



egta insight

**ADVANCES IN HYBRID TELEVISION
AUDIENCE MEASUREMENT**

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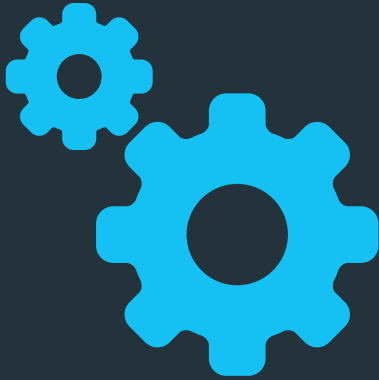
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EXECUTIVE SUMMARY

This report examines the evolution of television audience measurement (TAM) as it adapts to today's changing TV content viewing patterns.

Part 1 sets out the perspective and viewpoint of television sales houses and broadcasters, highlighting the need for next-generation audience measurement to be built on the strong foundations of existing TAM methodologies.

Part 2 examines the changing media landscape and the incremental shift towards consuming television and other audiovisual content on an increasingly diverse range of screens and devices. It also provides an overview of emerging hybrid measurement techniques and solutions.

Part 3 offers an update on several national projects for hybrid audiovisual audience measurement, covering those markets that have reached an advanced stage of development.

This report is not intended as an exhaustive analysis of TAM methodologies, and it should be noted that this is an area of constant evolution.

// Towards more hybrid solutions for future-proof television audience measurement methodologies



An introduction by Fabrice Mollier,
egta President

Since egta's last publication of *Advances in hybrid television audience measurement* published in January 2016, a lot has happened. In our constantly developing industry, it has been very exciting to follow the evolution and fine-tuning of some of the most advanced hybrid audience measurement models across Europe and beyond.

As egta has been proving through various projects, TV is the world's favorite and most trusted media, and TV content is also the most consumed across screening devices. While online players are being challenged on the reliability of their data and the safety of their systems, it is important to reassess that one pillar of television's success is built on the accuracy and accountability of its audience data.

That being said, the industry's general consensus is that the lack of harmonisation in standards and metrics must be addressed. Marketers have been more vocal than ever on the at times fraudulent state of digital media, raising critical issues such as viewability and brand safety.

Leveraging the strength of the well-trusted European television audience measurement to

better measure online video is one logical solution which is being explored in certain markets.

To help marketers make more informed media-investment decisions as well as support them in strengthening their brand's connection to consumers, the TV industry must take a pioneer role to foster improvement in this field. Through the AV Currency Working Group and other upcoming initiatives, egta's goal is to continuously contribute to the ongoing discussions and monitor the new generation of television audience measurement.

We hope that this report will be a valuable piece of information for your activity. egta believes in continuous learning and innovation-friendly environments, hence we are enthusiastic for further relevant contributions and forward-looking conversations.

"Measurement is fabulous. Unless you're busy measuring what's easy to measure as opposed to what's important." - Seth Godin

PART 1

THE IMPORTANCE OF HOLISTIC TELEVISION AUDIENCE MEASUREMENT ACROSS ALL SCREENS

// The view of television sales houses

It is well established that, today, viewers watch television content on many screens other than TV sets and usually do so via the Internet, using a variety of connected devices. Viewing behaviours have evolved faster than the audience measurement techniques that form the basis of advertising transactions, and the whole industry, egta's television sales house members included, agrees to say that audience measurement systems and data analytics must be adapted to the new reality.

The television sales houses represented by egta base their arguments for evolved audiovisual audience measurement on the following premise: television is – and will remain – the leading mass communication medium, while also proving effective for smaller target groups through niche and thematic channels, whether delivered via over-the-air broadcast, cable, satellite, Internet Protocol Television (IPTV) or over-the-top services. It is the medium that enjoys the most effective, quantitative and robust measurement, and the use of electronic people meters is almost universal.

Television not only offers the most accurate and audited data, it also allows meaningful comparison between countries. Effective evolution therefore requires the extension of traditional television audience measurement (TAM) systems to all other devices, rather than its replacement by an entirely new system.

Several countries – a number of which can be found in Part 3 of this report – have been working for a few years already on the development of new audiovisual measurement solutions that can capture viewing beyond the traditional television screen and delivery methods. These projects, which typically involve a hybrid methodology using two or more types or sources of data, are at different stages of readiness: in some cases,

the first results are being reported to the market, others are at the deployment and testing phase. Beyond the technical challenges associated with measuring increasingly fragmented device usage, some of the most important unanswered questions lie in the commercial decisions that will ultimately be taken around how to use audience data for monetisation in the future: the question of tomorrow's currencies.

During egta's 2017 Audiovisual Currency Working Group Meeting (see page 9), part of the discussion revolved around the question of whether it is worth the effort trying to build a solution for Total TV Audience Measurement if all that is produced is a well calibrated planning currency. Possibly, the industry may also end up with different currencies for planning versus buying/billing, instead of a single one. The current lack of proper tools to release the data to the market is also an issue that will need to be overcome.

“Audience measurement systems and data analytics must be adapted to the new reality.”

// Balancing pace of change with the need to develop robust and future-proof solutions

Change is nothing new in television, a medium that has gone from just a few linear channels broadcasting for only part of each day in black and white, to a 24-hour, multi-channel, linear and on-demand offer that covers almost every conceivable human interest, delivered in ever higher definition to ever-larger screens. TAM has naturally evolved at the same time, both in terms of the methodologies and technologies deployed.

The most recent shift in viewing, which is discussed in Part 2 of this report, has seen viewers use an increasingly diverse and sophisticated range of Internet-enabled devices to access television content in new ways, presenting TAM with its latest – and perhaps most difficult – challenge. Whilst the panel-based and census-level data collection techniques developed for Internet Audience Measurement (IAM) are now being deployed to capture these new video viewing behaviours, until recently it has not been possible to combine these technologies with traditional TAM to provide holistic audience figures.

It is arguably harder for TAM providers to respond to these changes than it is for viewers to adapt and evolve their consumption behaviours.

“To ensure the next generation of audiovisual audience measurement meets the needs of both advertisers and broadcasters, egta believes in a viewer-centric approach.”

Inevitably, media agencies and their advertiser clients require the most accurate, comprehensive and granular data possible, and broadcasters want to ensure that every person who watches their content – and the advertising around it – is captured, and there is therefore pressure from all sides for TAM providers to adapt their services quickly. This presents two challenges for TAM providers: firstly, they must develop and rigorously test solutions that are increasingly complex from a technological and methodological perspective; and secondly, they require the consensus of many different actors – sometimes with contrasting opinions – before they can adopt a particular route, and in many cases they rely on broadcasters and publishers to take some form of action, such as the deployment of measurement tags in their content, before they can start reporting data to the market.

Above all, TAM operators need to ensure they retain the trust of all interested parties. Whereas digital has arguably been able to adopt a more ad hoc approach to measurement, with incremental improvements over time, the television industry stands to suffer potentially irreversible damage if any next-generation TAM systems are flawed when launched. In terms of timing, it may be worth redefining what ‘long/longer’ means when implementing complex measurement methodologies.

// Television audience measurement as a quality benchmark for future systems

To ensure the next generation of audiovisual audience measurement meets the needs of both advertisers and broadcasters – and by extension their sales houses – egta believes in a viewer-centric approach. Future TAM systems therefore need to be tailored to make the most of the combined benefits of television and Video On Demand (VOD), rather than exposing the differences between the two. egta therefore

recommends that – wherever possible – TAM operators aim for a holistic system that covers all video exposures in a single harmonised database and avoid creating different databases for different screens. Furthermore, the established high standards of television audience measurement

must be used as the benchmark for future measurement solutions. For sales houses, the ultimate goal is to deliver equivalent metrics for both cross-screen advertising campaigns and traditional television campaigns: especially reach, frequency, demographics and viewing duration.

// egta's Audiovisual Currency Working Group (AVCWG)

Since 2011, representatives of egta's member television sales houses and experts from the industry, most notably from audience measurement Joint Industry Committees (JICs) and service providers, have met on a regular basis. The principle objectives of the group have been threefold.

Firstly, to share experience and knowledge across markets on new developments in audiovisual (AV) audience measurement. Over time, this has become increasingly focused on efforts towards hybrid methodologies that can capture TV and video viewing across all devices and screens (Total TV Audience Measurement).

Secondly, to define common objectives and guidelines for the industry with regards to AV audience measurement. Back in 2014, egta published its [Guidelines for the future of audiovisual audience measurement](#), which presents the view of television sales houses and offers recommendations for best practices in developing TAM-based methodologies to measure audiovisual content regardless of when, where, and on which device (ATAWAD) this viewing takes place. This report is available for download on the egta website¹.

And thirdly, to engage with other industry stakeholders, such as media agencies and advertisers, to ensure that the evolution of television audience measurement and AV measurement meets the needs of the advertising industry at large.

Common observations, hurdles and learnings from the AVCWG's last meeting are summarized below (the full minutes are available for download on the egta website²):

- Budget sourcing, panels getting more and more expensive, resources, organization, project complexity, tagging process that requires the cooperation of broadcasters, alignment of all the parties involved and the fact that the environment keeps changing while working are hurdles that explain why, in most markets, the development of Total TV Audience Measurement takes longer than expected;
- The validation of Total TV data (all screens together) appears to be much more complex than validating a traditional TV measurement (TV-set only);
- The pressure of delivering daily validated/calibrated hybrid data is a challenge and would require automation that is not yet effective;
- The integration of YouTube, Facebook and the likes in Total TV Audience Measurement requires an agreement on viewability standards and other KPIs. No market is there yet;
- The development of new/updated systems to analyse hybrid data will come after the hybrid is there. How this might affect trading systems is still an unanswered question;
- Tradable cross-screens inventory volumes are currently very low so the impact on broadcasters and sales houses' commercial offers is still limited.

PART 2

THE EVOLVING TELEVISION MARKET

// Changing viewing behaviours

The viewing of measured broadcast TV content on television screens via traditional means, including live and catch-up, is under pressure due to changing viewing behaviour in many markets throughout Europe and North America, and this is especially acute in younger age groups. Figure 01 shows the average viewing time per individual in selected markets, including most of those featured in the third section of this report.

For the wider population, measured TV viewing is quite stable in most markets over the past five years. However, the picture for TV set viewing amongst young adults (as defined in each market) is more striking.

All featured markets saw strong declines in linear viewing among this target group between 2012 and 2016, with 3 Nordic countries at the top of the list, namely Denmark (-59%), Sweden (-37%) and Norway (-36%).

In the absence of comparable supporting data, it is difficult to quantify precisely how much of this decline in TV viewing is due to young people replacing their big screen television viewing with the same content on other (unmeasured) screens, and how much has shifted to viewing non-broadcaster content or other unrelated activities.

European markets have recently faced competition from new entrants, most notably Netflix. Broadcasters themselves have also created competition for their linear output by developing sophisticated over-the-top (OTT) services, with maxdome (ProSiebenSat.1) in Germany, MYTF1 (TF1) in France, the iPlayer (BBC) in the UK or TV4Play (TV4) in Sweden being good examples.

Even in the absence of per-market streaming data from Netflix and its rivals, it is reasonable to expect some of this viewing to have moved away from traditional television distribution channels.

