ATSC 3.0 DATA LANDSCAPE

OPPORTUNITY ASSESSMENTS FOR LOCAL TV BROADCASTERS

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PREPARED FOR

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Executive Summary

PILOT, a division of the National Association of Broadcasters, commissioned BIA Advisory Services to explore and analyze planned and possible use cases of ATSC 3.0 for data services that can contribute to positive outcomes for the local TV industry. Local TV broadcasters have new opportunities for business models and enhanced public service utilizing the advanced data capabilities of the new transmission standard. In this report, we'll highlight several prominent data-centric opportunities and identify the landscape of companies that could be helpful to broadcasters.

The U.S. media and marketing economy now embraces data throughout its ecosystem from point-of-sales systems (POS), to customer relationship management (CRM systems to audience and consumer research services. Technology platforms, workflow automation, data science and growth in design-centered and agile marketing and product development are major drivers in the rising data economy.

With ATSC 3.0 and IP-enabled back-channels, local TV broadcasters will be able to measure, target, and attribute outcomes from the content they deliver to their broadcast audiences. The ability to create a unique form of first-party data for their audiences is very significant. This first-party data is an asset that can be monetized in several ways as we'll discuss. The data marketplace into which local TV broadcasters can now enter with their

ability to collect audience is big business and growing both in magnitude and consequence. Local TV audience data can add significant value to other marketing and consumer data for those looking to build out a detailed profile of consumers and their relationships with TV.

BIA conducted interviews with industry executives and performed research to identify and compile a list of companies relevant to the data landscape. We produced a separate *ATSC 3.0 Data Landscape Database* as a compilation of several types of companies that are at illustrative of the kinds of companies that local TV broadcasters might view as part of their new data landscape. This is a dynamic list initiated with well over 100 companies active in the media and marketing data landscape to provide examples of the types of companies that broadcasters are or could be doing business with related to ATSC 3.0 data capabilities. In addition to this list, we also include a much larger list of over 5,000 companies in the larger martec (i.e., marketing technology) landscape for an expanded view of the data landscape and new value creation opportunities.

To help visualize how this new data landscape might look in terms of business opportunities and use cases, we highlight six ATSC 3.0 empowered, data-centric market opportunities for enterprising local TV broadcasters to pursue: (1) *First-Party Audience Data*, (2) *Audience Analytics and Insights*, (3) *Addressability, and Personalized Content Targeting*, (4) *TV and Multi-Touch Cross-Platform Attribution*, (5) *Data Delivery*

and Content Distribution Networks, and (6) *Public Service, Alert, and Warning*.

Introduction

The FCC authorized the voluntary use of the ATSC 3.0 standard on a market-by-market basis in November 2017. This is a broadcast TV standard that makes native use of the Internet Protocol (IP) in its transmissions and supports a dedicated return channel. With these capabilities, local TV broadcasters gain an important seat at the data landscape table to develop and scale a variety of data-related business and service opportunities.

We highlight six ATSC 3.0 empowered, data-centric market opportunities for enterprising local TV broadcasters to pursue: (1) *First-Party Audience Data*, (2) *Audience Analytics and Insights*, (3) *Addressability, and Personalized Content Targeting*, (4) *TV and Cross-Platform Attribution*, (5) *Data Delivery and Content Distribution Networks*, and (6) *Public Service, Alert, and Warning*.

We interviewed senior executives from leading firms and analyzed trade press, company, and industry reports to build a viewpoint on current thinking about how ATSC 3.0's data landscape may evolve in terms of business models and to identify an initial set of companies relevant to the data landscape as ATSC 3.0 rolls out. Some companies already have explicit plans underway to make use of ATSC 3.0's unique data capabilities. In other cases, we see implicit data-related opportunities for local TV broadcasters using ATSC 3.0 based on broader media industry practices. For example, MVPD set-top box data and both

app and device-based user data from digital media firms provide substantial value to publishers, marketers, agencies and others in the broader media and tech industries.

Here are a few examples of ATSC 3.0 projects and tests underway:

- The NextGen TV Hub Showcase at the 2017 NAB Show was presented by ATSC, Consumer Technology Association and NAB. The NextGen TV Hub sponsors included broad support from consumer electronics, broadcasters, vendors, and trade association groups. The NextGen Hub highlighted data transmission and collection services including emergency alerting, accessibility features (e.g., closed captions, video descriptions), addressable advertising, audience measurement and automotive applications). (ATSC, April 18, 2017)

- Referring to the audience data collection capabilities supported by ATSC 3.0, Mark Aitken, VP Advanced Technology for Sinclair Broadcast Group sees, "a big financial upside to ATSC 3.0's potential for collecting and analyzing viewership data."

