners can increase engagement with subscribers, broaden the range of channels they watch, increase viewing times and increase ARPU. This works across all sorts of providers – satellite, cable, IPTV, OTT," he claims.

PUSH. Laurence Miall d'Août, CEO at TVbeat, says that through using Big Data and advanced technology, more pay-TV and OTT platforms are implementing suggestions to push the most relevant content in front of their subscribers. "In reality, most subscribers are still using EPG (Electronic Programme Guides) to search for content – for more than 90 per cent of subscribers, this is the primary source of discovery. Some pay-TV platforms have good metadata for content, however the biggest challenge is the gap between linear and VOD content as they don't have connected content across all platforms. The TV set is becoming just another screen, and it's not surprising that our TVbeat data shows an increasing consumption of content across multiple devices. Being able to see what viewers are watching across devices is imperative to knowing what they are really interested in," she notes.

"The viewer should be made aware of what data is collected, how it is used and positively accept this."
Geir Helland Persson, Conax.

David Leporini, EVP of marketing, products and security at Viaccess-Orca, suggests that providing a personalised television experience relies on the operators' ability to collect and leverage Big Data in two key areas: enriched content metadata and user behaviours. "The personalised experience starts with video content discovery and recommendations, extending to a full range of personalised interactions with content services. Operators need to focus on enriching and extending first generation metadata for content descriptions, in addition to understanding how the user interacts with content services such as the VOD catalogue, in order to create a personalised experience in interacting with the services. This will enable operators to present users with a targeted, individualised, and personalised interface to their services, increasing user satisfaction and loyalty, driving content consumption, and boosting monetisation," he advises. "End users want interfaces that are personalised to the way they want to interact with and use the operators' services, instead of a one-size-fits-all user experience. They are looking to be immersed with an engaging interface."

ACCESS's Foster recommends that by leveraging data sciences' capabilities in tandem with multi-screen expertise, operators can better understand their subscribers' demographics and behaviour and target them accordingly, whether through tailored recommendations on VoD portals or personalised advertising, such as pre-roll and post-roll videos on their PVR content.

OPTIONS. Sachin Sathaye, VP, product strategy and marketing, ActiveVideo, says that one of the most rewarding aspects of the past couple of years has been seeing how virtualising set-top box functionality to provide advanced search, discovery and navigation for its customers universally results in positive impact on consumers. "In Liberty Puerto Rico, for example, the Social Content Navigator that combines multiple tiles of live video with real-time viewing trends has helped people discover new content options outside of their comfort zones."

Crystal's Franklin says that Big Data, when used correctly, is a powerful tool for content providers, marketers and advertisers. "The issue is that Big Data is often viewed in a silo without context and with gross assumptions about what the patterns in the Big Data mean. Our proprietary research shows that companies make incorrect assumptions by analysing viewer habits without understanding 'why'. This is especially true when companies include social media activity and focus on vanity metrics such as number of shares or likes. To truly improve service and viewer engagement, a deeper analysis of patterns must take place, which can be facilitated through metadata and advancements in Internet of Things technology. This represents a shift in thinking from the industry's current demographic and transactional-based approach and requires a holistic understanding of the viewers," he suggests.

"Viewing data can also be used to confirm

"Big Data is starting to play a key role in how companies are delivering services."
Charles Dawes, Rovi

“Personalised recommendation is one way to legitimise collecting data from and about the audience.” Matthew Huntington, Freesat

and deny common perceptions,” says EBS's Bedford. “For example, Netflix can confirm Box Set binging by seeing users watch many episodes on the bounce. This perhaps contributes to VoD providers launching all episodes of shows such as *Arrested Development* Season 4 or *House of Cards* at once. However, there does seem to be a slight shift in this trend. Netflix’s *Better Call Saul* is being released the ‘linear way’ episode-by-episode.”

CHALLENGE. Jean-Marc Racine, managing partner at Farncombe, says that in theory, all the data relating to a viewer can be tracked and leveraged to enhance the user experience, or for monetisation. “While Internet advertising capabilities are driving this, the TV service platforms still need to be architected and operated to allow such services. This is a challenge for most operators, given the diversity of their systems and distribution networks,” he notes, adding that Big Data can predict customer behaviour and be useful in reducing churn or increasing monetisation, suggesting that this requires integration with the operator systems, including outbound marketing and the call centre, which can be a challenge when the operators are relying on legacy solutions that were not designed to be used in this way.