// Quantifying broadcasters' missing eyeballs

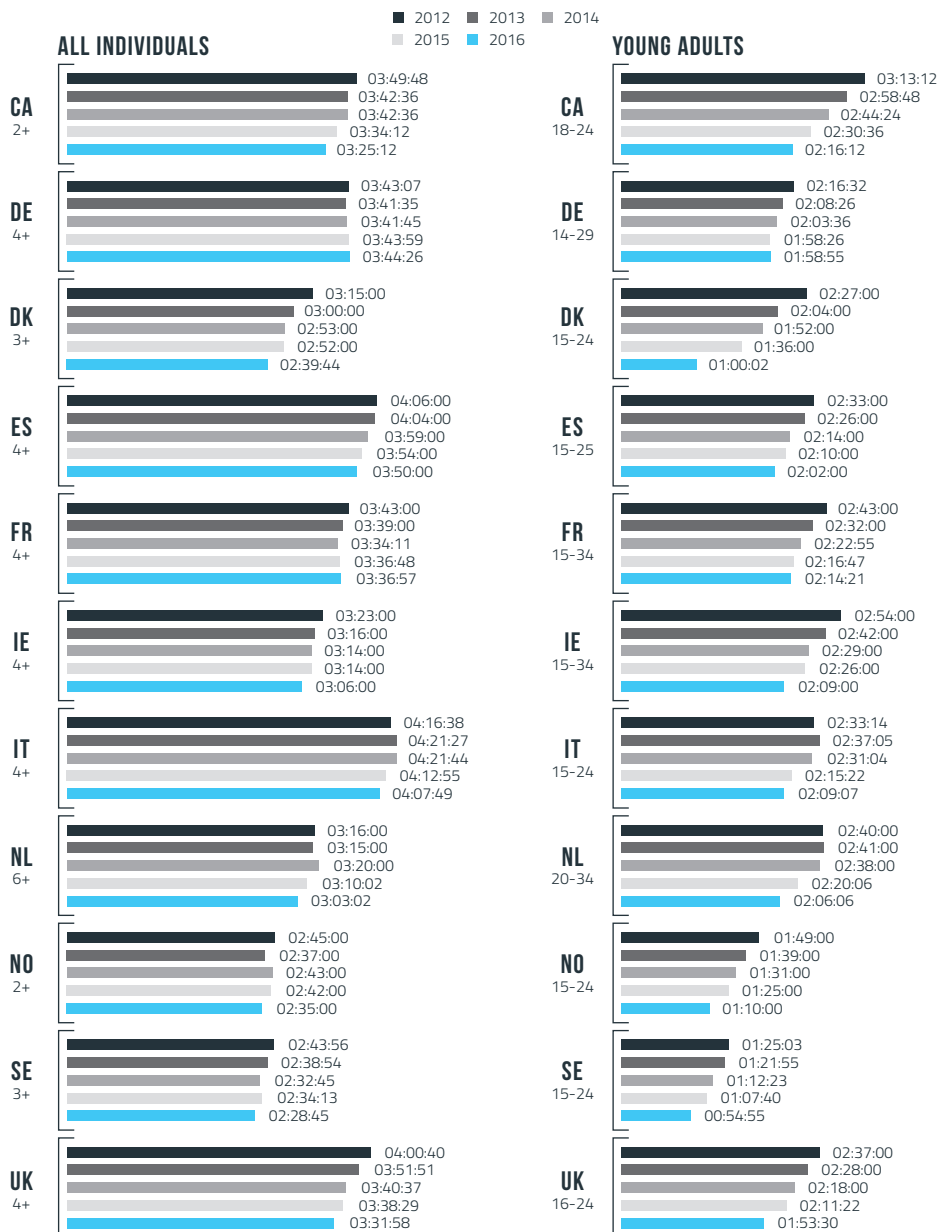
In 2014, the industry body Thinkbox started collating data from multiple sources, that sheds light on video viewing patterns in the UK, as shown in Figure 02 (2016 data). This shows that whilst young people indeed consume a variety of video content of different types, and by extension use a range of devices to do so, television is still dominant, accounting for more than 55% of their total viewing time.

From this snapshot of the UK market, it can be argued that the existing TAM fails to account for 6.3% of this viewing in the case of young adults and 3.9% for the whole population, i.e. the amount of broadcasters' content that is viewed on-demand and excluded from the consolidated figures (Live + VODSAL + 7 days).

Whilst the findings of one national study cannot represent the reality across Europe, it at least offers a measure of the opportunity cost of excluding broadcasters' VOD from the television currency.

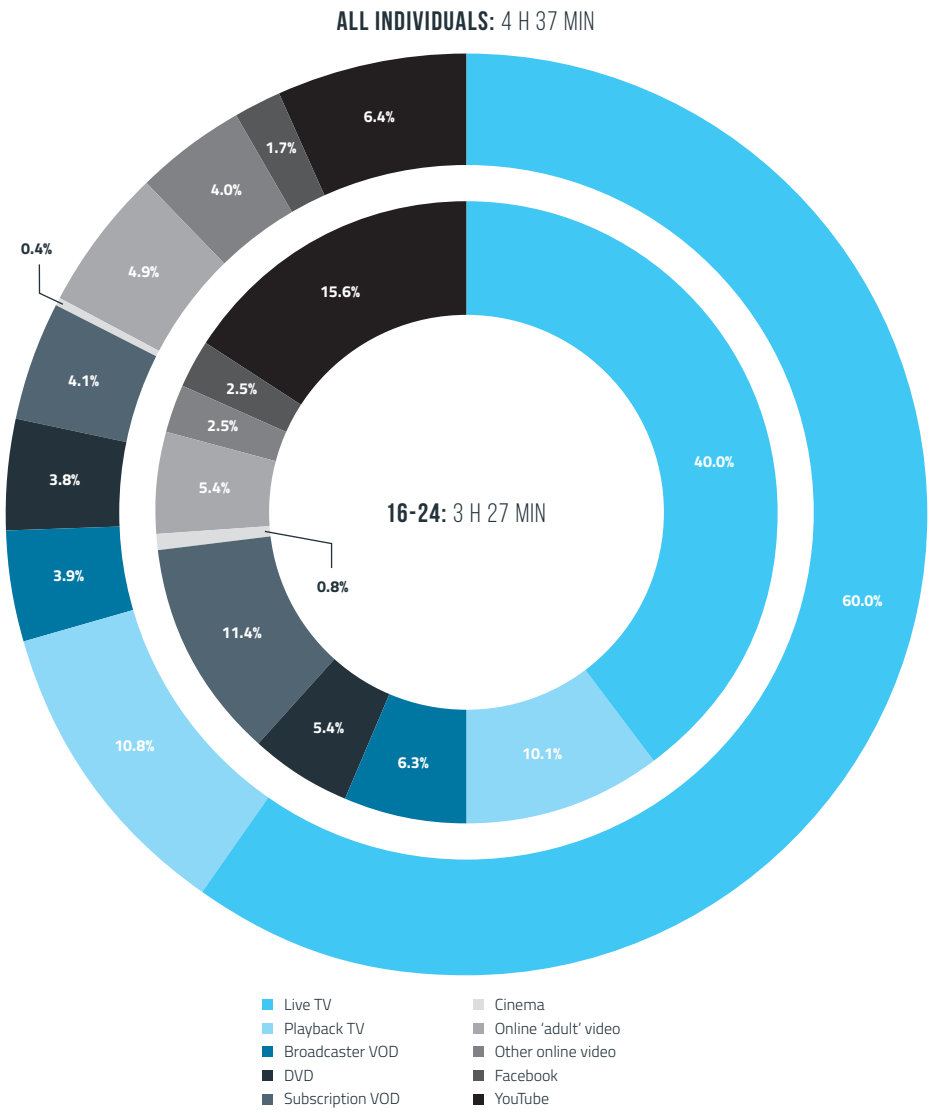
Being excluded from the television currency by no means prevents broadcasters from exploiting commercial opportunities around their VOD, and indeed some broadcasters choose to erect a paywall around this portion of their content. Advertising, in the form of pre-, mid-, post-rolls and other formats, may also be traded on broadcasters' own server data, raising the issue of how television currencies should evolve – if at all – in the future.

FIGURE 01: AVERAGE DAILY VIEWING TIME (HH:MM:SS)



Sources: Average Individual daily viewing time Monday-Sunday - Numeris (CA), TNS Gallup (DK), Médiamétrie (FR), AGF (DE), TAM Ireland (IE), Auditel (IT), SKO (NL), Kantar TNS (NO), Kantar Media (ES), MMS (SE), BARB (UK)

FIGURE 02: TOTAL UK VIDEO CONSUMPTION: ALL PLATFORMS & DEVICES



Source: 2016, BARB / comScore / Broadcaster stream data / OFCOM Digital Day / IPA Touchpoints 2016 / Rentrak

// Extending TAM beyond broadcast viewing: hybrid solutions

Several markets are developing and, in some cases, testing additional technologies to traditional TAM to measure the viewing of television content on screens other than the TV set, as well as content that has been accessed via online platforms and on-demand through set-top boxes (STBs). In these markets, increasingly sophisticated techniques are being deployed, leading to the complete re-engineering of TAM methodologies.

The measurement of viewing across linear and non-linear distribution channels in most cases leads to a hybrid solution of one form or another, in which panel-based measurement is complemented by census-level data. The census measurement techniques that are currently being adopted for hybrid audiovisual audience measurement have largely been developed for market-level Internet Audience Measurement (IAM). IAM is less standardised across European markets than TAM, and not all countries have both panel and site-centric (census) solutions in place.

The measurement of content consumed on the Internet allows for the production of census-level data, sometimes referred to as machine data or return path data (RPD), and this gives an accurate account of total consumption, potentially across all devices and screens.

Every video stream can be detected, including the time and duration of viewing and any actions, such as pausing or stopping the content, carried out by the viewer. It does not require any extrapolations to be made in order to estimate the viewing behaviour of the population as a whole.

Whilst this is highly advantageous compared to the limitations of data derived from panels, which by their nature only capture a snapshot of consumption within a small sample, census-

level data gives information only about what was consumed. It says nothing about the characteristics of the people actually viewing the content. For a complete understanding of who, as well as what, was consumed, census-level data needs to work alongside a panel, which can deliver information on demographics, such as age, gender and other attributes, and for this reason panel-based measurement remains a central component of all the hybrid Total TV measurement approaches currently being developed.

An overview of the capabilities of panel and census measurement can be found in Figure O3.

It is important to note the necessity of maintaining the integrity and robustness of existing TAM systems. As these systems form the economic foundation for the vast majority of commercial television broadcasters' revenues, as well as an important source of revenues for many private broadcasters, the JICs and research organisations currently building out extended measurement capabilities are ensuring that these developments do not have negative effects on the existing television currencies.

“The measurement of viewing across linear and non-linear distribution channels in most cases leads to a hybrid solution of one form or another, in which panel-based measurement is complemented by

FIGURE 03: AN OVERVIEW OF CAPABILITIES OF PANEL AND CENSUS DATA

PANEL DATA	CENSUS DATA
Respondent level data reflective of viewers' behaviour	Comprehensive and exact account of all online activity
Offers: Reach estimates Demographic profiles Cross-platform behaviour at household/individual level	Offers: Total usage For all websites and apps

census-level data.”

Whilst TAM organisations are not alone in developing solutions for measuring online video, they have the advantage of being the only organisations with access to raw television viewing data in most markets (the US being a notable exception). Individual companies, such as Google, Facebook, Dailymotion and others have access to huge and very rich datasets, including the reach of their services and in some cases demographic data on their users, but they cannot deliver cross-platform video reach that includes viewing on both television and online. TAM organisations are the only bodies that can deliver this data with the transparency and credibility required by advertisers and media agencies.

// Defining the scope of Total TV measurement

A fundamental question to be addressed in each market is the scope of the new Total TV measurement universe, as well as the purpose of the measurement itself. When building out measurement into the online environment, it becomes technically possible to integrate consumption data from an almost unlimited variety of sources, from non-broadcast and

user-generated content (UGC) video platforms to social media. Whilst the inclusion of a wide range of publishers and content providers may be advantageous in terms of providing a detailed and comprehensive understanding of consumption patterns, it increases the complexity of the measurement and may not serve the interests of the television industry in that market.

In Europe, the most common initial approach aimed at measuring the online content of television broadcasters that are currently measured within the TAM, as well as other professionally produced content from other publishers. In some markets, there is a secondary objective to extend the measurement to cover all AV content, including UGC, whilst others expect to limit measurement to broadcasters' content only.

The disadvantage of including non-broadcaster video content, aside from the additional complexity in integrating the publishers themselves, is that it naturally dilutes audience shares. The shift from a stable and relatively small number of measured publishers to a more volatile and larger universe may actually render audience shares meaningless.

From an advertising perspective, the more services that are measured the greater the potential volume of inventory available to the market, which

On the other hand, delivering equivalent measurement data helps to bring some perspective on the relative size of television as compared to other AV sources. On average, individuals spend far more time watching television than they spend with online publishers – even those with a quite high reach, such as YouTube and Facebook.

// Defining the purposes of tomorrow's Total TV Audience Measurement data

One of the primary functions of TAM is to provide a currency for the trading of advertising on broadcasters' channels, and this can be expected to remain the economic basis for the television industry for many years to come. In the absence of any standardised, market-level measurement to date, online video, however, has adopted ad server data as a de facto currency.

In many ways, this model serves online video publishers better than traditional TAM, in that it provides instant, on-demand data that can be used in automated and programmatic trading platforms, including real-time bidding (RTB).

At this early stage of developing hybrid Total TV Audience Measurement, there is no clear consensus from the television industry over how the data will be used, and whether there should be separate currencies for media planning and trading, for example.

Ultimately, this will be a decision taken by each market as the measurement methodologies and business models themselves evolve and adapt to the new conditions.

There is also the question to know how long it will take to adapt systems to new hybrid data. Trials are made in France to include hybrid data into existing APIs (Applications Programming Interface), however, the main issue is the difference in data granularity, as online KPIs depend on the video

length and on the viewing duration, which is not comparable to TV's KPIs. There is a need for GRPs on target group for online inventory – as for TV, not on total population only.