- The Pearl TV business alliance comprising Pearl TV, FOX, NBCU, NBC Connecticut, Univision and Verance, has been testing a watermarking service as, "a key ingredient of next-generation TV in a world where advertisers and programmers are becoming more accustomed to two-way and

addressable advertising opportunities." (Verance, April 4, 2017)

In this report, we'll highlight each of these opportunity areas. the media and marketing data landscape to provide examples of the kinds of companies that broadcasters are or could be doing business with related to ATSC 3.0 data capabilities.

While this is a large list, it certainly is not exhaustive. As we'll discuss, there are over 5,000 companies in the marketing and technology ("martec") space, each playing some role with marketing data.

For convenience, we've included a separate listing of these Martec 5000 companies in the database. This broader listing provides a much deeper listing of firms that local TV broadcasters may wish to evaluate as possible vendors, partners, or customers.

The Business of Data

The data marketplace into which local TV broadcasters can enter is big business and growing both in magnitude and consequence. Firms are developing innovative approaches using data science and data engineering for using structured and unstructured data to build data-driven consumer profiles and drive strategic business insights. A promise of smarter uses of data is businesses can improve decisions and outcomes in everything from design-centered thinking for building customer-centric products and services to data-infused audience and consumer segmentation and targeting. This lets companies develop and deliver contextually relevant content across media platforms at scale mapped to audience interests and consumer purchase lifecycle journeys.

One study estimates the number of companies blending marketing, technology, and data in the martec landscape grew from only 150 firms in 2011 to over 5,000 by 2017 (Chiefmartec.com, May 2017). The Martec 5000 company landscape is dynamic with M&A, new entry, business model pivots and related name changes, etc. Overall, less than 5 percent of the companies listed in 2016 were removed, but the list grew by 39 percent, and ownership or name changes occurred for 3.5% of the companies between 2016 and 2017.

Because of how marketing and media data can interrelate, in some ways it makes sense for us to at least reference all Martech 5000 companies as relevant to the ATSC 3.0 data landscape. Depending on individual business strategies of local TV

companies, more or fewer of the Martech 5000 may be useful to planned business models.

We've come to a point where the primary value of goods and services produced for sale in core markets can be substantially enhanced by the monetization of data produced about these goods and services in adjacent markets.