For Freesat's Huntington, Big Data is “very important as it is only through monitoring how users are interfacing with and experiencing television services that we can improve them. Monitoring what content people consume helps us to create a better picture of their preference and build a better understanding of who they are. Social media is important for television audiences as it provides a means to help them feel connected to other viewers, whether it’s sharing the love or hatred for a particular programme or specific moment in a programme. Freesat is trialling a Twitter feature for broadcasters who can use the platform to share a link with viewers so they set recordings from a link within a tweet. We expect this to really take off,” he reveals.

Genius Digital's Cottle says that Big Data is starting to become a very valuable asset for today’s broadcasters and content owners. “In an era where viewers have more choice than ever before, the companies that fail to understand their audience will lose out to the ones that do,” he warns. “And Big Data is important for two main reasons. The first is that it is helping to measure more of the audience; meaning companies no longer have to rely solely on panel information. Big Data is helping to collate actual audience data that can be used and applied to build compelling and profitable TV services. The second is that it is bringing together subscriber data and billing data to build a ‘bigger picture’ of subscriber activity. For example, Big Data can bring together subscriber data such as what people are doing, along with billing data, like what people are watching, and build an identity for an audience. This data now becomes meaningful and can be used to drive relationships and improve the viewer experience, or to increase monetisation and reduce churn.

Social Media is another data set that can be used and combined to build a full picture of audience activity. But Social Media shouldn’t be used on its own to predict subscriber viewing habits or trends- instead, it should be used to compliment core data.”

SEMANTIC. Jinni's Glick says the user interface is only as good as the underlying data and suggests that the semantic revolution has paved the way to recommend the relevant content according to unique user tastes and to increase viewer engagement, claiming that the company understands each user’s unique entertainment personality and provides an explanation why the content was recommended. “This creates trust as the recommendation engine knows the user and this will cause the user to have a better experience, increasing monetisation and consumption.”

According to NAGRA's Trudelle, the big shift that we are currently seeing happening is that most advanced TV platforms are always two-way connected, and personal multiscreen device usage allows for Web-like interactions between the service provider and the viewer. “Systematically mining the collected data to deliver actionable results is starting to happen. And this calls for a more data-driven approach to delivering content packages to subscribers, with an improved user experience for the viewer in the end. The challenge is still around fragmentation, as not all subscribers consume multiscreen services or have a fully connected STB. So our advice to service providers is to segment users and start developing data-driven solutions for the emerging, new generation of TV viewers.”

Red Bee Media's Plunkett says the growth of Big Data, across many industries, has greatly expanded and improved the tools and expertise available to process and extract value from large and increasingly real-time data sets. “This is great for the media industry as we can take advantage of these tools, many of them freely available open-source software, to improve the quality of our services. Viewing data, social media activity and content metadata can now be combined like never before to allow the industry to better understand their audience and improve the relationship with them,” he adds.

FOCUS. According to Rovi's Dawes, Big Data is starting to play a key role in how companies are delivering services that are able to focus on the customer and their experience to make it unique and personal. “For example, there are two areas where technology providers can actively make use of ‘Big Data’ to do this. The first is through the use of advanced analytics, which enables data-driven insights and business intelligence to advance operational efficiency, improve the customer experience and profitability, support carriage and bundling decisions, and help mitigate churn. This, in turn, can link with advertising technology able to use multiple sources of data to predict and target audiences by analysing viewer behaviour and impression inventory to create highly accurate, advanced campaign management and media planning. Big Data can also be leveraged from multiple systems and sources to enhance services and to build 'Knowledge Graph' capabilities. Knowledge Graphs represent part of a new generation of graph based databases that link content to real world entities, meaning that you can build search and discovery experiences that