At this stage, tradable cross-devices inventory volumes are currently very low. Therefore, the impact on broadcasters and sales houses' commercial offers is still limited.

// Extending and multiplying panels

To date, all of the projects being developed to measure Any Time, Anywhere, Any Device (ATAWAD) viewing retain one or more panels and add census-level data.

Two options exist for extending the scope of the panel data: firstly, a single source panel that covers both offline and online viewing, or secondly, two or more panels to cover viewing on different platforms and screens.

The single panel approach is advantageous in terms of the quality of the data generated as compared to the use of two or more separate panels. Using multiple panels requires statistical modelling techniques and profile matching to form the basis of the measurement.

However, single panels have their limitations. Asking panelists to deploy measurement across more than one device increases the burden on them and may make recruitment and compliance more difficult.

The measurement of viewing on smartphones, which is generally found to be a more challenging platform than PCs, also represents a shift towards measuring consumption on personal devices that are often used outside of the home, rather than equipment that is both used by different people in the household and typically only within the home.

// Two approaches to online panels: software meters and Wi-Fi routers

Two approaches have been developed to measure online usage on panelists' devices: software meters, which are locally installed on each device and may be adapted for different types of equipment, for example PCs, smartphones, tablets and Smart TVs – such as Kantar Media's VirtualMeter; and Wi-Fi routers, which capture Internet streaming data from all devices within the household to which it is connected.

Software meters have a number of advantages. There is no hardware and they can be installed in as many devices as required with ease. This can also be done remotely, without the need for an engineer to intervene. They provide very accurate and rich data, and are suited to measuring time spent watching or listening to streamed media.

However, meters are somewhat burdensome on panelists, especially if a single panelist uses several devices each of which has a locally installed software meter.

Wi-Fi routers reduce this burden on panelists, and their use eliminates some of the technical challenges associated with multiple devices within a household. These devices function as a proxy Wi-Fi, and the user experience is similar to that normally associated with log in-protected Wi-Fi in public places such as hotels.

Each panelist is required to identify him- or herself when using the connected devices, which do not themselves need any additional software installations. This greater usability comes at the cost of measurement precision, which is lower with routers than it is with software meters.

The router solution also offers limited range, and any viewing that takes place on mobile devices out of the home is not measured. Furthermore, it

is not possible to guarantee that all panelists do indeed use Wi-Fi at all times when in the home, as they may remain connected via mobile telecom networks, such as 4G, and hence circumnavigate the measurement technology.

// Privacy issues

A commitment to data privacy is clearly of fundamental importance to any audience measurement system. Aside from a moral obligation to protect personal data and prevent its use for unsolicited marketing or other misuse, the willingness of individuals to participate in measurement panels will inevitably be hindered by any fears that their information may not be treated in the strictest confidence.

As panel-based measurement moves from the television towards more personal devices such as smartphones and tablets, the range and type of monitored activity widens. Panelists' reluctance to submit information about their online activities across several devices is often cited as an advantage of using different panels to measure different pieces of equipment, rather than a single source for all.

Privacy becomes somewhat more complex in measurement regimes that involve data sources beyond panels (which are easier to control), such as census-level measurement.

At the European level, the 'cookie rule' in the current ePrivacy Directive requires user consent before storing information, or gaining access to information already stored, in the terminal equipment of the user.

Consent is often collected through banners or pop-ups which give user the opportunity to accept the collection of data or at least inform him/her that the processing of data will be taking place if he/she continues to browse the website.

From 25th May 2018 onwards, the new General Data Protection Regulation (GDPR) will set higher standards for what is meant by 'consent'. Namely, the new rules will require a true opt-in from the user through an affirmative action; silence or pre-ticked boxes will no longer be accepted.

Users will also need to be presented with mandatory notices clarifying what information is being processed for what purposes and which are the recipients, or categories of recipients, of the personal data.

The GDPR also strengthens or introduces new consumer rights which carry practical challenges for companies, such as the right to object to the processing of personal data, or the right to erasure of personal data.

All these changes will need to be included in their privacy policies by measurement companies, but also by broadcasters ('controllers' of the personal data under GDPR) in their contractual relations with audience measurement partners (typically 'processors' of the personal data on behalf of the broadcaster). The penalties for breaching the new data protection framework have been substantially increased, therefore businesses will want to clarify the liability of each partner in case of infringement.

Finally, it should be noted that while the GDPR (horizontal regulation) is approaching its implementation date, the ePrivacy framework (specifically applicable to electronic communications) is currently being reviewed.

The new rules may imply even stricter requirements to protect consumers' privacy, however a tailored exception from consent for audience measurement purposes is being considered. The final version of this text is not expected before the second half of 2018, with a possible implementation by 2019 or 2020.

// State-of-play on advances towards a Total TV Audience Measurement Solution in various countries

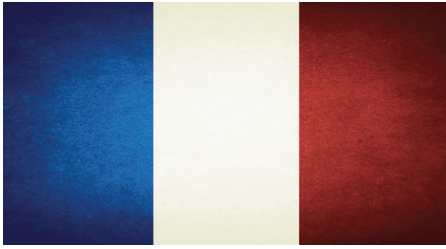
When discussing with JICs and Research Organisations responsible for the setting up of new solutions for the measurement of Total TV viewing, a number of common themes emerge:

- The commercial data on which to trade are largely yet to come, from 2018 onwards;
- Viewability needs to be taken into account when adding different sources together;
- Panel-centric hybrid measurement may suffer as a potential trading currency since RPD will still be seen as more accurate;
- Processing hybrid data is much more complex than for TAM panels. Day after reporting becomes much harder to achieve, which matters if the data are to be used for trading;
- The impact and implications derived from GDPR are still to be assessed;
- Broadcaster cooperation is of the utmost importance;
- New quality check and audit approaches are needed.



PART 3

**AN UPDATE OF NATIONAL INITIATIVES
IN THE DEVELOPMENT OF HYBRID
AUDIENCE MEASUREMENT IN THE
EVOLVING TELEVISION MARKET**



FRANCE

// Médiamétrie 4 screen measurement and hybrid television measurement for thematic channels

Television audience measurement is carried out in France by the research company Médiamétrie. The organisation has a rather unique position, in that it acts as both operator and JIC for TV, Radio and Internet measurement. It also provides its scientific and technological expertise to Kantar that operates the Press measurement in France. For its measurement, Médiamétrie has built fixed and portable meters. This technology is licensed to several countries including India, Morocco and Norway.

Traditional TV audience measurement in France currently covers all TV sets in the home, including time-shifted TV (program viewed via digital video recorders (DVD-R & PVR)) and replay TV (services provided by channels that let viewers freely watch TV programs on demand. These services are available via TV set-top boxes), that are measured separately, thanks to watermarking. Considering the large share of IPTV/Fiber/Cable (55% in 2017) and the growing importance of catch-up services, the market asked Médiamétrie to be able to differentiate time-shift viewing from replay TV.

This feature is enabled by a new type of watermarking technology: file-based (as opposed to broadcast) watermarking. Médiamétrie reports

detailed information about the replay TV audience at a program level. Médiamétrie has also launched an additional TV universe called Viewing Moment.

This audience represents the sum of all TV consumption for a given channel on a given day, no matter when the content was originally broadcast. In this approach, all content will be accounted for even if it originally aired a few months ago.

// From 3-screen to 4-screen measurement

Médiamétrie's online measurement expertise provided an opportunity to start measuring video across screens and devices. The first metered Internet panel was launched 18 years ago under the company's joint venture with Nielsen – called Médiamétrie/NetRatings – and this was expanded to include smartphones in 2010 and tablets in 2012. These mobile and tablet panels include iOS and Android devices. Since 2013, Médiamétrie has been working to unify these panels into a single measurement, and the results of the first 3-screen Internet measurement were released in January 2015.

The next step in this project was to extend this measurement to video content and to fuse it with Médiamétrie's TV panel. As part of this process, the company is also using a 4-screen single source panel, which consists of 3,500 households, which has been developed in partnership with Google (see below).

Since early 2016, Médiamétrie provides 4-screen total ratings – that do not include demographics – on a daily basis, at the programme level. Data on demographics are available on a monthly basis, at TV channel level (less granular approach).

This 4-screen measurement was designed to be taken to the next level, namely to ultimately provide 4-screen GRPs to be used for media planning and buying.

// The single source Google and Médiamétrie Panel

Set up in March 2013, this project has been audited, examined and supported by CESP (Centre d'Étude des Supports de Publicité). Television audience data is measured by Médiamétrie using the same meter technology and data processing as for its TAM ratings service, and the company transmits data to Google. Google is responsible for measuring Internet usage data from all active devices within the panelist's households, including PCs, Macs, smartphones and tablets on all operating systems. This is carried out using a Google meter device, which takes the form of a proxy Wi-Fi using a wireless router. The measurement is extended by adding an on-device meter that allows a more in-depth capture of online audience. The online audience data is sent by Google to Médiamétrie.

// Enhanced measurement of thematic channels using TAM and set-top box data in a hybrid model

In 2014, Médiamétrie developed a new hybrid television measurement initiative to improve the granularity of the measurement for thematic channels, with the support of Pay TV Operator Canal+. This project is separate from the current 4 screen measurement outlined above, and it uses different data sources and methodologies. In this case, the term hybrid refers to the combination of people meter TAM data and return path data (RPD) from a sample of set-top box television decoders. Therefore, census data does not form part of this model.

Smaller and niche thematic channels in France are challenged by the competition from online video platforms, and it is difficult to achieve granular audience reporting using the traditional TAM approach. Therefore, the objective was to be

able to measure thematic channels with greater granularity and to increase the frequency of reporting. Médiamétrie's solution is built on RPD delivered initially by a sample of about 10,000 Canalsat decoders, with demographic information appended using an individualization model.

The household data is acquired using CATI/CAWI surveys. The RPD data is then used to enrich the viewing data from the Médiamat TV measurement service. The challenges for this form of hybrid measurement are twofold: firstly, differentiating times when a decoder is on (and returning RPD) but the television set is switched off; and determining who – and how many – members of the household are watching at any given time.

The first of these is addressed by using the TAM panel viewing data to identify and transform RPD logs that do not correspond to actual viewing. The question of who is watching is addressed using the individualization process outlined above, which applies a statistical Hidden Markov model (specifically, a Markov chain model using mathematical algorithms adapted specifically to the parameters of this project).

Comparison of the results of this hybrid measurement with the Médiamat TAM data shows good consistency. The granularity of the measurement is improved, and use of a much larger sample than just the people meter panel provides lower volatility and fewer zero ratings.

This approach is not expected to replace TAM, as it is not yet adapted to provide a trading currency for large channels (or television watched on non-RPD compatible methods), but the objective is to extend the project to cover a greater range of thematic channels and TV operators in France in the future. Médiamétrie was the overall winner of the 2015 I-COM Data Creativity Award for its hybrid TV measurement. Médiamétrie was also awarded twice on the occasion of the IAB Research Awards in 2017 for its 4-screen measurement.





GERMANY

// A three-panel plus census approach

Television audience measurement in Germany is the responsibility of the JIC Arbeitsgemeinschaft Fernsehforschung (AGF), with GfK as the contractor. Measurement for linear TV viewing is carried out mainly by using GfK's audio matching hardware meters, with a panel of 5,000 households that represent approximately 11,000 individuals.

AGF established two online panels – operated by Nielsen – to measure non-linear viewing using software meters, for PCs and laptops on the one hand (Panel A: 15,000 people) and tablets and smartphones on the other hand (Panel B: 5,000 people). The Nielsen technology was adapted to include extended features to meet the requirements for TAM – i.e. viewing duration, dedicated metadata, etc.

While the viewing data coming from PCs and laptops are already available for reporting, AGF expects to be able to report on tablets and smartphones data by mid-2018 at the latest. It is worth noting that the fused online-TV data are not yet regarded as a currency.

The German television industry has chosen to establish separate panels for non-linear viewing, to operate alongside the existing linear TV panel. These new panels provide data on audience demographics, age, gender and household composition. The system is open to any online

publisher, provided that they integrate an AGF certified census measurement kit to supply measurement events and standardised identifiers of content and advertising.

Panel A alone is not sufficient to deliver accurate reach for non-linear viewing, due to its inherent limitations. The panel only captures in-home viewing, and the highly fragmented online viewing audience restricts the accuracy of a relatively small sample.

AGF therefore developed a calibration model for the panel and census-level data providing demographic reach metrics based on the relationship between views from the census and users from the panel.