Citing an example of creating value from data in the automotive industry, IHS Automotive concluded in a 2013 study that rich data assets in the auto industry can be sourced from the "OEM connected car landscape from a variety of Big Data assets found in the connected car – diagnostics, location, user experience (UX) /feature tracking, and adaptive driver assistance systems (ADAS)/autonomy." In other words, in addition to the primary value the industry creates by building cars, the "data exhaust" from these vehicles has substantial value to many firms in the supply chain.
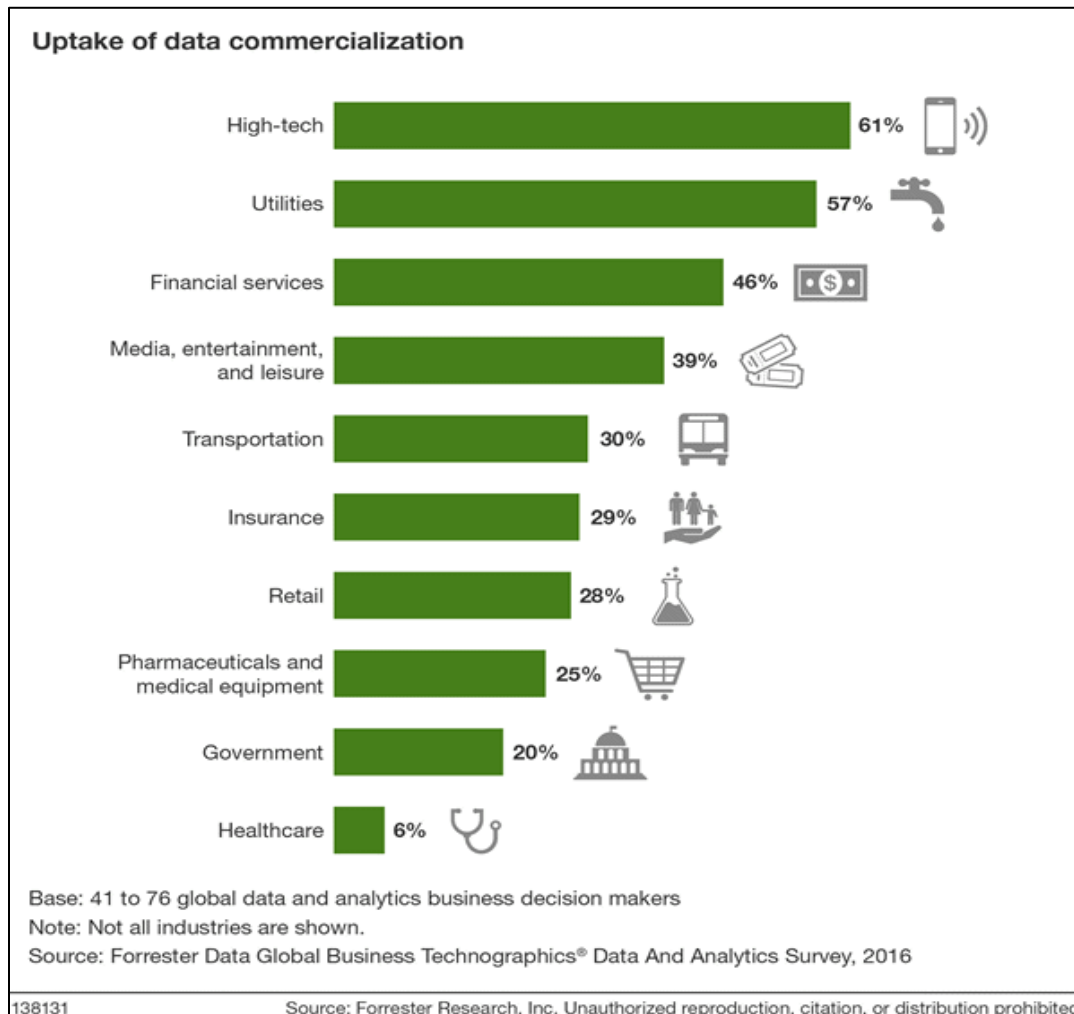
IHS forecasts that by 2020, 152 million OEM connected cars will generate 350 Mbps of data versus 15 Mbps in 2013. IHS figures this sums to 11.1 petabytes of the types of data they expect to be monetized for $14.5 billion. Indeed, John Ellis separately argues in his book, *The Zero Dollar Car,* that value of connected car related data may allow consumers to drive a car off the lot for free if they provide permission for all their data to be used.

All companies produce data whether it is their primary business or not. For many firms, a market opportunity adjacent to their primary business model is to sell access to the data they produce. Figure 1

illustrates the extent to which firms across different industry segments are monetizing data they generate. In Forrester's research, analysts consider data commercialization offers as ranging from direct sales of data to data-derived analytics and insight services. Overall, about one-third of companies have figured out ways to create value by sharing or monetizing the data they produce with customers or partners. High tech companies lead the way with 61 percent of these firms monetizing their data versus only 39 percent of media firms.

Local TV broadcasters can or could produce data relevant in the ATSC 3.0 data landscape including data about audience behaviors, advertising campaign outcomes, programming, tune-in, technical parameters, digital rights management, and utilization of devices and apps. This data has implicit and explicit value to local TV broadcasters both internally but also for potential commercialization to customers, vendors, and partners. When combined with other data, the value increases.

Figure 1. Update of Data Commercialization Across Industry Segments

Uptake of data commercialization

High-tech	61%
Utilities	57%
Financial services	46%
Media, entertainment, and leisure	39%
Transportation	30%
Insurance	29%
Retail	28%
Pharmaceuticals and medical equipment	25%
Government	20%
Healthcare	6%

Base: 41 to 76 global data and analytics business decision makers
Note: Not all industries are shown.
Source: Forrester Data Global Business Technographics® Data And Analytics Survey, 2016

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ATSC 3.0 Data Business Models

In this section, we'll highlight six data-centric business models that local TV broadcasters may consider developing as part of their business initiatives in the ATSC 3.0 data landscape.

The companies in our reference ATSC 3.0 Data Landscape Database provide these or similar services and could be useful for local TV broadcasters interested in considering these data-centric business models in ATSC 3.0 deployments.

First-Party Audience Data

Opportunity Assessment: Generate new insights and revenue sources to increase the value of local TV with the ability to collect and monetize first-party audience data that can be used to create incremental value internally and shared or licensed to partners and customers for new revenue streams.