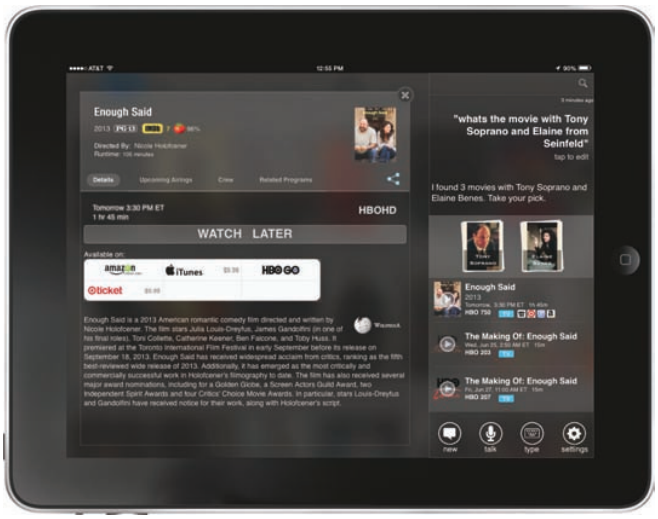
work much the same way as we think as humans."

"Viewers' habits have been tracked by ThinkAnalytics since before the term 'Big Data' was coined," claims Docherty. "While Big Data is the umbrella concept, it is the recommendations engine itself that personalises the user experience and makes it easy for them to discover new content by making intelligent use of this data. TV programming such as reality shows and live events, including the *X Factor,* football and *Question Time*, are already leveraging social media to interact with its audience. The data accumulated by social media is being analysed by recommendations engines to enhance the user experience to showcase trending content and other influences," he adds.

Acording to TVbeat's Miall d'Août, in a world that is more connected than ever, the role of Big Data is already becoming ever more important. "Pay-TV operators are ready for Big Data that can help them understand how their consumers are really behaving. Operators are not just distributors anymore; they want to increase customer satisfaction. It is clear that analytics and viewing data are becoming very important for operators who want to stand out in a marketplace where competition is getting fiercer and consumers have more choice than ever before. Operators are beginning to develop an appetite for granular data that provides critical insights into how to satisfy their customers, as well as being able to anticipate the needs of their audiences, maximise opportunities for upselling and assess which content is valuable."

"The quality of the metadata impacts the entire user experience." Peter Docherty, ThinkAnalytics

Viaccess-Orca's Leporini notes that predictive analytics, which are used by various OTT providers, rely on information collected about the viewers' tastes and interests along with viewers' social affinity, so that service providers can send personalised content recommendations that users will like. "Recently, Netflix was very successful in using Big Data for deep analysis and predictive algorithms for its *House of Cards* series by showing different trailers to different viewer categories. This ultimately enabled Netflix to provide members with the best engaging experience. Some of the ways that operators can improve the viewer experience are by providing social recommendations from friends, creating a community around certain content such as a specific show or sport, and through second-screen social media apps like Facebook and Twitter."



PRIVACY. With broadcasters and operators handling a range of data on their viewers and subscribers, how do they strike the balance between managing data to enhance services and encroaching on privacy? How should they communicate with viewers about this? "Consumers are an integral part of the puzzle and should not be forgotten," says Foster. "While Big Data can be used by operators to design new services, improve existing ones and ultimately increase revenue, it can also benefit consumers by offering better recommendations and potentially better pricing for their favourite content. Communicating the value of Big Data for consumers will drive acceptance of sharing the subscriber's personal data, and lead to a healthy relationship between operators and consumers," he suggests.

"They should plan this carefully," advises Geir Helland Persson, VP market research, Conax. "It affects their platform, products and marketing strategies. If they handle the privacy issues well, they may actually experience increased trust from viewers even though they are registering a lot of personal data. Transparency is a key. The viewer should be made aware of what data is collected, how it is used and positively accept this. Preferably, they should also be able to access and delete this data. To increase acceptance, it is a good idea to exemplify how this data is used to improve their experience, be it content recommendation, GUI personalisation or improved support. And to further address any scepticism, it must be made clear whether data will be used internally only, or if it also can be, for example, sold to third-party advertisers. The recent case where Samsung's Smart TVs recorded voice data which was sent to a third-party for analyses may be a border line case. But the media attention it received clearly shows how sensitive these issues are."

Franklin suggests that broadcasters, advertisers and service providers must become more sophisticated and relational with viewers. "This requires a level of intimacy and permissible data collection, but with this intimacy comes responsibility. Viewers are okay with broadcasters collecting information and in fact they expect it. And when it is properly used to present valuable content to viewers, they appreciate it. It's when this collection information is used in a way that only benefits the company or is outside of the relationship with the company collecting the data that consumers have an issue. Learning that a viewer enjoys a certain type of show or actor and recommending other shows is helpful. Sharing or selling information for the sole purpose upselling products or pushing advertising is not," he warns.