The calibration model for online viewing has a number of limitations and challenges to overcome, mainly associated with the limited sample size for specific episodes. As a consequence, the official reporting is at this stage only available at the level of a month's viewing, and this only for content and not for advertising. The official data is also aggregated at the level of formats or genres, rather than individual episodes.

// Further steps towards developing Germany's hybrid TAM solution

The current hybrid model already delivers insightful figures. However, it still needs a few upgrades, amongst which:

- Increase the delivery speed: at this stage, data is delivered about 30 to 40 days after the end of the month of broadcast/serving, making it not relevant for planning or billing. AGF is confident to reduce delivery deadline down to 7-10 days after broadcast/serving.
- Measure more devices: mobile is just short of being launched; AGF currently explores solutions to extend non-linear measurement to Smart TVs;

network operators are a bigger challenge as AGF would need to convince them to include the AGF census tag in their media players – or, alternatively, would need to buy census data from the network operators to integrate them in the AGF model.

- Increase coverage: the current measurement includes 5 TV broadcasting companies. In order to turn this measurement into a currency, it should include at least the major video companies, such as YouTube, Netflix and Amazon video.

// A landmark deal to include YouTube within television measurement

The measurement of YouTube follows the hybrid measurement described above: YouTube videos will be measured with a census approach that provides the number of online views, viewing duration and content identifiers for each format, while panel data offers demographic profiles.

A calibration model will unite those data to provide reach and demographics. At the same time AGF and YouTube will unite their respective online panels, i.e. the panelists from AGF's Nielsen online panel and YouTube's GfK online panel will be joined into a virtual mega panel. This is still work in progress.



ROBERT SCHÄFFNER

HEAD OF MEDIA AND MARKET RESEARCH MEDIENGRUPPE RTL

egta: *Even though AGF's Total TV measurement solution is not fully in place yet, the current data it provides is quite insightful. Could you give us a few examples?*

Robert Schäffner: Current online figures are only a sub-set of devices, namely desktops, but it gives us great insights. For example, it shows that the majority of users of RTL NOW, the catch-up service of our biggest TV channel, are under 30 years old, slightly contrasting the demographic profile from the linear TV channel.

This indicates that there can be a significant potential for incremental users on an episode level. We can also analyse how many channels an average online viewer watches on our platform. And we are happy to see an online audience uplift of up to 10% on specific target groups.



JILL MCGRATH

CHIEF EXECUTIVE OFFICER TAM IRELAND

Last September saw the launch of TAM Ireland's AV Data Solution, phase 1 as part of the VISTA Project.

egta: *Could you explain the project's first phase, its main objective, and how it fits in the overall VISTA Project?*

Jill McGrath (JM): The AV Data Solution is a data fusion carried out by Nielsen's data science team in Ireland, fusing four different datasets produced by TAM Ireland: TAM Ratings, Establishment Survey, Life-style Survey and Total Viewing Study. It provides an interim solution to the TV advertising industry.

It is a planning aid to give users an understanding of the total AV market and to give context and perspective to each element within it. It provides data on 16 trading demographics – average daily viewing minutes as well as daily, weekly and monthly net reach and incremental reach – and covers both in-home and out-of-home viewing.

This helps improve both media planning and campaign effectiveness for broadcasters, advertising agencies and their clients.

egta: *What is the VISTA Project overall methodology?*

JM: It is hybrid solution incorporating census-level data fused with panel viewing data to provide a total video measurement. There is no official timeline for the last stage of the project, which is the full data integration.

egta: *Do you partner with third parties on this project?*

JM: Currently, we are working with ABC (Audit Bureau of Circulations) to audit the current streaming measurement providers working with each of our member broadcasters to assess if they have the capability to provide standard metrics.

We have also completed an initial test of Nielsen's streaming meter measuring streaming activity across all devices in the home: TV-set, laptops and PCs, tablets and smartphone.

egta: *What do you believe to be the most significant challenge(s) to overcome when developing this project?*

JM: The biggest challenge is introducing a measurement system that will require the direct involvement of the broadcasters for content identification. Finding a solution that works for all broadcasters and is relatively easy to implement is a key focus.

egta: *Is the VISTA Project developed in response to the market's needs, or is TAM Ireland anticipating those needs?*

JM: A combination of both really. There is a need for a better understanding of total video consumption but that need will increase and deepen as viewing behaviors change and as the opportunities for dynamic advertising grow.

egta: *What was the initial feedback from the market after the launch of Phase 1?*

JM: We received very positive feedback! Here is an example of feedback from **Nick Fetcher**, Group Board Director of the largest media agency

in Ireland, Core Media: "This research is invaluable in the new world of video consumption. For the first time, we can now accurately measure how viewers are watching video content across different devices and different video platforms. It will make our decision making much more robust and accountable and deliver far better outcomes for our clients."

egta: *What do you expect the measurement landscape to look like in two-three years?*

JM: It will be a lot more complex than today, with several moving parts. The focus will be on joining all those moving parts to form valuable, trusted and reliable data for the industry.



ITALY

// Auditel: Super Panel

The Super Panel is a project that Auditel has been working on since 2014, and became a currency as of July 31st 2017. The project was created as an answer to the fragmentation observed in various TV markets across the world, and particularly in Italy where, out of more than 200 TV channels, only 32 TV channels were measured on a daily basis back in 2006. This number was up to 219 in 2016.

Fragmentation was also observed in devices' capacity to measure TV and video content. To tackle this, Auditel increased its basis from 32 million traditional TV sets to 130 million Total viewing devices including OTTs, smartphones and tablets where people are able to stream video and TV content.

// The Italian approach: Smart Single Source

The project started with an international benchmark to create a tailor-made solution which became the "Italian approach": using all the benefits of a single-source implementation without the typical issues such as low collaboration level and low acceptance rate. The specificities of the approach involved the following:

- Tripling the panel size to get maximum benefits in terms of data quality and stability: the panel size went from 5,600 to 16,000 households.

- Maximizing effectiveness in terms of compliance from the panelists' perspective to create an economically sustainable 'Smart single-source' model
- Answering both the TV content measurement fragmentation and the need of incorporating a new digital measurement solution
- Having an optimal collaboration with the people in the measured households to ensure a very stable panel

// The Super Panel currency

Auditel replaced the traditional people meter with a 'set meter panel' to create the Super Panel Currency. In terms of implementation, the two devices are exactly the same, they measure TV on and off, they are capable of measuring the device providing content on TV, they are equally able to measure the content tuned on TV.

The difference stands in how people are measured. With the people meter, there is a remote control and a traditional display where it is possible to detect who is actually in front of the TV.

While on the set meter panel, to have an optimal collaboration with the households, the people meter is not installed. This means that the measurement is very accurate for both panels.

The two panels are also equally balanced and equally representative of the Italian population.

The benefits of the Super Panel are the much smoother data and the reduction of the 0 rating spots on the day of broadcast.

// Future developments of the Super Panel

The Super Panel will cover digital measurement by leveraging the optimal collaboration level already in place with the people of the measured households.

Auditel will also introduce new technologies and

new modelling and data protection features in the recruitment process, and the parameter will be extended from measuring traditional TV to cover new platforms ranging from smart TVs to smartphones and tablets.

In terms of timeline, Auditel is working on the second stage of the Super Panel to be launched in July 2018 – which involves introducing census measurement using ComScore's tags and launching the panel pilot phase when Kantar's Focal Meter will be installed on a small sub-sample to validate some of the assumptions which are currently being used to plan for the third stage of the Super Panel.

This last stage is set to be completed in 2019 and will result in the installation of Kantar's Focal Meter on the entire panel, the completion of Auditel's content library, working on the census data calibration and the merger of digital content and traditional TV data.



THE NETHERLANDS

// SKO: Videodata Integration Model (SKO-VIM)

The Netherlands has developed an online video currency using a hybrid model of census data alongside an online panel. In January 2016, SKO became the first organisation in the world to combine panel and census data to produce daily online video programme ratings. For the first time, the market had access to reliable information about not only the size of the audience watching shows online, but also demographic and reach data about those viewers. SKO introduced cross-platform online video commercial reporting later that year. This allows campaign reporting at a creative level.

// A fusion of census and panel data

The census-level data is derived from tagging/libraries inserted into content by the participating publishers, which currently comprise NPO, RTL, SBS, Fox Sports, Ster, Sanoma and Branddeli – which, together, provide the biggest market share in terms of TV content.

For the most part, census level data on broadcast and online only content is delivered by comScore, complemented with Conviva data. Identifiers within this census data identify members within the online panel, allowing demographic data to be appended to the census data. comScore amongst

others are certified by SKO for delivering data, as it offers an open market approach that also enables the integration of data from other suppliers. This process requires input from the participating broadcasters, as they have to insert the tags and libraries into their players and content in order to be measured.

Census measurement and reporting also cover online video advertising. This is carried out according to the IAB VAST (Video Ad Serving Template) standard, which essentially creates measurement events.

Publishers automatically insert Kantar Media tracking pixels into the video campaigns that they sell direct to advertisers (as opposed to using an automated trading platform), and when the commercials are served, these pixels place a call to Kantar Media's systems.

This data, which also identifies the type of device on which the spot was played, is therefore independent of the publisher's ad server.

It is to note that not all campaigns are measured. SKO started with premium direct campaigns, with the objective of including programmatic campaigns – which share has increased incredibly – at a later stage.

Whilst the pixel integration is being carried out automatically by the broadcaster's premium ad servers, a system for extending this process to programmatic trading is being deployed across publishers' ad-serving systems (SSPs) and agencies Demand-Side Platforms (DSPs).

An online household-level panel, called the Mediapanel, using VirtualMeter (software meter) and run by TNS/Kantar Media, has been established: all members of the household (aged 6+) participate with all their tablets, smartphones, laptops and desktops.

This provides a single source for online behaviour across all online devices, rather than the multiple panel approach for different devices taken in some other markets.

Panelists log onto their connected devices at the start of each session by selecting their names from a drop-down list, either through a homepage login for desktop or laptop computers, or via an app on mobile devices. This measurement software is available for Android and iOS platforms. The panel is managed in a similar way to traditional TAM panels.

Following the identification process outlined above, the census and panel data are overlaid to create calibrated targets, which in a second stage result in panel data with adjusted totals and census data with demographics appended. This calibration process is outlined in an SKO document that can be found at http://bit.ly/SKO_technical.

// An integrated measurement that still requires improvement

Since 2017, SKO provides fused TV and online data on a daily basis. Metrics include: linear TV broadcast, independent of platform (TV, online, tablet, smartphone, computer and TV time-shifted viewing (<28 days).

It is also possible to report online and fused ratings on the basis of online time-shifted viewing, online viewing of online advertising campaigns (at creative level), and online viewing of online-only content (for example, online live streams of the Olympics, pre-views, etc.).

The most important result from those fused data is the ability to calculate the net reach of campaigns across all platforms as well as the viewing overlap between TV and online campaigns, and the uplift brought by online viewing – at programme level as well as campaign/creative level.

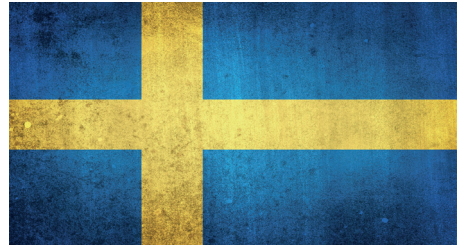
Of course, there remains some work to do in

the extension of the census project to cover all broadcasters as well as their linear streaming through network operators and cable companies.

The latter is being attempted by means of measurement within the TV panel. Additionally, SKO would like to acquire information on other screen use of the online devices – by means of non-tagged measurement, on a video-site level – and through participation/tagging, if possible.

It is important to note that no agreement has been reached to date regarding a hybrid currency that will cover media planning, trading and billing.

2018 will be a turning point, where SKO will see how the data is used and assess whether broadcasters, media planners and buyers are able/willing to work with it.



SWEDEN

/ / MMS: The integration of measurements towards a total video currency

The stated aim of Sweden's television JIC, MMS, is to launch and maintain a fully accepted media currency covering all TV and online video viewing on all platforms, screens and in all situations. The organisation is working on this Total TV solution, which produced its first figures in early 2017. MMS launched the first fused figures at an ad level in the analysis tool in October 2017, with the objective to launch data on programmes at a later stage. The approach MMS is developing leverages a larger number of separate data sources and involves data fusion across the existing TAM panel, two online panels and one census-level source to deliver Total TV viewing.

/ / A solution built around the TAM panel, census measurement for content and ads as well as online panels

Television audience measurement in Sweden has been carried out by Nielsen since 1993, using audio matching technology. MMS is in a testing phase to implement watermarking as well.