Quick Take: TV broadcasters can collect viewing data from ATSC 3.0 compatible devices and services if all the pieces come together. Essentially, this means using an ATSC 3.0 supported dedicated return channel (DRC) to provide data back to the TV broadcaster indicating the content being displayed during specific times on an ATSC 3.0 device.

For example, let's say a new ATSC 3.0 compatible smart TV set connected to an over-the-air antenna is tuned to the local TV station's 6 p.m. news. Using the home's WiFi network or some other return path, the TV set tuning information can be sent back to the TV broadcaster using the ATSC 3.0 DRC. Similar information could be provided if that content was broadcast live but stored and accessed later that evening from a DVR or other type of media server. The TV broadcaster can now have a census-level view of content delivered to such devices. This is what is referred to in the industry as First-Party Audience (or Publisher) Data.

While this data has value, advertisers want information just not about the device or app, but rather deeper information about the households and individual audience members viewing TV on these services.

For the first-time broadcasters using ATSC 3.0 can collect and report their own audience data when a back-channel has

been enabled using an IP network. Since this can be a census of all audience members, it is called *deterministic audience data* versus the kinds of *probabilistic audience data* ratings firms use to produce their audience estimates including surveys, panels, and audience modeling built on these data.

The ATSC platform can uniquely identify audience members for example by linking to their device MAC (Media Access Control) addresses, or by linking to using user account information for app-based TV experiences. This new data capability allows broadcasters to compete with MVPDs' set-top box data and smart TV audience data for developing and targeting audience segments or even one-to-one content delivery.

The ability to collect first-party audience data comes with some policy concerns that will be new to many local TV broadcasters. *Personally Identifiable Information* (PII) such as name, address, phone number, email address, login IDs/PWs and other household and person identifiers create privacy concerns over how this data is handled.

We're already seeing how MVPDs' set-top box data is being used by network programmers and marketers to build out new approaches to audience segmentation and index-based media buying. This is not without a myriad of challenges, but audience-based buying in linear TV is

moving ahead. For example, *AdExchanger* reports that, "TV networks like Viacom, Turner and NBC Universal are deploying systems that allow marketers to do index-based buying. Viacom Vantage, for example, did eleven deals last year using "advanced currencies" – that is, deals that incorporate data from third parties like comScore or matched credit card data from American Express, instead of just Nielsen panel data. In this year's television upfront, that number is on track to triple" (*AdExchanger*, July 20, 2016).

The ATSC 3.0 standard provides a Dedicated Return Channel (DRC). This is quite significant to the topic of viewing measurement and reporting. Just as MVPDs can collect and license viewing data based on set-top box tuning and Return Path Data (RPD) from these STBs, so too can TV broadcasters now enter this market by providing their own first-party audience data of what is broadcast, when, to what devices.

Sinclair Broadcast Group executives embrace the opportunities ATSC 3.0 present for collecting first-party audience data. Chairman David Smith and president/CEO Chris Ripley shared some of their thoughts with *TVNewsCheck* (November 1, 2017). Smith said, "ATSC 3.0 is the advertiser's Holy Grail, given its expected ability to pinpoint who is watching and where they are."

The ability to measure and report their own first-party TV audience viewing data significantly advantages local TV broadcasters. TV broadcasters have long relied on independent, third-party firms to measure and report their audiences to the marketplace. In part, this is because of the expense, complications, and operational scale required to enter this business. Another major factor is the advertising industry's comfort level with the collection, processing and reporting of TV audience data by independent third-parties.

The two companies best known in the syndicated TV audience data business are Nielsen and comScore. These companies use a mix of panel, survey, MVPD set-top box and other data sources to produce both ratings and share information and to provide enhanced-data views of audiences used by the TV industry for selling and buying advertising and in making programming decisions.

Technology and advances in data engineering and data science creates the further ability to match viewing data from households and persons on an anonymized basis with a variety of other data sources.

This data infusion provides extended audience attributes for building deeper demographic, attitudinal and behavioral audience profiles. This process is seeded by publishers providing data about their own audiences, i.e., first-party data. First-party publisher data has been available to the media marketplace from digital media firms based on Personally Identifiable Information (PII) including email addresses or login information that can be mapped to device IDs. MVPDs similarly build assets from audience data collected from STBs and mobile apps.

To fully represent its viewing audience, local TV broadcasters would have to enable their DRC or through some other means collect return-path data from the variety of apps, devices, platforms, and services by which audiences can view their live linear and VOD programming.

