



# NEXTGEN BROADCASTING'S STRATEGIC JIGSAW PUZZLE

JERALD FRITZ

EVP, STRATEGIC AND LEGAL AFFAIRS

ONE MEDIA 3.0

Transforming a company (much less an entire industry) to take advantage of a disruptive technology requires a robust strategic vision. With so many ongoing projects related to NextGen Broadcasting, it sometimes feels like we're playing a reactive game of Whack-A-Mole with no apparent ties to link the varied projects surrounding these dynamic new capabilities inherent in this new standard.

In fact, however, there is a coherent vision. It is one that provides a path to serve our communities better and implement exciting new business opportunities. ONE Media/Sinclair has taken a holistic view to guide our efforts. The jigsaw puzzle pieces do indeed fit together. This is a good opportunity to step back and show how they interconnect.



## 1. DEPLOYMENT

**BROADCAST STATIONS.** To enable all the new NextGen Broadcast services domestically in the U.S., broadcasters need to deploy the NextGen technology. It's a complicated process. Rather than being granted a temporary second channel to achieve a mandatory transition, the NextGen deployment is a voluntary one that relies on channel sharing among fierce competitors. Fortunately, we as an industry (commercial and public broadcasters), have been remarkably successful in working together to deploy this technology. In just two years, we have seen NextGen Broadcast services deployed in over 45 markets covering more than half the U.S. population. Our company alone has led the transition in 33 markets where we are the NextGen host in 17 of them. The industry's plan is to have NextGen coverage of 75% of the country by the end of this year. That's a remarkable achievement – but it's not simple. Market-by-market deployment is a painstaking activity involving complex channel mapping to assure current signals are carried in both the current and new standards, program rights consents to move content around, multiple hosting agreements, intricate infrastructure buildouts and regulatory licensing/notice requirements. It's surely not an assembly line process, but the industry is making significant progress.

**SINGLE FREQUENCY NETWORKS.** Station deployment will be enhanced with the provisioning of Single Frequency Networks. These fill-in nodes, similar to cellular deployment, will dramatically improve reception of NextGen services in clutter and terrain-challenged areas. Working with our colleagues at Saankhya Labs in India, ONE Media/Sinclair is testing micro-transmitters – Broadcast Radio Heads and Gap Fillers – that can be interconnected around a market to augment reception on the same channel as the main broadcast signal. Several tests are planned in Sinclair markets and in India to determine the most efficient placement and reception contours of these nodes. These and other tests are refining the predictive software tools that allow for better planning of future network configurations in differing topographies.

**MARKETING.** Since there is no national “flash cut” date to deploy NextGen Broadcast services, marketing the deployment is necessarily limited and is tied to the sale of receivers capable of decoding the NextGen signal. Collaborating with our colleagues at Pearl TV, Sinclair stations have been at the forefront of pushing the sale of NextGen TV receivers in deployed markets.

**RECEIVERS.** Transmission and reception are the essential symbiotic keys to NextGen Broadcast deployment. Deployment of both together is an absolute necessity. Fortunately, the consumer electronics industry recognizes the advancements enabled by NextGen technology and is producing multiple new ATSC 3.0-capable receivers under the trademark “NextGen TV.” The more stations that are deployed and the more NextGen receivers sold, the faster the migration to the new standard.

- **TESTING.** Our ONE Media Lab facility is working in close collaboration with these manufacturers in testing their equipment to ensure NextGen advanced applications are decodable and stable. Compliance and conformance testing is an ongoing effort and is necessary to accelerate receiver acceptance and deployment.
- **PATENT LICENSING.** ONE Media was also at the forefront in developing a now-completed, one-stop licensing patent pool under the administration of MPEG LA to ease the process for the manufacturers. This pool is geared to incentivize them to develop and distribute more NextGen-capable receive devices.
- **MOBILE DEVICES.** Through our affiliation with Saankhya Labs in India, ONE Media has also led the development of NextGen mobile phones complete with embedded semiconductor chips designed and built for the new standard. That mobile capability is one of the key enhancements over the previous digital transmission standard, which abandoned any focus on portable television just as mobile phone use was exploding. The “mobile first” strategy views TV broadcasting as more than linear program distribution to the home. It’s an essential strategic ingredient to expand content delivery to users on the move while also providing new data reception devices for innovative uses. ONE Media’s involvement with the NextGen Video Information Systems Alliance – NVISA – supports an industry coalition dedicated to advanced services and applications of the new standard.