This will prove useful in the future, when dealing with Dynamic Ad Insertion – as TV4 is planning to do by Q2 2018. In December 2017, the TAM panel was extended from 1,350 to 3,000 households to

be able to cope with viewing fragmentation.

Census measurement of video content using comScore's Stream Sense was introduced in 2011, census measurement of video advertising by Adobe in 2014. In 2017, comScore took over the ad measurement as well. Using this census-level data, MMS began publishing live+7 days viewing figures of online video advertising for Sweden's television broadcasters in 2014, regardless of the platform on which it was accessed.

In November 2015 MMS introduced the first publisher, the Aftonbladet in the currency and, in the meantime, extended the scope of the measurement to cover other publishers, such as paid-VOD services HBO Nordic, Viaplay and Netflix – that are now included in the measurement but not yet in the currency.

MMS is in a dialogue with YouTube and Facebook to include them in the measurement as well but, at the time of writing this report, they did not yet reach an agreement.

The census measurement operates on the basis of events, which are created each time a viewer carries out some form of interaction with the video media player. Examples of events include starting, stopping or pausing a video. MMS can calculate viewing durations from this data, and publishers provide the organisation with the necessary metadata to identify the content.

The MMS solution includes census measurement of online programmatic campaigns that include a film code – that is unique for each commercial. The ultimate goal is for all programmatic campaigns to include such a code, so that the measurement is as granular as possible.

Online measurement provides reach and frequency figures. MMS is planning to include viewability and affinity as new metrics in the coming year.

// Total Video Ratings

MMS is working towards a TAM model that brings data from the television, desktop, mobile and detailed panels together with census-level measurement for programmes and advertising using a data fusion model. The organisation built the integration hybrid model with GfK, who does not deliver any data but helps with the fusion and modelling processes, as well as with the audit of the different data sources.

The first step of this process consisted in the creation of profiles to be able to work based on online demographics. In order to do this, user-centric data from the online panel is used to build predictive modelling. The prediction model is then applied at cookie-level on census data (provided by comScore) to try to estimate the probability of a cookie belonging to specific demographic target groups. Finally, the data is validated. For example, data on commercials are compared with the AdServer data.

As a second step, MMS had to set up an aggregated model that combines data sources to correct issues like cookie deletion, device sharing and overlap between platforms. The solution was to use a representative online panel for cross-device measurement in order to estimate parameters for the model. The model follows a two-step routine: mapping cookies to user within each device type and calculate the de-duplicated cross-device reach.

Currently, MMS is using the same method to introduce TV as another type of device, and complete step three of the process, namely the fusion between TV and online data. Common variables for the enrichment of the TV panel with online viewing are: socio-demographics (age, gender, education, size of household, region, etc.), TV usage (total, by weekday, by timeslot, by station, etc.) and online usage (frequency of video consumption online, devices used – desktop, laptop, smartphone and tablet). At the time of writing this report, MMS is conducting a Proof of

Concept (POC) to take the measurement solution to a next level, creating a virtual panel where they would have demographics at cookie level on all cookies in the census measurement. To be continued.

// Challenges

There are a number of questions still to be addressed: the increase of Kantar's online panel size as there is a need for more cross-device panelists to make the prediction model ever more efficient; measuring mobile apps that proves difficult, at least partially, as each update of iOS ruins the current measurement model in place; the daily delivery, because of the high number of sources coming together; and, finally, meeting the needs of the different types of clients in MMS portfolio (publishers, telecommunication companies, etc.) whose perspectives are quite divergent.

// A currency?

MMS regards trust in the new currency as critically important, and the new methodology therefore needs to be open and transparent. MMS retains the TV and online currencies, alongside its new hybrid total video measurement – that is not yet a currency. How the market will use the data remains to be seen.



PIRJO SVEDBERG

**EXECUTIVE VICE
PRESIDENT, MMS**

egta: *Can you explain the decision to potentially include all online video publishers in Sweden's new Total TV solution, rather than focusing just on television broadcasters as is the case in some markets?*

PS: We have always measured all TV consumption, all channels and not only our clients. So when we decided to extend the measurement to other platforms, the only option was to include all players and sites with video content.



UK

// BARB: Project Dovetail

BARB is looking to create a hybrid measurement system which takes the goodness that is in the census data and puts it together with the panel data. Project Dovetail, which was awarded to Kantar Media, seeks to deliver cross-platform insights into the viewing of programmes. It uses a single source panel for measuring all viewing behaviours while the majority of hybrid television measurement projects elsewhere around the world maintain separate sources for broadcast and online viewing. Census-level data is delivered by metadata tags inserted by broadcasters, completing the hybrid methodology. Delivered in a series of steps, the complete hybrid measurement solution is expected to be operational and reporting programme data to the market as of March 2018. BARB's ability to tag commercials has been slowed down by the issue around whether Apple's IDFA – the identifier for advertising on iOS devices – can be trusted. BARB hopes to have Dovetail fusion for commercials up and running by Q4 2018.

// A single source panel for viewing data

BARB, the JIC for television audience measurement in the UK, operates a panel of 5,100 households across the country, representing approximately 11,500 individuals (aged 4+). Broadcast television viewing is measured using Kantar Media's people meter, which uses both audio matching and

watermarking technologies. In order to measure online video viewing, software meters – also developed by Kantar Media – are installed on the desktop and laptop computers present in each panel household, and a measurement app is installed on tablets.

Panelists are required to log in each time they use the device for watching content through TV player apps, ensuring that the number and identity of people accessing a piece of video content on a given screen – whether alone or collectively – is recorded just as it is for broadcast television viewing.

// Census-level data from metadata tags

One of BARB's key objectives has been to develop an independent, credible, transparent and accountable measurement methodology, for both TV-set audiences and online viewing. Verification that the census-level data represents actual viewing is essential to this process. The system design has therefore been audited by the ABC (Audit Bureau of Circulations).

The Kantar software code tracks programme viewing activity to the second. One of BARB's challenges is to define comparable metrics for online and offline programme viewing, with a special focus on the definition of viewability. BARB applies the principles of TV metrics to online viewing by using an average-duration metric, which is applied to both programmes and ad streams; this takes account of total viewing time, not just the first two seconds.

However, the remaining unknown metric is the part of programme/ad content that was actually on the screen. For tablets and smartphones viewing, BARB only gets data if the app is full screen, guaranteeing them a 100% viewability for that part of the census data. BARB is working with the UK broadcasters who use information from

third-party vendors to understand the extent to which PC viewability is an issue and to what extent they need to factor that into their figures.

// Remaining questions

There is a list of questions BARB still has to answer. As mentioned above, there is the issue of Apple's IDFA. Commercial broadcasters aren't inclined to take the risk of using an identifier that may in the future not be allowed for this case.

BARB will have to work through the full implications of the GDPR. Clearly, with a panel, one has to inform consent from day one. However there are potentially some issues to deal with, for example to what extent an actual written consent from all panelists is needed before BARB does the selection.

BARB is keen to build a bigger panel and issued a tender for a boost panel – that is similar in concept to what Auditel has been doing in Italy. A decision should be made shortly whether BARB awards that boost panel or whether they actually decide to re-issue a tender for their core panel with the aim of getting one bigger core panel.

A firm decision needs to be made about the potential extension of BARB services to include other online platforms – the likes of YouTube and Facebook. BARB's remit is quite clear: delivering information on what people watch when it comes to TV programmes and associated commercial activity. From that perspective, BARB has taken the view that online video ads in static editorial content or social media news feed do not fall within this scope.

Finally, there is a question mark around the issue of whether BARB should be measuring services that are not regulated in the ways that other media channels are. In the UK, as it is the case in many countries, brand safety is a big issue and all of the services BARB currently records are regulated. BARB is consulting the industry as to whether

it should extend its reporting of online platforms and, if so, how should this be done.

// The final phase: integrating the data sets to provide a new gold standard for the industry

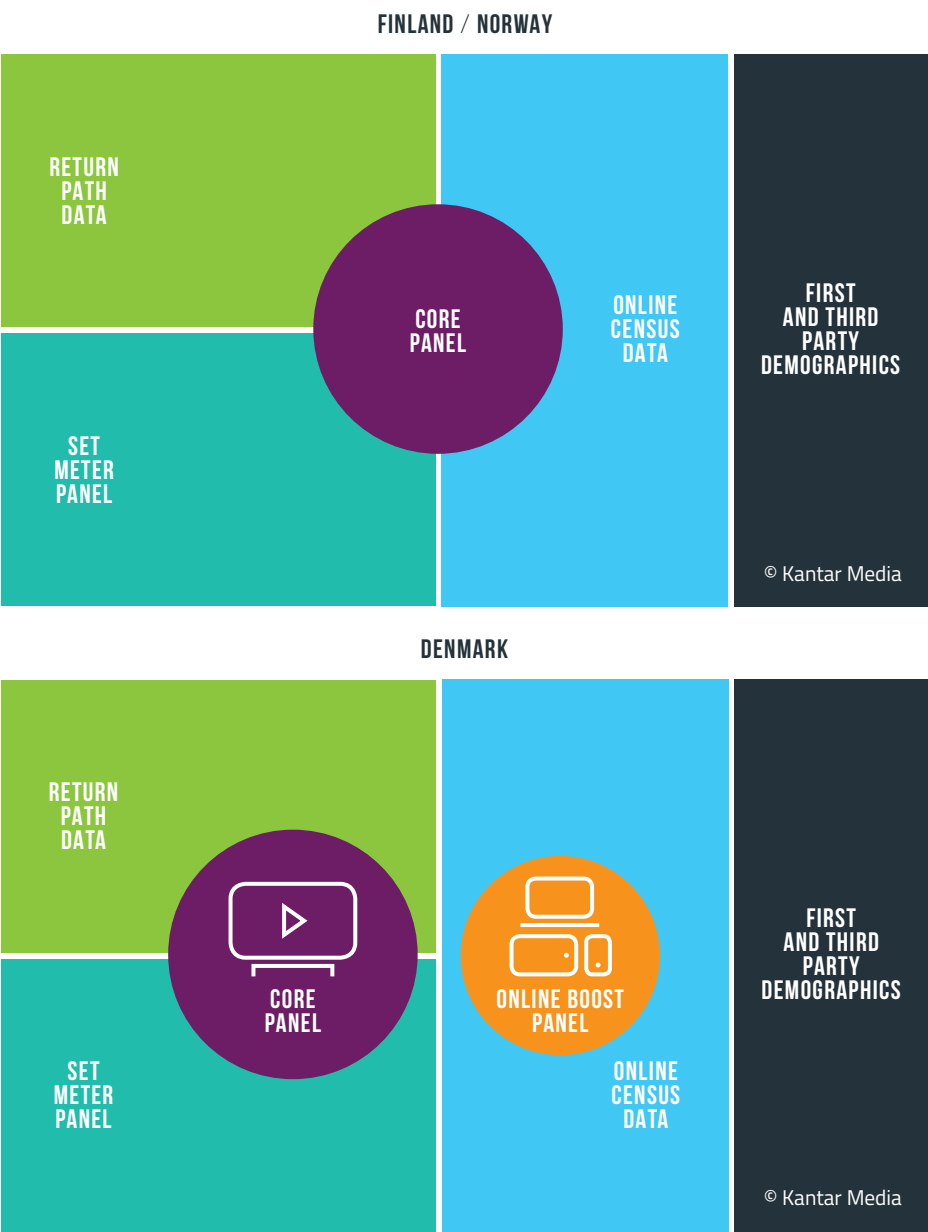
Whilst the fully operational hybrid TAM is not expected to be available until March 2018, BARB releases on-demand and live-streamed viewing data in the form of the weekly TV Player Report. The data reflects devices and programmes, rather than audiences. Current figures show that the total volume of viewing minutes on connected devices equates to less than 1.5% of the viewing of those broadcast on the TV set. It is important to keep in perspective that this is a relatively small additional amount of viewing of which two third happens on-demand and one third in live streaming.

Specific programmes – such as Love Island, a Summer runaway hit broadcast on ITV – do have a very high level of viewing on computer devices. Also, viewing on computer devices happens largely at the same time as viewing on a TV-set. BARB is also able to provide a tester of what they will be delivering when Project Dovetail launches, namely a breakdown of audiences across TV sets, PCs, tablets and smartphones, for on-demand pre-broadcast – e.g. when BBC decides to launch a season of a TV series on linear TV and to make all episodes available simultaneously on the BBC iPlayer – for live TV, time-shift and on-demand within 7 days and within 8-28 days.

// The expected future currency or currencies

The delivery of standard audience metrics for on-demand advertising is predicated on the data being for planning purposes. There is no agreement yet on whether any of the new data should influence the trading currency data produced by BARB.

FIGURE 04: KANTAR MEDIA'S BLUE PRINT FOR VIDEO AUDIENCE MEASUREMENT



THE KANTAR MEDIA APPROACH

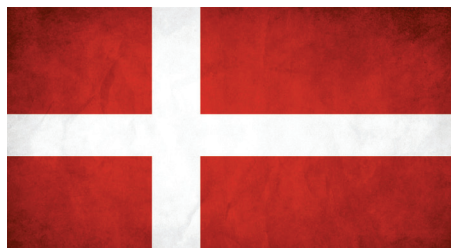
Kantar Media, in collaboration with the national JIC, operates television audience measurement, and its extension to other screens and platforms (video measurement), in many countries around the globe including Denmark, Norway, Finland and Spain – see the respective related chapters on pages 38, 39, 40 and 41 – and a few more.

Figure 04 illustrates Kantar Media's blueprint for video audience measurement – that is slightly adapted depending on each market's requirements.

- The sample size that needs to be big enough to provide sufficient online viewing, and sometimes requires the setting up of (an) additional panel(s) – a decision that comes at a cost and requires the approval of all the involved parties;
- Tagging, for which a common set of rules and definitions is needed;
- The implementation of Content IDs, especially for advertising measurement, that is usually not fully controlled by broadcasters/publishers but rather done by third parties.
- Therefore, there is a need to involve media agencies and advertisers, if only to communicate on the project so they understand the importance of Content IDs and tagging and the need for help from their side.



- The daily delivery of data is pointed as one of the challenges. The processes (including data fusion /data integration) have to happen overnight/ early morning, making the operational aspect of the project highly constraining.



DENMARK

// TAM-centered fusion methodology

Denmark is one of the countries where online panels and fusion processes are in place. The methodology is based on a standard TAM panel (2,600 people) measuring TV sets and smart TVs using Kantar Media's standard people meter technology.

This panel is complemented by two online panels: a separate digital meter panel of 1,000 people built for the purpose of video measurement that measures all connected devices (PCs, tablets and smartphones) using Kantar Media proprietary VirtualMeter (software meter); and the already existing cookie-based web profile panel composed of 28,000 people covering all digital devices.

The latter provides additional information on the profiling of online viewers and on specific online niche behaviours.

As a base for online panels, Kantar Media is tagging the content of 8 participating publishers and broadcasters (DR, MTG, TV2, Disney, FOX, Discovery, Turner, Viacom) in order to get census data – total traffic measurement of all tagged content, at device-level.

The digital meter panel is fused back to the TV panel, while the web profile panel and census data are used for calibration purposes.

// Reporting and insights

Since January 2017, Kantar Media produces and publishes fused and calibrated data on a daily basis.

The results provide relevant insights on video consumption behaviours, such as the share of overall online viewing (3% on Total Population 3+, up to 4% on younger target groups), the overall weekly reach uplift brought by online viewing (~4% on Total Population 3+, up to 7,6% on target group 12-30) or the uplift by type of programme (for example, Skam – a Norwegian teenage drama series available on DR3 and via DR streaming services – that generates 37% of its viewing online (live + vosdal + 1-7days TSV): 27% on PCs, 8% on tablets and another 2% on smartphones).



NORWAY

// A distinctive characteristic

The particularity of the Norwegian market is the level of Out-Of-Home (OOH) viewing that is quite high (e.g. 31% for the 2015 Eurovision Song Contest on NRK and 34% for the 2015 X-Games Women Contest broadcast on TV2 – programmes that are very likely to be seen in bars, restaurants and second homes). OOH viewing, including its large share of viewing in second homes, is measured since 2014 as a part of the TV currency, by fusing OOH viewing from Kantar Media's PPM panel – that serves as a base for the radio currency, but also measures TV, making the data fusion process quite easy.

// Video measurement methodology

Back in July 2016, Kantar Media started implementing an extended TV measurement (video measurement) in Norway and, naturally, the methodology needed to take into account the high level of OOH viewing.

This is the reason why Kantar Media deployed two panels that started running in parallel in December 2017: a first panel (Panel A) measuring in-home broadcast and online viewing and a second panel (Panel B) measuring OOH broadcast viewing only. Panel A (3,000 people) uses standard Kantar Media people meter technology – which was already in place – to measure viewing on the TV set and an additional router meter – that is currently being

implemented – to measure online viewing based on census data. Panel B (1,500 people) uses Médiamétrie's RateOnAir device – portable people meter technology – based on Kantar Media audio watermarking, which is the primary detection technique in place in Norway.

As with every multi-source measurement solution, the process requires a fusion of the different sets of data produced: the calibration of panel A data to census data, and the daily fusion of panel B data to panel A data.

Kantar Media has good hopes to be able to produce fused and calibrated data on a daily basis as of January 2018

// Challenges

Video measurement in Norway is a challenge in the sense that it has to cover on average 5,5 devices per household.

As it is the case on many other markets, tagging and the implementation of content IDs in the tags – unique identifiers for programmes and spots that are necessary for census measurement of linear and on-demand content – is another challenge that requires the collaboration of broadcasters and a number of other parties.



FINLAND

// A single-source measurement?

In Finland, Total TV (video) is monitored thanks to a single-source measurement solution based on the TAM panel that is already in place (2,300 people), measuring TV-sets and Smart TVs using Nielsen's technology, and measuring other connected devices (PCs, tablets and smartphones) using Kantar Media's router meter – as it is done in Norway – which implementation was finalised late 2017.

Additionally, Kantar Media works with comScore on the tagging of the content of the 3 main Finnish broadcasters – Nelonen, MTV and YLE – to enable census measurement. comScore Total Traffic measurement provides information at the device level.

This information is used to calibrate the data derived from the single-source measurement. Thanks to census measurement and to a separate study that allows profiling (additional questionnaire in the RAM survey), Finnpanel – the Finnish JIC – can already estimate the total level of online viewing on the market, per target (e.g. 2,3% on Total Population, up to 6% on target group 15-24).

// A possible enhancement in the methodology

Just like in Norway, Finnpanel plans to deliver live calibrated data on a daily basis at the beginning of 2018 but one question remains unanswered: is the TAM panel big enough to deliver representative data on online viewing and to deliver enough data overall to be able to properly calibrate? This question will only be answered once live data is delivered on a daily basis.

If necessary, the broadcasters may take the decision to set up an additional booster panel (digital meter panel, as the one developed in Denmark – see related chapter on page 38) in order to solve the scale issue.



SPAIN

// Video measurement based on existing currencies

Back in November 2015, when starting to implement video measurement in Spain, Kantar Media decided to use the currencies already in place on the market. The CMAM (Cross Media Audience Measurement) project is therefore based on the standard TV currency – Kantar Media panel for TAM, 4,755 households/11,000 people – and on comScore's online currency – census measurement, complemented by a PC panel of 37,000 people, in place since many years, and by an additional new mobile panel of 2,000 people.

It is to note that, in Spain, the main publishers' content is tagged with comScore's SDK or tags. All the main broadcasters, who represent more than 75% of TV audience shares, and nearly 90% of the Advertising TV Expenditure, are part of this project.

The Spanish TAM panel works with standard Kantar Media people meters. Additionally, Kantar Media implemented its VirtualMeter (software meter) in 55% of the panel TV households in order to get single-source overlapping data, used to extrapolate viewing behaviour for households that are not equipped with the VirtualMeter.

The data is then calibrated based on comScore census measurement. It is worth noting that comScore utilises third-party data, such as Spotify information to attribute demographics to their census data.

// Work in progress

The CMAM project is still work in progress. It is a long process that needs to be taken step by step. Started in November 2015, CMAM began delivering side-by-side (TV data on the one hand, online data on the other) aggregated monthly figures at media owner level as of 2016 in one reporting software (Instar Analytics Web).

Since mid-2017, they extended the data to TV programme ratings – a more granular level – allowing analysis by channel, programme or even by episode of a series. This is in a test phase, with the objective to publish live data as of December 2017. The end goal – publishing fused and calibrated data – is planned for Q2 2018.

// Insights from comScore census measurement

As explained, the total video measurement is not in place yet. However, comScore census measurement already provides estimated figures based on viewing minutes (on H1 2017).

For example, time-shifted viewing (up to 7 days) adds 14 minutes to an average viewer's linear TV activity. Online viewing, from different connected devices, adds 6 minutes – which represents 2,3% of a viewer's total viewing per day.

The analysis of online viewing time broken down by platform shows that 60% happen on a PC while the remaining 40% happen on a tablet or a smartphone.

When analyzing online viewing time split by type of stream, one can see that 63% is catch-up VOD and 37% is live streaming. comScore census data gives additional information on the type of screen used by the viewers for online viewing: 29% of the viewers use computers only; 51% choose to watch either on a tablet or a smartphone; the remaining 20% use a mix of all those screens.



CANADA

// Numeris On Demand Measurement (ODM)

Canadian television and radio audiences are measured using the Personal People Meter (PPM), supplemented by a twice-yearly diary for each medium to cover smaller market areas. This work is carried out by the research organization, Numeris. By inserting a separate set of codes for linear and on-demand television content, broadcasters can ensure that all viewing can be captured by the PPM device and attributed by delivery platform.

Numeris is already working with broadcasters to encode their VOD content, which will allow it to be identified within the PPM panel, and the next phase of the project for a full hybrid measurement model involves the integration of census-level return path data (RPD) from participating broadcasters' servers and from cable TV set-top box operators. Numeris is currently developing a proof of concept model for this data integration.

// Mobile measurement technology offers an on-demand solution

The PPM captures viewing and listening data from all sources, regardless of whether the content has been delivered by broadcast or via an online platform. Numeris is therefore able to measure television VOD viewing on set-top boxes and, in some cases, online VOD.

Under the existing model, any online live-streamed viewing is folded into the regular currency. Should the market demand it, a solution to identify viewing by delivery platform would be relatively simple to implement, as it would just require appropriate encoding on the part of the broadcasters.

Several large broadcasters are now encoding their VOD content, and Numeris has started releasing non-linear viewing data to the market in October 2015, reporting on September 2015 data.

The organisation provides episode-level average minute audience (AMA) data from the encoded programs viewed by the PPM panel to the industry on a monthly basis. Research reports that include aggregated genre-level reporting of comedy, reality and drama programs and VOD viewer profile information have also been distributed to the industry.

// Census-level data from set-top boxes and broadcasters' servers

Following pressure from the industry and a decision by Canada's broadcasting and telecommunications regulator, CRTC, cable television operators were asked to form a working group to explore how to release the viewing data from their set-top boxes to enrich audience measurement. This would be particularly valuable for smaller, niche channels, which are not well served by panel-based measurement systems.

The working group selected Numeris to conduct a successful Technical test that combined RPD data from multiple set-top box providers. Subsequent testing should establish a method to obtain the viewing files from the STB boxes and link the STB and currency PPM data.

Numeris presented a design for a national STB system to the Working Group. They are in the process of securing BDU (Broadcast Distribution

Undertaking) datasets to conduct a POC that will help inform a business plan for further development.

The development of a Set-Top Box measurement solution is an integral part of Numeris' cross platform audience measurement strategy.

Numeris will continue to develop the hybrid TAM methodology and define the associated new models with the industry through the course of 2018.

// Cross Platform Audience Measurement

VAM (Video Audience Measurement) is a solution currently being designed by Numeris to help deliver an audited standard unit of measure originating from one neutral, credible and transparent organisation, for all video distributed across all platforms and devices. Its purpose is to characterise the value of digital video in the media space, and to provide a deeper understanding of who is watching.

Through the VAM solution, Numeris will be working to extend the measurement of Canadian viewing to include as much of the digital video landscape as possible. Numeris aims to capture all broadcaster content across platform, by device type. Numeris is working to provide measures of pureplay (services such as YouTube and Google), OTT and other related viewing behaviours as part of their intended service.

A steering committee comprised of Numeris members conducted a request for proposal process to select a digital partner to conduct the VAM Proof Of Concept (POC). Kantar Media supported by comScore was chosen to conduct the POC and work is now underway.



NEIL MCENEANEY PRESIDENT, NUMERIS

egta: *Canada is notable for the use of portable (PPM), rather than fixed people meters for television audience measurement, what do you see as the main advantages of this technology?*

Neil McEneaney (NM): Numeris has been using PPMs for a long time and it has served us well. In this increasingly complex media environment we need to measure it all and passive measurement with PPM is the foundation. As we previously described, PPM has allowed us to seamlessly capture live TV viewing and Radio listening from the same household.

It also captures playback, out-of-home tuning and live streaming of video and audio content regardless of the device used. In addition, we have developed a non-linear measurement system called On Demand Measurement (ODM) that uses the same panel households and tracks their consumption of encoded VOD content.