There is a market for first-party local TV audience data. comScore and Nielsen and other firms interested in local TV data have licensed such data from MVPDs and smart TV firms. comScore's Rentrak business has long based its audience measurement services on set-top box data licensed from MVPDs. Comcast announced a deal in November 2017 to license its anonymized household-level viewing data from its subscribers to Nielsen to enhance its audience measurement and reporting service by getting data from millions of households. This follows discussion dating back to October 2015 suggesting that Nielsen would pay Comcast a reported $100M for an exclusive license to the data, according to a report in the *Wall Street Journal*. Similarly, in January 2017, AT&T and Nielsen announced a multi-year agreement for anonymized set-top box data from connected homes subscribed to AT&T's DIRECTV and U-Verse services that Nielsen will incorporate into its local and national TV currency ratings services.

Audience Analytics and Insights

Opportunity Assessment: Once first-party data is created, its incremental value to local broadcasters can be further enhanced by developing audience analytics and insights based on this data that can create value internally and shared or licensed with partners and customers for new revenue streams.

Quick Take: Collecting first-party audience data related to the devices receiving ATSC 3.0 broadcast content has value. But to maximize the value of the audience data, it must be enhanced to add household and person data attributes that can be associated with that viewing. For local TV broadcasters to monetize their first-party audience data more fully they will need to match their ATSC 3.0 device tuning data to households and people using a combination of deterministic and probabilistic data models. Once these additional attributes are mapped onto the primary viewing data, the ability to create sophisticated audience analytics and insights of value to the marketer and agency space is substantially enhanced.

While the ATSC 3.0 standards supports the ability for TV broadcasters to collect first-party audience data, this is a raw material that becomes part of a larger and complicated process to produce audience measurement and reporting systems and the kinds of analytics, insights, and trading platform services that the market wants. With ATSC 3.0's enhanced capabilities to serve mobile audiences, that brings in a whole new element to the data landscape including companies specializing in location data and intelligence.

ATSC 3.0 first-party data brings forth a fresh set of unique audience data, but there are many workflow steps to cleaning up the data, combining it with other data sets to make it more valuable, and integrate it into planning and trading platforms. The good news is that broadcasters do not to take on this challenge alone. There are hundreds of companies, platforms, and exchanges that broadcasters can work with to bring their first-party data to market. As one example, Oracle has a data management platform (DMP) that provides licensed access to consumer and audience data from over 70 firms such as Edmunds, Acxiom, TiVo Research, and FourSquare. Other data management platform companies working with local TV broadcasters include Deep Root Analytics and Lotame.

In addition to hosting, staging, providing licensed access to an aggregation of data from various sources, the data industry has many companies that provide audience and consumer analytics and insights solutions. These firms use machine learning, artificial intelligence, data science, data engineering, and other techniques to extract, load, transform data from disparate data sets and perform analytics. The goal is to provide actionable insights about consumer behaviors, attitudes, and propensity for making certain decisions using more than gender and age as has been so typical of the linear TV industry in the past.

Audience analytics and insights firms can utilize ATSC 3.0's deterministic audience data and combine it with other data matched on a person or household level to create one-to-one person level and broader consumer segmentation profiles with thousands and thousands of attributes.

Addressability and Personalized Content Targeting

Opportunity Assessment: Using addressable technology to identify content combined with the ability to identify and target specific devices, local TV broadcasters can compete in the growing market for addressable TV advertising. Beyond targeting broadcast audience members with personalized content, device and audience graphs can be built using the ATSC 3.0 audience data to follow audience members across platforms. TV broadcasters can match enhanced audience data from third-parties to first-party audience data on a household or even persons basis. This data can be used identify and target audiences for addressable TV campaign. For example, a local car dealer might want to target an in-market SUV buyer with a household income of $100K+ located within 20 miles of their dealership with a 30-second spot using creative designed to appeal to them. Beyond addressability, broadcasters can also show attribution. In this example, using data that connects that TV viewer to their mobile phone, data can show the TV triggered a mobile search that then led to booking an appointment and test drive at a local car dealer. That kind of attribution increases TV's value proposition to advertisers.

Quick Take: The ATSC 3.0 standard uses IP-enabled back-channels to determine what audience members are watching and to target personalized content to audience members based on their individual profiles. For example, based on location, interests or other factors, broadcasters can provide targeted content including programming such as news zone feeds, personalized advertising, or public service alerts and warnings. This ability to address content targeted to households and people based on specific attributes provides a set of monetization and service opportunities for broadcasters.

Earlier we identified ATSC 3.0 broadcasters' ability to use an IP back-channel to identify who is receiving their programming (e.g., at the device MAC address or user account level). Building this deterministic audience data set is step one. Step two is further matching that data with other data sets to add household and person level attributes. This is where the big pay-off comes in terms of where audience-based buying is headed. Step three, and a big one, is productizing the data for commercial applications including appropriate data handling, data governance, analytics, reporting and industry acceptance.

The media industry deploys addressable advertising solutions in the national TV advertising market primarily using MVPD set-top box and smart TV device level data Addressable linear TV advertising is just entering the local TV market. The market for addressable linear TV advertising has grown from $410 million in 2015 to $2.25M in 2017 with a forecast growth to $3.04 billion, according to *eMarketer* (July 2017). In Figure 2, we show the basic workflow for an addressable linear TV campaign.

Nielsen has been making acquisitions and evolving its business model to address opportunities in ad targeting. Kelly Abcarian, senior vice president of product leadership at Nielsen, explained that the goal is to bring "person-level television data" to digital marketing and "bring the scale to a whole new level" (*TechCrunch*, October 31, 2017). Nielsen acquired eXelate in 2015 and Gracenote in 2017 to increase its presence in the digital advertising and targeting business. Gracenote uses its Video Automatic Content Recognition technology that is embedded in 27 million

smart TVs to analyze video images in real time to measure content viewing. Gracenote's VP of product personalization Sherman Li said, "this information has already been used to power a variety of smart TV features like content recommendations, and interactive ads."

With ATSC 3.0's ACR and device targeting, specific ad content now can be addressed to different consumer segments. This allows local TV broadcasters to become competitive with audience data and insights compared with what smart TVs and MPVDs can offer.

As with the example below provided by Experian, the advertiser can build target audience segments created drawn from thousands of attributes in first-party, second-party, third-party data. These audiences, typically at the household level, are match on an anonymized basis by a "safe harbor" data platform to identify the households in the MVPD subscriber base fitting the target profile. When a TV commercial runs, different household segments will receive TV ads targeted to them based on their data profiles.

In addition to targeted advertising, local TV broadcasters can transmit other types of content to specific households. For example, in the Washington, DC or New York, NY markets viewers from at least three states watch the local TV stations. Political advertisements, news, weather, and other content can be broadcast and displayed only on TV sets or other ATSC 3.0 devices based on targeting criteria. News

and ads relating to local political races in Connecticut no longer must be shown to all TV households in the market but instead only to selected households where interest is likely to be higher.

Figure 2. Workflow for an Addressable Linear TV Campaign

Source: Experian, 2016

TV and Multi-Touch, Cross-Platform Attribution

Opportunity Assessment: Ad spending is shifting to digital media in part because marketers can track campaign performance in ways they cannot in broadcast TV and so have more confidence in digital platforms. With the ability to track TV ads and show attribution, local TV broadcasters will become more competitive with digital media.

Quick Take: To this point, we've discussed how the ATSC 3.0 platform can acquire first-party audience data, create audience analytics and insights, and target specific content to addressable devices. This set of capabilities can be further applied to creating attribution metrics for linear TV advertising by local broadcasters. Simply put, with addressable technology, the local station can know what TV ad is broadcast to a home or person (as mapped to the relevant devices).

This data measuring audience exposure to a TV ad that is then matched to a household or person can be further matched to other devices and data sets to show subsequent outcomes including store visits, purchases, tuning or other relevant behaviors on the ATSC 3.0 platform as well as other platforms to which the household or person can be matched. A local TV station can show data that an ad is delivered to a specific set of homes, and then show via other databases what happens next. In some cases, the TV data can be further matched to household or person IDs to show cross-platform outcomes. This type of attribution is extremely valuable to marketers trying to understand and optimize cross-media impacts.

Forbes provides the example of iSpot as one of the first companies to launch multi-touch attribution tracking for TV using ACR data

and using Inscape to map to its universe of 7.3 million smart TVs connected to the Internet" (*Forbes*, October 30, 2017). Since the iSpot and Inscape solution collects ACR data at the TV set level, it can show what programming was displayed from whatever is connected to that smart TV including OTT, MVPD or broadcast programming. This is valuable to marketers who want to know what ads are seen in TV households and what happens next. However, a footprint of 7.4 million smart TVs, while sizable does not tell the bigger story of what's happening across all TV households.

This capability led *Forbes* to conclude, "One of the key benefits of digital advertising – at least for brands – is that it is extremely measurable and trackable...TV, on the other hand has no such metrics...Until now that is."

This smart TV-based solution is attracting significant excitement and growing support in the TV and advertising industry. This is an important proof point for the similar capability to measure and track audiences that ATSC 3.0 brings to local TV broadcasters. This will help local TV better compete with trends toward increased spending by marketers in digital advertising.

In Figure 3, we show BIA's forecast that of $174.5 billion spent in advertising targeting local audiences by 2022, $78 billion or 45 percent will be spent in digital media. This is up from 32 percent in 2017.

Figure 3. Ad Spending Shifting to Digital Media

Note: Numbers are rounded.
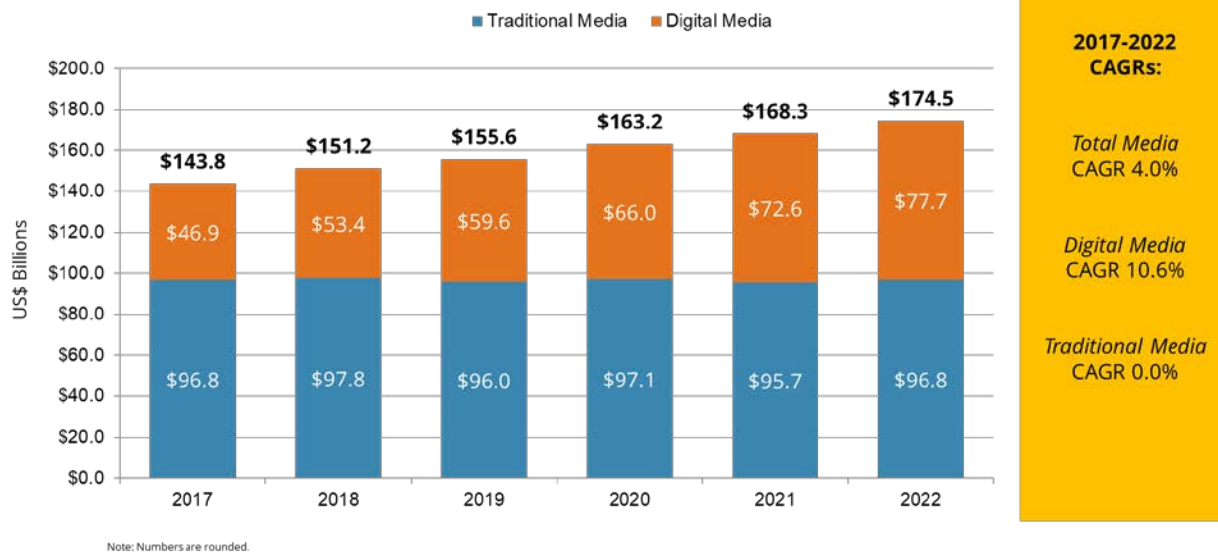
Source: BIA Advisory Services, January 2018

Data Delivery and Content Distribution Networks

Opportunity Assessment: Since ATSC 3.0's uses Internet Protocol for its data format, it offers compatibility with a range of data networked devices, applications, apps and can provide content distribution services for third-parties to develop incremental revenue streams.

Quick Take: ATSC 3.0 local TV stations can provide broadcast wireless point-to-multipoint IP data delivery at scale in local market geographies. This last mile data delivery service can address demand for services to reduce network congestion, provide wireless connectivity for connected cars, and other Internet connected devices and appliances, and distribute third-party data over ad hoc or standing ATSC 3.0 Content Distribution Networks (CDNs). Wired and wireless broadband connectivity supports one-way and interactive data services. When combined with ATSC 3.0 data networking, an enhanced set of capabilities become available to the market.

One example of the kinds of opportunities ATSC 3.0 broadcasters have in the data delivery marketplace is the collaboration between NAB's PILOT program and GENIVI (a nonprofit industry alliance committed to driving the broad adoption of open source, In-Vehicle Infotainment (IVI) software and providing open technology for the connected car.)

PILOT's early work with GENIVI focuses on the role of broadcast radio in the in-vehicle infotainment and connectivity experience. With the ability to deliver data to ATSC 3.0 vehicle infotainment systems, local TV broadcasters have access to a significant new market segment, the in-car audience.

Some local TV broadcast groups have evaluated opportunities in the data delivery and CDN market segments and concluded future opportunities to be competitive are slim. Others are more sanguine. Several broadcast groups including Sinclair Broadcast Group, Northwest Broadcasting, Nexstar Media and Univison, formed a spectrum

collaborative that is, "is particularly invested in developing products and services associated with ATSC 3.0 and monetization opportunities such as spectrum utilization, virtual MVPD platforms, multicast channels, automotive applications, single-frequency networks and wireless data applications" (*FierceCable*, June 15, 2017).