**SECURITY.** Deployment of NextGen content works only if content owners are assured that their product is protected from unauthorized use and reuse. Copyright owners rightfully and jealously guard their valuable product and they expect any transmission system to be secure.

- **A3SA.** To encourage full participation and investment in the NextGen ecosystem, it is critical that content providers, broadcasters, device manufacturers, and consumers can trust that their content, services and information are protected and secure. To this end, the ATSC 3.0 Security Authority (“A3SA”) has been formed to develop protocols for securing ATSC 3.0 broadcast services by leveraging the same tools Web-based content services use (*i.e.*, IP-based encryption protocols, device certificates and rights management technology), all in conformity with the ATSC security standards. ONE Media has been an active participant in working with A3SA to provide device manufacturers and broadcasters with access to protection and security credentials that will enable secure delivery of high-value television content through the use of the ATSC 3.0 standard.
- **EDGE GATEWAY APPLIANCES.** Providing a broadcast competitor access to a station’s transmission infrastructure is a “swallow-hard” step in trusting that no harm will be done to those facilities. Enhancing that trust in a tangible way is critical. Through CAST.ERA, Sinclair’s joint venture with South Korea’s leading mobile operator SK Telecom, the company has developed an EGA – an Edge Gateway Appliance – that permits a secure way for guest stations to access their allocated portion of NextGen spectrum on an ATSC 3.0 host station. The new product provides the peace of mind necessary for a station to permit the full exploitation of the shared spectrum required in a transitional deployment environment mandated by the FCC.
- **INTERNATIONAL.** Expanding the acceptance and deployment of NextGen Broadcast capabilities throughout the world opens vast new business opportunities for U.S. companies. Of the four primary digital terrestrial standards for transmitting broadcast content, the newest and only standard based on the Internet Protocol (IP) is ATSC 3.0. The importance of international deployment can’t be overstated. That is why Sinclair/ONE Media has invested time, money and energy in working with the ATSC, foreign governments, international regulatory bodies and academic research institutions to advocate for the adoption of the standard. Those include the Electronics and Telecommunications Research Institute (ETRI) of Korea and the Indian Institute of Technology, Kanpur (IITK).

- **ITU APPROVAL.** Through extensive efforts within the U.S. government coordinated by the FCC, ONE Media played an integral part in the adoption of the NextGen Broadcast standard by the International Telecommunications Union – ITU. With that “stamp of approval,” ATSC 3.0 can flourish in multiple countries beyond South Korea and the U.S. Acceptance of the new standard by countries that have yet to transition away from analog services or by nations looking to enhance the use of underutilized broadcast spectrum, can provide a much-needed economic boost and a tool to countries looking to “refarm” this scarce resource.
- **ITU ONGOING RAPPORTEUR GROUP.** Ongoing work at the ITU through an ATSC 3.0 Rapporteur Group led by Sinclair/ONE Media is focused on multiple Recommendations and Reports to provide needed clarity for introduction, adoption and implementation by other countries. This effort is supported by ATSC’s own international implementation team to develop applications that can be implemented by the rest of the world.
- **INDIA – DIRECT-TO-MOBILE DEMONSTRATIONS AND MARKET DEVELOPMENT.** Sinclair/ONE Media’s partner Saankhya Labs is executing a live Proof-of-Concept project with multiple use cases in India. Saankhya is working with that country’s telecom and broadcast stakeholders to facilitate NextGen opportunities, including convergence with 5G telecom standards and device development for a billion-person subscriber base.
- **WESTERN HEMISPHERE EXPANSION.** Similar work in Brazil is geared to assisting that country in converting its less efficient standard to ATSC 3.0. Efforts within CITEL, the Inter-American Telecommunications Commission, are focused on expanding the understanding and eventual approval of the NextGen standard throughout the Western Hemisphere. That work has already borne fruit as Jamaica has recently moved to make ATSC 3.0 its national standard. Similar efforts are also underway in Central America. Active in the North American Broadcasters Association – NABA – Sinclair is at the forefront of this coordinating mission to expand the use of NextGen technology.
- **ATSC PT6 – GLOBAL OUTREACH.** The ATSC itself is engaged in expanding the number of countries that may be candidates for adopting the NextGen standard. Chairing the Sub-Group, Sinclair has developed administrative metrics with weighting to consider pertinent factors on the optimum candidates. Preliminary targets have been identified, with plans to introduce the advantages of ATSC 3.0 to several countries, regions and continents.