CAUTION. According to Bedford, viewers are understandably cautious about this, particularly if there doesn't appear to be any real benefit derived. "People are reluctant to part with personal data about their viewing habits if they keep getting recommended

irrelevant shows; if content discovery is successfully aided, then the trade-off is more worthwhile. Ultimately broadcasters want access to this data in order to keep, or gain customers. To successfully do this, and indeed get people to part with personal data in the first place, viewers have to be convinced it's worth it. Take a supermarket as an example, many would baulk at the idea of a large store knowing and tracking exactly what they buy every month, but when offered vouchers for use in or out of the shop then they're happy."

Huntington says the way to keep the balance between data management to enhance services and avoiding privacy issues is to provide clear value back to the consumers. "The only way to communicate with audiences is by being transparent about what information is being surrendered in exchange for improved services."

"We always advise clients to meet the gold standard of what is deemed acceptable in their markets, and to not to do anything that they would not want to end up on the front page of a national newspaper," reports Cottle. "Today's consumers are generally more savvy about their data and how it is being used. Data and privacy are not new concepts, and consumers are becoming used to the idea that their information is being collected- recommendations and personalisation are examples of that. But there are still concerns around what information is being collected, from which devices, and where it might end up. Ultimately, transparency is the key."

> "The use and quality of video discovery is a key differentiator in attracting and retaining viewers."
> Steve Plunkett, Red Bee Media

LEGISLATION. Trudelle notes that European legislation on personal data collected by Web sites and service providers in general was reviewed in 2014. "We advise our customers to follow these more 'opt-in focused rules' to build trust with viewers. With on-demand viewing and interactivity reaching the masses, viewers are now more comfortable with the concept that TV has become more and more like the Web, with positive aspects resulting from smart usage data processing by service providers, as long as user confidentiality is guaranteed."

According to Plunkett, this is an area where transparency and clear communication is paramount, not just for an individual broadcaster, but as an industry at large. "It is essential that viewers know what data is being collected, how and where it is being stored, exactly how it is being used and what's in it for them. Communicating these points to viewers builds and retains trust which is very important. If we get this wrong then all of the promise and benefits of greater personalisation will be lost."

> "Users should be able to access their personal data and request to delete it."
> David Leporini, Viaccess-Orca

"Service providers should be open and forthcoming about what data is being captured and for what purpose," declares Moonen. "They should educate consumers about opting-in by pointing out the benefits, such as improved services, and reassure them where needed. Consumers don't need to be personally identifiable, just uniquely addressable." Docherty notes that broadcasters have to comply with data protection, but those that clearly communicate the benefits of opting in to services such as personalised recommendations achieve the best results. "We have been involved in deployments where subscribers are offered a choice of having their viewing behaviour tracked in return for a personalised service and 99 per cent of users have opted in," he reports. "In the end, whether there is encroaching or not is regulated by law," says Miall d'Août. "There are harmonised regulations developed across the EU/EEA and we to follow these in addition to any requirements from local regulators."

According to Leporini, broadcast operators need to be able to provide users with value based on the collected data, whether it is by offering a better user experience, customised content, or a promotion, etcetera. "In general, there are different levels of personalisation that can be defined in a content service. The service can run without requiring personal information, e.g., based on popularity algorithms designed to accommodate a large percentage of the population. It can be semi-anonymous, whereby data is clustered, and the operator creates groups of users based on viewing patterns and interest affinity to provide personalisation. Users can also opt-in to using the service. Under this approach, users get a personal experience that is tailored based on their actual usage and their possible social affinity," he says, adding that users should know exactly what data is collected by operators. "We were recently reminded of this requirement when Samsung warned viewers that the voice activation feature on their Smart TVs might be collecting personal information – and sharing it. Users should simply understand the benefits they can get using the service from the data collected by operators. Furthermore, the use of data should be clear. Is it only used for improving the video service and optimising personalisation or is it also used for targeted advertising? One final word of advice: users should be able to access their personal data and to request to delete it."