We feel this remains a good solution for the Canadian market as we continue to leverage the benefits of a portable single source measurement system to produce new audience insights.

egta: *Can you explain how Numeris is integrating Set-Top box data into the measurement?*

NM: There is significant interest from the media industry and Canada's broadcasting and telecommunications regulator, the CRTC, in exploring a set-top-box (STB) solution in Canada. The CRTC created a working group to explore how to release the viewing data from their set-top boxes to enrich audience measurement. Numeris was selected and successfully completed a technical test that combined RPD data from multiple set-top box providers.

Recently, we presented a design to the CRTC Working Group for a national STB system and we are in the process of securing BDU datasets to conduct a proof of concept test that will help inform a business plan for further development. The development of a Set Top Box measurement solution is an integral part of Numeris' cross platform audience measurement strategy.

egta: *What is your view on the form of currency that the Canadian market is looking for in the coming few years?*

NM: Numeris' strategic focus is in developing a cross platform audience measurement solution based on our marketplace's need for a currency that allows them to tell the best story about their audiences. VAM (Video Audience Measurement) is a solution currently being tested by Numeris to help deliver an audited standard unit of measure originating from one neutral, credible and transparent organization, for all video distributed across all platforms and devices.

Over the next few years we will continue to develop cross platform audience measurement through a series of metrics to understand audiences across all platforms, by device.



US

// Nielsen: the provider for television ratings in the US

The television ratings service in the US is delivered by Nielsen, with electronic measurement across the national service, as well as the top 56 local markets. The most commonly used metric for national television advertising is the Average Commercial Minute Rating, introduced and agreed upon by the industry in 2007.

This standardised measure for commercials averages all minutes of the program that contain national commercials from the live telecast either via playback or on-demand. The most common metric currently was referred to as “C3” which included up to 3 days of viewing, but the past 18 months have introduced a significant amount of change, with the extension of the window of crediting for the Average Commercial Minute data from 3 to 7, and out to 35 days which enables clients to evaluate opportunities beyond traditional viewing intervals.

The other major enhancement to the television currency was the inclusion of Out of Home (OOH) ratings which is particularly important for networks that distribute sports and news content.

Nielsen also produces program content ratings and accounts for all time users spend watching television from any source. Nielsen is working towards a Total Audience solution to extend audience measurement beyond the distribution

channels and viewing patterns that are currently included in its traditional ratings, including a wider range of mobile and digital devices as well as dynamically inserted advertising.

The company is developing a hybrid methodology that is built on data from its people meter panel alongside big data from partners, such as Roku, Facebook and Experian. Nielsen states that its partnership with Roku, a popular streaming platform with some 10 million devices currently in use, is an industry-first for over-the-top (OTT) devices, as it will allow marketers to buy video advertising on the Roku platform with the same audience guarantees that are available for traditional television.

Under the collaboration with Facebook, the two companies exchange anonymised data in order to append demographics to census-level viewing data for video. The information Facebook receives identifies shows by a numerical code, rather than the show's title, meaning that Facebook does not know what is being watched. Conversely, Facebook sends only anonymised age and gender data back, and therefore Nielsen does not know who was watching, but it can build a demographic profile for the measured content and advertising.

Another considerable development to be mentioned is the introduction and support of Audience Based Buying via the Nielsen Marketing Cloud. This allows clients to segment and maximise their audience delivery in extended and more specific ways that benefit their business. In terms of cross platform solutions already in currency, Nielsen announced on February 2017 that it has been granted accreditation by the Media Rating Council (MRC) for its inclusion of digital measurement in the TV ratings.

The additional capability, known as Digital in TV Ratings (DTVR), accounts for linear TV viewing occurring on desktop and mobile devices for participating programming sources.



BRIAN FUHRER

SVP, NATIONAL & CROSS-PLATFORM PRODUCT LEADER, NIELSEN

egta: *What is your vision for effective audiovisual measurement across all screens and devices in the future?*

Brian Fuhrer (BF): Nielsen's vision for comprehensive measurement comes together in a framework we are calling "Total Audience." Simply put, the Total Audience approach includes the measurement of video consumption regardless of where, when, or how it is accessed, for all underlying business models.

We are committed to pursuing this on behalf of our clients, and they have enthusiastically endorsed our strategy. Nielsen's Total Audience framework utilises the best and most appropriate metering techniques and data sources, calibrated by our high-quality panels.

egta: *What is the current state of development of your next generation measurement solution?*

BF: We have made a tremendous amount of progress in terms of implementing the capability to measure content and ads across platforms. This includes mobile, computer, out of home, and OTT measurement, including SVOD services such as Netflix. We are still looking to close a few

remaining gaps around measuring dynamic ads on OTT and VOD platforms.

The key now is getting content providers and distributors to enable the measurement platforms we have created (where appropriate), and we are making progress on this front as well.

The past year has included some measurement expansions driven by our clients including expanding the window of linear measurement from 7 to 35 days, inclusions of Out of Home measurement, and the syndication of Subscription on Demand Measurement.

egta: *What do you believe to be the most significant challenges to be overcome?*

BF: The first major challenge is achieving industry consensus on any currency-related change. In our industry there are many different companies with varying (and sometimes conflicting) opinions, and we must give them all serious consideration, as any changes to the currency can have a major impact on their business.

The second challenge is more technical in nature, as many of the digitally-oriented solutions require client software integrations that are seamless once completed, but do take some initial focus.

egta: *Do we need a single currency, or separate currencies for programmes and advertising?*

BF: This decision will always be driven by what the industry wants to endorse and utilise. It is clear that clients want to be able to track their advertising and programs and do so independently of what the actual business model might be.

They key benefit here, and one that truly fuels our Total Audience strategy, is the flexibility that measuring at the advertising level provides (particularly across platforms) and the new business opportunities that it contains for our clients.

Separate currency for programs versus advertising creates a disconnect during the planning and posting process, so having them all measured within the same framework is critical.

egta: *What do you believe to be the most significant challenges to be overcome?*

BF: The drivers for measurement will be fragmentation, and the opportunities that more precise and informed advertising will provide. Because content and advertising distribution opportunities will continue to grow, measurement will also need to be more granular to accurately reflect that delivery.

Overall context is key, and expanding the behaviours, attributes and characteristics collected in our panel homes to include digital census-based measurement will be required to report Total Audience.

Another key trend is the necessity to measure content not just across platforms, but also across distributors so that a program or episode can be measured for its entire lifecycle.

This is the first solution to receive accreditation from the MRC for its contribution to TV audience measurement for programming viewed on computers and mobile devices.³

Nielsen's DTVR is true de-duplicated linear cross platform measurement and is in the C3/7 currency. The service is used by both TV networks like CBS and ESPN as well as Digital first players like Hulu and YouTubeTV.

// TV in the US: under pressure from shifting viewing behaviours

Television companies, both broadcasters and cable companies, are facing significant challenges in the US. Measured viewing of live +3 days (represented as the C3 rating, which is commonly used for trading) is undoubtedly declining. Whilst not directly related to the issue of viewing figures, it has been reported that cable subscriptions fell for the first time in 2014. As the industry has analysed these data, it becomes evident that the largest impact comes from other viewing options on the set, including subscription-VOD.

Data from Nielsen shows a consistent year-on-year decline in the amount of traditional television being watched, especially by younger people, and an increase to other television options. As a demographic group, only over 65-year-olds watched more traditional television over the years; all other age groups watched less. This is particularly noticeable for 18-24-year-olds, with average weekly viewing per individual in this population falling from 26 hours and 28 minutes in Q1 2011 to 11 hours and 22 minutes in Q2 2017.⁴

// New actors active in television and cross-media audience measurement

The changing nature of television and video consumption, and the increased availability of Return Path Data from set-top boxes and connected devices, has led to a number of other companies becoming involved in the supply of television audience insights.

// comScore & Rentrak: from digital analytics to cross-media measurement

comScore completed its merger with Rentrak Corporation in January 2016, to create a new model for a dynamic, cross-platform world. Built on precision and innovation, comScore's data footprint combines proprietary digital, TV and movie intelligence with vast demographic details to quantify consumers' multiscreen behaviour at massive scale.

This approach helps media companies monetise their complete audiences and allows marketers to reach these audiences more effectively. With more than 3,200 clients and a global footprint in more than 75 countries, comScore is delivering the future of measurement.

ComScore and Rentrak, two companies that specialize in the measurement of media consumption, have merged, forming a company that is likely to vie with Nielsen to offer data that can form the backbone of deals struck between media outlets and their advertisers. The two outlets gained shareholder approval early 2016 and officially completed their transaction quickly thereafter, executives said.

The deal folds Rentrak, which measures video-on-demand, movie box-office and set-top box data that tell how people watch TV, within ComScore,

which measures consumer web activity. Executives from the company said they will move quickly to offer advertisers a way to gauge how viewers consume video entertainment, no matter whether they use a movie screen, TV, desktop computer or mobile device.

The two join forces after media companies have articulated a new desire for new measurement options as consumers move from TV screens to everything from streaming video to mobile apps.⁵

// 605: leveraging set-top box data to improve advertising measurement

Improving the advertising industry's approach to measurement and accountability is at the heart of a new partnership between Charter – a leading broadband communications company and the second largest cable operator in the United States – and 605, a data and television analytics firm that optimizes programming and marketing initiatives within the media, sports, and entertainment industries.

Under the agreement, Charter provides 605 with aggregated and anonymized television platform data from all of its cable system operations nationally. 605 then uses its proprietary data infrastructure and analytics capabilities to enhance advertising and campaign measurement solutions for Spectrum Reach, Charter's advertising sales division.

In May 2017, Spectrum Reach introduced an innovative new product developed in partnership with 605 for linear media planning and optimization called the AudienceApp. The AudienceApp makes it possible for Spectrum Reach customers to better identify and target specific audiences on linear television and execute more effective campaigns.

Ben Tatta, 605 Co-Founder and President said, "Charter is an important and strategic partner that

brings a powerful and significant data set to 605.

Programmers, distributors, advertisers and agencies are moving quickly to embrace audience-based advertising and measurement and we are at the forefront of this trend.

We believe our efforts can accelerate the transformation in the advertising industry's approach to measurement and accountability by moving beyond traditional ratings to include impressions in buying decisions."

// TiVo Research: matching viewing data with second- and third-party advertiser and purchase data

TiVo Research is a wholly owned subsidiary of TiVo Inc., a company that provides DVR set-top boxes and next generation television services. Formed after TiVo's 2012 acquisition of the media and marketing measurement company TRA, TiVo Research focuses on measuring and quantifying ROI, rather than on audience size and basic demographics alone.

Its services therefore complement Nielsen's currency ratings, and they allow advertisers to better understand their television campaigns and optimise their media planning and buying.

TiVo Research gathers passive second-by-second set-top-box tuning data from more than 2.3 million representative US households in a privacy-compliant manner. Tuning data is aggregated, normalised, and weighted to the US Census. It provides the base for audience metrics covering programs, networks, dayparts and genres.

Both live viewing and time-shifted viewing are measured and available. Data comes not only from TiVo DVR boxes, but also from other cable, telco, satellite and over-the-air households.

TiVo Research is able to measure the entire sales

cycle by matching its set-to-box data to digital exposure, second-party customer data from advertisers and third-party consumer purchase (frequent shopper card) data at the household level. Using anonymised data and third-party matching,

TiVo Research upholds the strictest standards of privacy compliance. Data remains clean throughout the entire process since it is matched one-to-one. This method allows TiVo Research to avoid modelling or fusion, which use probabilities to guess how a household behaves rather than actually measuring how that household behaves.

Through partnerships with leading providers, TiVo Research has access to packaged goods purchase data from 59 million households, data on 115 million new automotive registrations and healthcare data for 75 million individuals.

By analysing this single source data, TiVo Research can provide peerless insights on television/digital advertising ROI. Whilst relatively small panels are used by Nielsen and others to provide eyeball counts, TiVo leverages big data to quantify advertising impact at the household level.

As a media technology company, TiVo's main focus is on improving the television consumer's experience. TiVo Research delivers a better experience through more relevant advertising, but the main advantages are for television networks, cable operators and advertisers.

Networks can increase the value of their inventory through research, whilst smaller cable operators in particular are able to use their own set-top box data without the need for large investments in resources and in-house data expertise.

Furthermore, cable operators can use TiVo Research's assets to manage upselling of their subscription tiers by making customers aware of content that they might be interested in and that they would otherwise be less likely to explore.

Going beyond its established measurement methodologies, TiVo Research is currently engaged in two new measurement initiatives:

firstly, a trial in collaboration with CIMM (Coalition for Innovative Media Measurement) to triangulate and validate data from three sources, set-top boxes, Internet routers and a mobile software meter; and second, using mobile devices to correlate advertising exposure with visits to stores.

Studies involving location matching with all other data have already been reported at ARF conferences and this is becoming a staple of the service.

The CIMM trial, called the Children and Teens' Measurement Project, is designed to gather data on whole families' TV, Internet and mobile content consumption, both in and out of home. The UK-headquartered RealityMine was selected by CIMM to recruit a family panel of 500 households, with at least one child aged 2-17, taken from a panel of TiVo subscribers.

TiVo Research provides second-by-second video viewership data for linear and DVR content and advertising, as well as aggregated VOD and OTT usage. RealityMine's whole home router captures all Internet activity taking place in the household, and panellists install the company's mobile app to measure both in home and out of home usage.

TiVo Research partnered with the mobile audience intelligence company NinthDecimal to launch LCI™ TV, a solution that correlates advertising exposure to foot traffic in brands' physical points of sale, especially important for retailers, movie, automotive, and restaurant advertisers. LCI™ TV matches NinthDecimal's location data from mobile devices with TiVo Research's television viewing and other data assets.

This allows advertisers to evaluate ROI for different consumer targets and different media types outside the home, enabling them to adjust

the media mix and achieve better efficiency.

In December 2017, Altice USA selected TiVo services to support its service offerings under an expanded six-year agreement. Altice USA, one of the largest broadband communications and video service providers in the United States, has broadened its license to the TiVo patent portfolios used to build customizable, next-generation services.

As part of the agreement, Altice USA has also deployed TiVo's Personalized Content Discovery platform to enable personalization and recommendation features on its newest, cloud-based connectivity platform, Altice One.

The Personalized Content Discovery feature combines TiVo's personalized search and recommendations with its renowned conversational voice search.⁶



BILL HARVEY

CO-FOUNDER OF TIVO RESEARCH & CEO OF BILL HARVEY CONSULTING

egta: *TiVo Research's measurement and analytics solutions use data matching techniques, whilst data fusion forms the basis of many of today's next generation methodologies. What are the advantages of matching over fusion?*

Bill Harvey (BH): The problem with fusion for targeting is that it waters down the degree of efficiency leverage that can be gained from an average of 28% gain to an average of single digit gains (if any). As a result, fusion based research has not produced any peer reviewed case studies where sales/ROI went up because of the targeting changes made. On the other hand, TiVo Research/TRA has published through ARF many cases showing the effectiveness of their methodology with major advertisers, agencies and networks such as Kraft, Mars, MediaVest, Turner, et al.

egta: *What advantages can you offer to advertisers by matching set-top box data with their own customer datasets and third-party purchase data?*

BH: The main point is to verifiably increase sales per media dollar. This is the central issue in all advertising and the only ones who are proving ROI lift are TiVo Research and direct marketers.

egta: *The solutions and projects you are involved with involve big datasets and partnerships between different organisations. What are the biggest challenges you have faced, and what approach works best when developing sophisticated measurement systems?*

BH: First privacy must be absolute, so the initial discussion is always to ensure that no better privacy solution can be achieved and that the available solution is impenetrable. TiVo Research for example is continuously audited by a British auditing organization that specialises in certifying companies for the highest level of information security namely ISO 27001, which TiVo Research/TRA has maintained continuously from the beginning.

Second, TiVo Research has evolved proprietary methods that allow a data supplier to prevent any household level data it owns from leaving its firewall while enabling data matching and aggregation. Once those two key foundational issues are laid to rest, the principles of being a good partner, making sure deals are "win/win", and conscientious attention to rigorous methodology are the other variables that are essential to big data matching success.

egta: *Privacy concerns are often cited in discussions around advanced audience measurement and its application to advertising. What has been your experience with this?*

BH: This has been a central concern from the beginning. In fact, TRA was built around privacy. TiVo became an early partner to TRA because both companies saw eye to eye on this crucial issue and demanded the highest standards of privacy. Prior to TRA I led an industry committee of the ARF, 4As and ANA to develop the CASIE (Coalition for Advertising Supported Information & Entertainment) Privacy Principles, the first and still the guiding privacy principles of the advertising industry.

egta: *What advice would you offer, in terms of partnerships and technology, to European television companies that want to explore matching TV viewing and consumer purchase data?*

BH: Best to work with people who have done this before as the level of detail involved in these processes is extreme. TiVo Research is eager to support the expansion of these best practices worldwide, as is my own consulting company Bill Harvey Consulting. Experian and Axciom are also experts at this. Agencies, major digital media companies, and others are fast improving their skillsets in these areas as well.

egta: *Looking forward a few years, how do you expect television – and other media – audience measurement to evolve?*

BH: The use of large samples of matched naturally occurring data, invented by TRA (four issued U.S. patents) is now ubiquitous and will be gradually replacing panel based data as currency, especially once IPTV replaces quadrature amplitude modulation (QAM) and other hybrid transitional analog/digital transmission standards.

IPTV will mean that server data become a census of all viewing, with viewing on mobile devices at the persons level, and TV set viewing on the household level, necessitating a research co-operator based hub panels or other solutions to fill in the persons level data.

Although the monopoly currencies of today will want to become the clearinghouse for all these server data, the network owners of such data will not be quick to hand it over and then pay handsomely to get it back in report form, and at that point the basic shape of the TV research industry will be profoundly changed.

GLOSSARY

Census measurement

In the framework of audience measurement, census measurement refers to the complete collection of consumption data for a particular piece of content or advertising across potentially its entire distribution.

Also known as machine data or return path data (RPD), census measurement is in contrast to sampling, usually carried out within panels, which collects data from only a subset of users and/or devices. The census may, however, include all measurable usage from either a sample of users or all users.

Demand-Side Platform (DSP)

A DPS is a system that allows buyers of online advertising inventory to manage multiple ad exchange and data exchange accounts through one interface.

Dynamic Ad Insertion (DAI)

DAI expands advanced advertising opportunities by allowing advertisers to target ads that can be swapped in and out of on-demand content.

GRP

Gross Rating Point, the sum of all rating points for a particular set of media events – programmes, advertising spots or ad breaks, etc. 1 rating point is equal to 1% of the total audience.

Formula: % Reach X Frequency

IAM

Internet audience measurement, the various techniques and methodologies for analysing online activity.

Most European countries now have a JIC or MOC model for IAM, and the relative complexity of measuring digital activity – in contrast to television, radio or print audiences – means that device and

platform coverage varies between markets. IAM often involves a hybrid solution built around panel and census-based measurement techniques, however in many cases there is no operational integration between the data sets.

JIC

Joint Industry Committee, an independent body representing all interested parties, including publishers/broadcasters, media agencies and advertisers, that commissions and oversees audience measurement. JICs typically engage private research companies to carry out fieldwork, analysis and reporting.

MOC

Media Owner Committee, also sometimes referred to as Media Owner Contract, an organisation set up by one or more broadcasters/publishers to commission research from a research supplier. Media agencies and advertisers may be represented.

Panel measurement

Representative survey sample from which data is collected over time. Panels may be short term and employ discrete one-off samples (e.g. some diary surveys) or continuous and long term with samples that change over time according to the number of homes that leave the panel and are replaced by new homes.

All peplemeter panels are continuous and long-term.⁷ Panel data provides demographic information about viewers and users, but statistical modelling is required to estimate total usage.

People meter/PeopleMeter

A fixed location electronic device, consisting of a set meter and a component that registers who within the household is watching, that measures all viewing activity on a television set, using – among other possible solutions – audio matching and/or watermarking technologies or a combination of the two. People meters are deployed in household

panels, and demographic user data is collected by the use of a remote control or other input

the JIC and/or the company carrying it out.

PPM

Personal People Meter, the trade name for a proprietary electronic measurement device developed by Arbitron (now Nielsen Audio). The PPM is designed to be carried by an individual panelist, and it records media exposure both inside and out of the home.

It is most commonly used to provide ratings currency for radio, although its use is extended to television and, in some cases, print measurement. A number of other portable electronic measurement devices, in the form of wearables or smartphone apps, also exist.

Supply-Side Platform or Sell-Side Platform (SSP)

An SSP is a technology platform that enables web publishers to manage their advertising space inventory, fill it with ads, and receive revenue.

VirtualMeter

A software meter developed by Kantar Media, which uses audience measurement technology derived from the company's PeopleMeter.

The VirtualMeter is installed locally on panelists' Internet-connected devices, allowing TAM services to be expanded to include online video viewing. Other measurement companies have also developed software meters, including comScore, Adobe and Nielsen, among others.

TAM

Television audience measurement, a data supplier system/service for measuring television viewing and delivering audience data. TAM is typically carried out using a panel of households selected to statistically represent the television viewing population, using fixed or portable people meters. Depending on the country in question, TAM may variously be used to describe the measurement,

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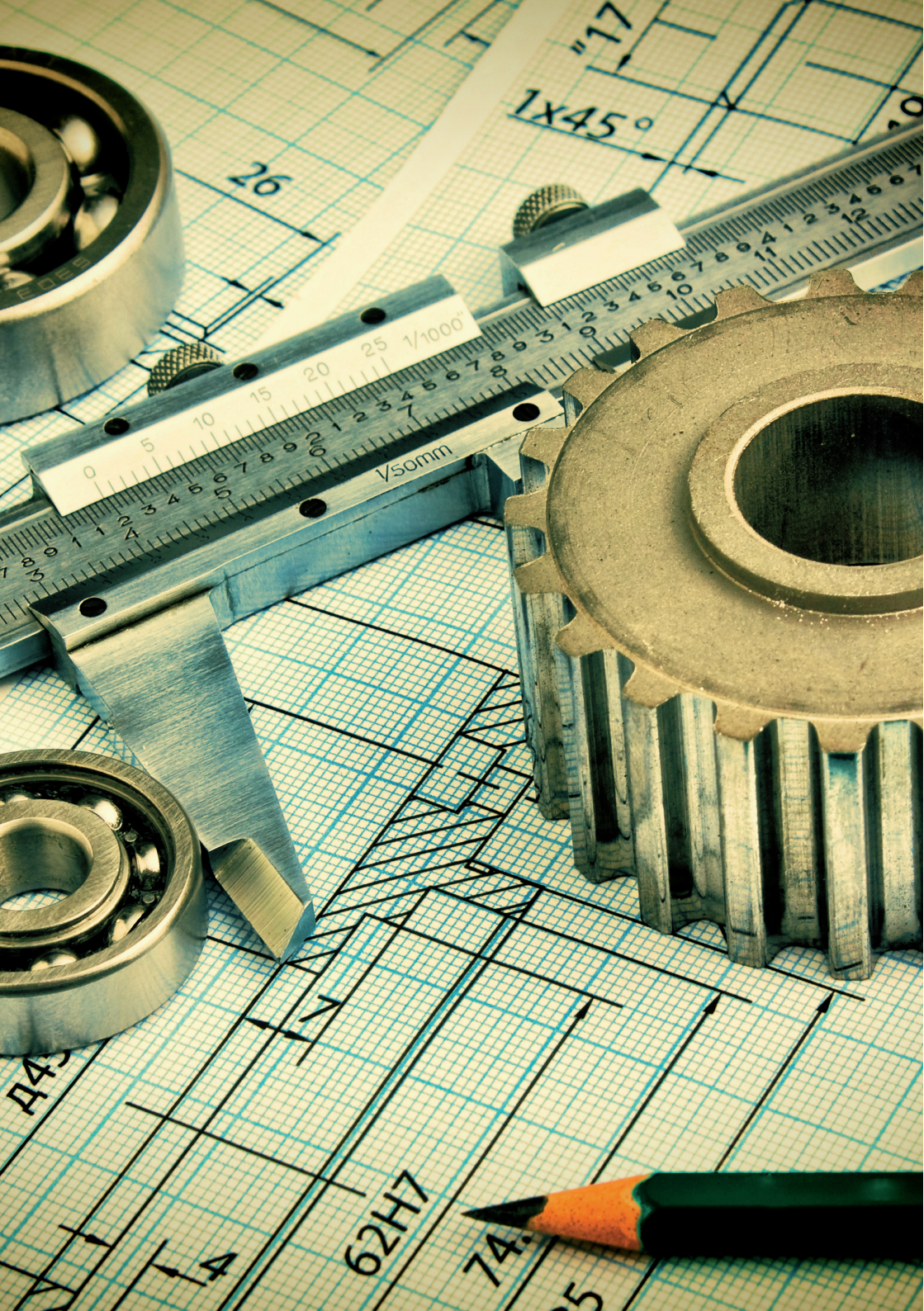
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