## 2. DATACASTING



**MAKING THE MOST OF SPECTRUM.** Across industries and around the world, virtually every spectrum user is constantly striving to improve service offerings with existing spectrum. The beauty of the IP-based NextGen transmission standard is that broadcast spectrum can be used for so much more than simple delivery of one-way, unenhanced television program streams. In economic terms, this is the market’s way of maximizing productivity and is the essence of how spectrum can be used most effectively. In business terms, it permits broadcasters to match and exceed the best features of competing video delivery platforms while also bringing new services to the public that will provide new revenue streams. This has been a part of the “digital promise” since broadcasters converted from analog transmissions and has been anticipated by regulators and broadcasters alike for several years. Developments to-date justify analysts’ predictions that, in the next decade, broadcasters will develop a third revenue stream as robust as advertising and retransmission fees.

- **SPECTRUM AGGREGATION.** While individual broadcasters will use a portion of their NextGen spectrum capacity for traditional linear video services, they may use any “excess” capacity for datacasting. Scaling that service on a regional and national basis will require broadcasters to aggregate their capacity and offer it for non-video use cases. The fundamental mission of BitPath, the joint venture between Nexstar and Sinclair, is this aggregation process. Among the several initial data uses that BitPath and others are demonstrating are:
  - **AUGMENTED GPS.** BitPath has demonstrated its NavPath™ and BitPoint™ systems which can put broadcasters in the center of the fast-growing Positioning, Navigation and Timing market while enhancing their public service commitments. Using a trivial amount of a station’s ATSC 3.0 capacity, these services can provide vast improvements to location accuracy for an unlimited number of users, vehicles and devices – all at a small fraction of the cost of existing services. These new BitPath service offerings will support dozens of use cases, including Internet of Things applications, autonomous vehicle tracking, precise drone delivery, and emergency response. BitPath has committed to provide both services at no charge to public safety first responders.
  - **ELECTRONIC VEHICLE CHARGING STATIONS.** The first commercial announcement of datacasting integrates Sinclair’s spectrum delivery capabilities with USSI Global’s electronic vehicle charging stations. These types of data delivery services are just the precursors of many more applications to come.
  - **ADVANCED EMERGENCY INFORMATION.** The targeting and IP capabilities built into the NextGen Broadcast standard make advanced emergency information services a natural fit for broadcasters. The expanded capacity of NextGen broadcasts combined with its pinpoint targeting capabilities enables more than a simple crawl on the screen warning of a crisis. Now, viewers can see the weather report, Doppler Radar images, evacuation routes, and shelter locations, and hear them in multiple languages. Similarly, a hazmat spill, school lockdown or AMBER alert can be targeted to specific geographic regions, and viewers can have instant access to critical information. And since the over-the-air broadcast system architecture is based on a “one-to-infinite” capability (where the system can never be overloaded), it provides a RELIABLE and dramatic enhancement to current emergency notifications.
  - **ELEARNING.** NextGen’s datacasting capabilities are being specifically targeted for enhanced e/ and distance learning. The need for these services was dramatically demonstrated during the COVID pandemic as educators struggled to reach students where broadband connectivity was limited or unavailable. All broadcast stations – commercial and public – will have the capability to improve the learning environment of students dramatically across the country, especially in places where the Internet just doesn’t reach. In cooperation with SpectraRep, Sinclair has been demonstrating those services over existing NextGen stations. Today that’s done with a separate reception box – a gateway – but tomorrow the reception capability will be built into all receives.



### 3. CORE PLATFORM DESIGN AND IMPLEMENTATION

#### STANDARD SETTING.

- **CORE NETWORK.** Connecting multiple NextGen-transmitting stations with potential customers in need of datacasting capacity is an enormous challenge. That infrastructure does not yet exist but is in an active planning stage. ATSC’s Technology Group through its S43 Specialist Group has taken on this important challenge of developing a “core network” that

will enable datacasting and permit it to scale across multiple stations and markets. Sinclair/ ONE Media is at the forefront in submitting proposals on how this core network should be developed and deployed.

- **BROADCAST MARKET EXCHANGE (BMX).** Our goal is to maximize the efficiency of matching aggregated spectrum capacity from multiple broadcasters with the needs of data users. This will eventually be accomplished in the cloud using artificial intelligence in a broadcast market exchange – BMX – giving data users and other distribution platform operators an alternative distribution tool. Sinclair has been at the forefront of designing the underlining BMX superstructure.
- **DATA PROVISIONING.** Leveraging its experience in artificial intelligence as a way of managing 5G networks, Sinclair’s CAST.ERA joint venture partner, SK Telecom, brings to the core network development high-quality, ultralow-latency services regardless of a user’s device type and specification. This capability will be enormously beneficial as broadcasters play an important supplementary and complementary role in converged 5G services with other telecom distribution platforms. It will be especially important for data offload use cases and supporting autonomous driving vehicles.