The spectrum consortium considers another opportunity for local TV broadcasters is providing a nationwide Content Distribution Network that could be used by customers like Akamai and OTT players like Netflix deliver content to local servers as a means for managing edge congestion in the data distribution market.

Public Service, Alert, and Warning Systems

Opportunity Assessment: The ATSC 3.0 standard supports Advanced Emergency Alerting. This allows local TV broadcasters to provide substantial more informative, relevant and targeted alerts and warnings ATSC 3.0 compatible devices both for enhanced public service and to develop incremental business opportunities.

Quick Take: The local TV industry's public safety initiatives are advanced by a non-profit industry collaboration, the Advanced Warning and Response Network (AWARN). AWARN's mission is to use, "next-generation terrestrial broadcasting to deliver rich-media, geo-targeted public alerts. AWARN wakes up devices, delivering alerts even when the cellular network is jammed or the power grid is down." AWARN membership includes broadcasters, tech companies, public service agencies.

The final business model we'll consider in this report relates to the enhanced types of public

alert and warning systems that ATSC 3.0 can support. With its native IP data format, ATSC 3.0 can broadcast alerts and warnings to any fixed or mobile device that can receive its signals and provide not just the Emergency Alert System (EAS) messages, but also much more in-depth data.

The Advanced Warning and Response Network (AWARN) is an industry-supported proponent of ATSC 3.0 solutions for public warnings. AWARN describes its technology solution as an, "open standards-based, terrestrial broadcasting of public alert and warnings." AWARN states that it will, "have the capability to distribute rich media alerts simultaneously to an unlimited number of enabled fixed, mobile, and handheld devices, indoors or outdoors across an entire television broadcast coverage area. The capabilities of AWARN will far exceed warning and disaster recovery communications currently available to the American public."

AWARN provides use case examples on its website, including:

- *Data delivery of multimedia alert content*. This could include video, radar images and evacuation maps; text, photographic, or pictorial instructions; inundation maps; plume models for chemical or radiological releases; and shelter locations, treatment protocols, and other recovery information. Alerts can be geotargeted and trigger devices to wake-up and deliver alerts.

- *Multilingual and accessible alerts*. Features such as text-to-speech and vibrate-upon-alert for mobile devices, along with all the rich media content available to users, mean that AWARN alerts will reach many more Americans, including those with aural or visual impairments.

Executive Interviews

For this project, we conducted a series of interviews including senior executives from the companies listed below to get a broader sense of views towards the ATSC 3.0 Data Landscape.

- Acxiom
- Akamai
- ATSC
- BitCentral
- CableLabs
- comScore
- DMI
- GroundTruth
- Imagine Communications
- Lotame
- NAB
- Nielsen
- Pearl TV
- Sinclair Broadcast Group
- SintecMedia
- Verance
- Videa
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Rick Ducey is managing director, leading BIA's strategy consulting practice. He assists clients with their business strategies and revenue models, market and assessments, product roadmaps, and designing and implementing strategies for leveraging video assets and inventory in local markets. Ducey also serves as practice lead and adviser to BIA Capital, a specialized, research-oriented investment bank serving the communications, digital and traditional media industries.

Ducey is a sought-out expert for his analysis and insights for how disruptive technologies, business models, emerging competition, shifting consumer demographics, and media usage trends drive changes in the media ecosystem.

Prior to joining BIA in 2000, Ducey was senior vice president of NAB's Research and Information Group where he led the Association's research and information technology strategy initiatives and practice areas. Ducey was recognized in academia as the 2011 Shapiro Fellow at George Washington University, where he teaches entrepreneurship in digital media. He has also taught on the faculties of Michigan State University, George Mason University, and the University of Maryland.

Ducey received his B.A. from the University of Massachusetts at Amherst, M.S. from Syracuse University, and Ph.D. from Michigan State University.

About BIA Advisory Services

Local media is one of the fastest moving industries of our time. And BIA Advisory Services has been at the center of it for more than 30 years.

BIA Advisory Services is the leading research and advisory firm focused on the advertising and marketing marketplace. We have proven advisory services and consulting methods that put our clients in the best possible position to compete and stand out in today's multiplatform, interactive world.

Our research, forecasts, industry analysis, competitive intelligence and industry-leading analyst team propel our clients' success forward. Put yourself in the best possible position to compete and win — turn to BIA Advisory Services.

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