#### 4. VIDEO ENHANCEMENTS.

- **BROADCAST APP.** Merging over-the-air and over-the-top programming is a revolutionary capability built into the NextGen Broadcast standard. Enabling that feature is the Broadcast App. Viewers today are agnostic on how they receive TV programs so long as the quality is equivalent between providers. Understanding that broadcast and broadband services can be merged to provide the best of over-the-air and Internet-delivered content is a key factor in the new delivery ecosystem. That interactive technology allows viewers to choose content regardless of how it gets to their screens. Sinclair has developed Broadcast App functionality to be delivered both over-the-air (to fixed and mobile devices) and via broadband, and it has offered this capability to the entire broadcast ecosystem on an open source basis so as to incentivize the creative community to use the app and accelerate new datacasting uses.
- **TRADITIONAL TELEVISION QUALITY.** The vibrancy, clarity, detail, luminosity and brilliance of NextGen Broadcast pictures make them almost seem three-dimensional. The signal delivered by Sinclair in all of its NextGen markets employs the single layer system (SL-HDR1) developed by Technicolor. This standard allows a broadcaster to deliver pictures in both standard and high definition simultaneously with TV sets automatically rendering the appropriate picture for that set. By using this technology, broadcasters can efficiently create and deliver content, eliminating the need for sending two separate streams. This solution permits broadcasters to serve both newer HDR-capable screens and those without the capability, recognizing that not all viewers have the latest TV sets available.
- **CONTENT PERSONALIZATION.** The strategic importance of the ATSC 3.0 standard with respect to traditional linear video program services is enabling broadcasters to target content and advertising, both geographically and demographically. Applications for personalized content and ad sales are an attractive strategic goal. There continues to be development in the overall advertising ecosystem. In many ways, the technical side of providing personalized service – advertising, messaging, informing – is not a barrier within the NextGen world. The complex nature of advertising and personalization and the role of data analytics in driving relevant consumer-facing advances is maturing. It is expected that over the next 2-3 years, dynamic ad insertion and other targeting capabilities will make their way into the NextGen market and become a real economic driver.



#### 5. GOVERNMENT OVERSIGHT



Broadcasting as a regulated medium has undergone profound changes from its beginnings in the mid-1920s to today. Still viewed by many as a “siloed” service, broadcasters must negotiate several unique rule sets that are not applicable to other spectrum users. The convergence of broadcast and broadband distribution interjects some regulatory uncertainty into how broadcasters are perceived. Digital bits are bits, and it should not matter conceptually the content of those bits. Meeting broadcasters’ Public Interest responsibilities for video services is not mutually exclusive with providing enhanced datacasting services. Rationalizing different sets of rules, however, requires attention.

The FCC is focused on protection of current over-the-air viewers from being disenfranchised. At the same time, the Commission has actively encouraged the efficient use of spectrum and welcomes datacasting uses like advanced emergency information and e/ and distance learning. As a result, Sinclair/ONE Media, along with the rest of the industry closely monitors and presses on multiple ongoing issues to ensure that this precious resource can be maximized. Those issues include:

- Spectrum reallocation from broadcasting to other uses (e.g., commercial wireless and unlicensed);
- Rules on spectrum licensing and use for single frequency network propagation using the Distributive Transmission System (DTS);
- Protecting Single Frequency Network expansion from White Space device interference;
- Reception standards for new devices;
- Emergency alerting rules;
- Streamlined licensing procedures to permit more rapid deployment of NextGen services; and even
- Obtaining simple experimental Special Temporary Authority to conduct much needed testing.

These proceedings and many others require engaged advocates to protect and realize our strategic vision.

**STRATEGIC VISION.** All of these jigsaw puzzle pieces form a mosaic of interrelated activity. Linked appropriately, the strategic vision melds the multiple disparate activities: **Deployment** (in all its related areas of intense activity domestically and **Internationally**), **Datacasting** (with its new business potential), **Core Network Design** (with its critical infrastructure), **Video Enhancements** (to upgrade existing offerings); and **Government Oversight** (that enhances and protects our ability to grow). Together they form the vision which is simply: evolving and improving our service to the public while making:

