

Regional Spotlight

North America



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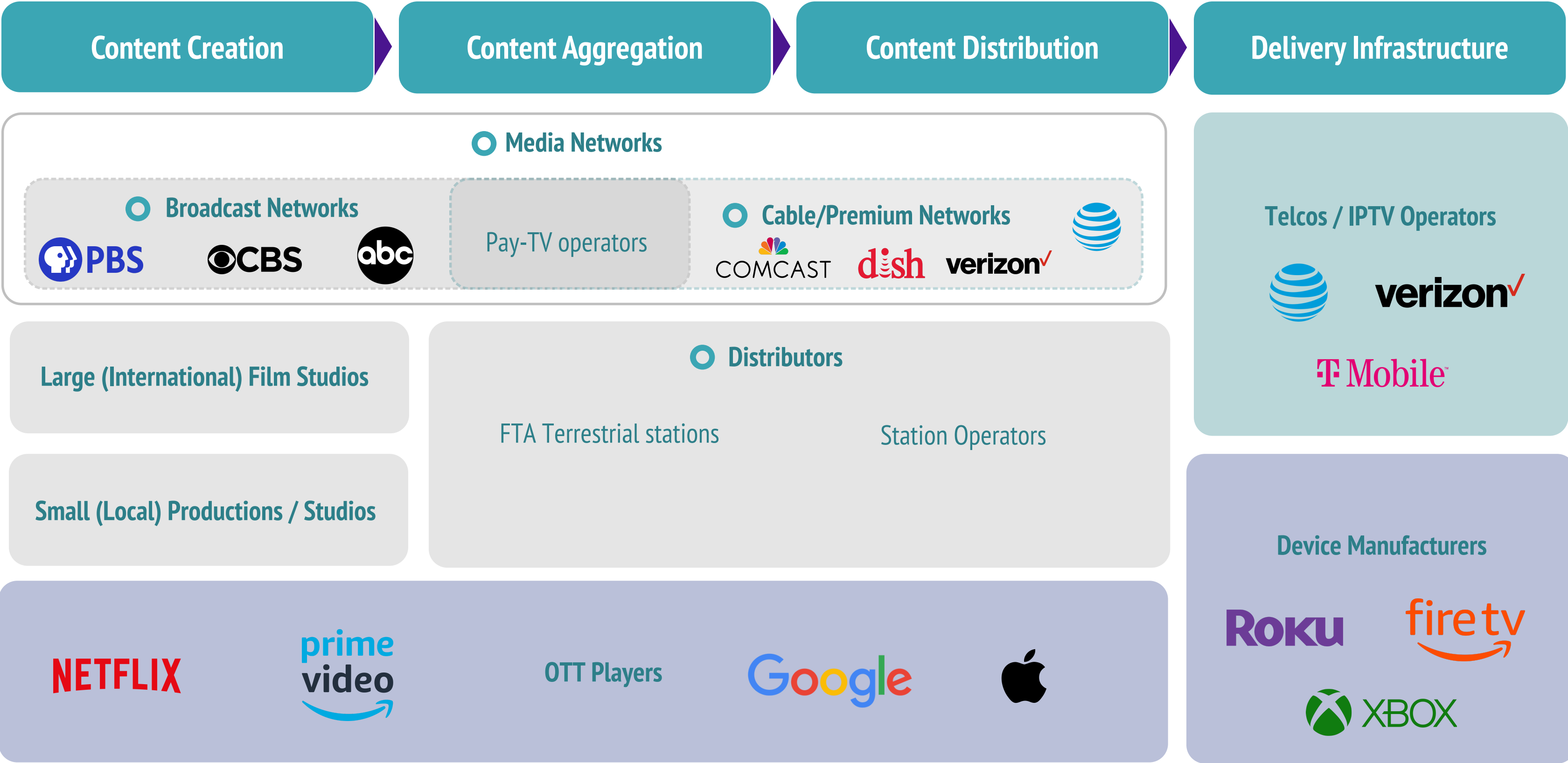


The Broadcast & Media Ecosystem

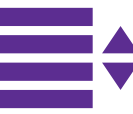


Key stakeholders

= Traditional tech users = Streaming native = Telecom



Sources: IABM



The Broadcast & Media Ecosystem

Traditional tech users - From Pay-TV to OTT



The US broadcast market - forming the world's largest advertising market - is dominated by private media organizations compared to Europe, where public service broadcasters (PSBs) play a major role.



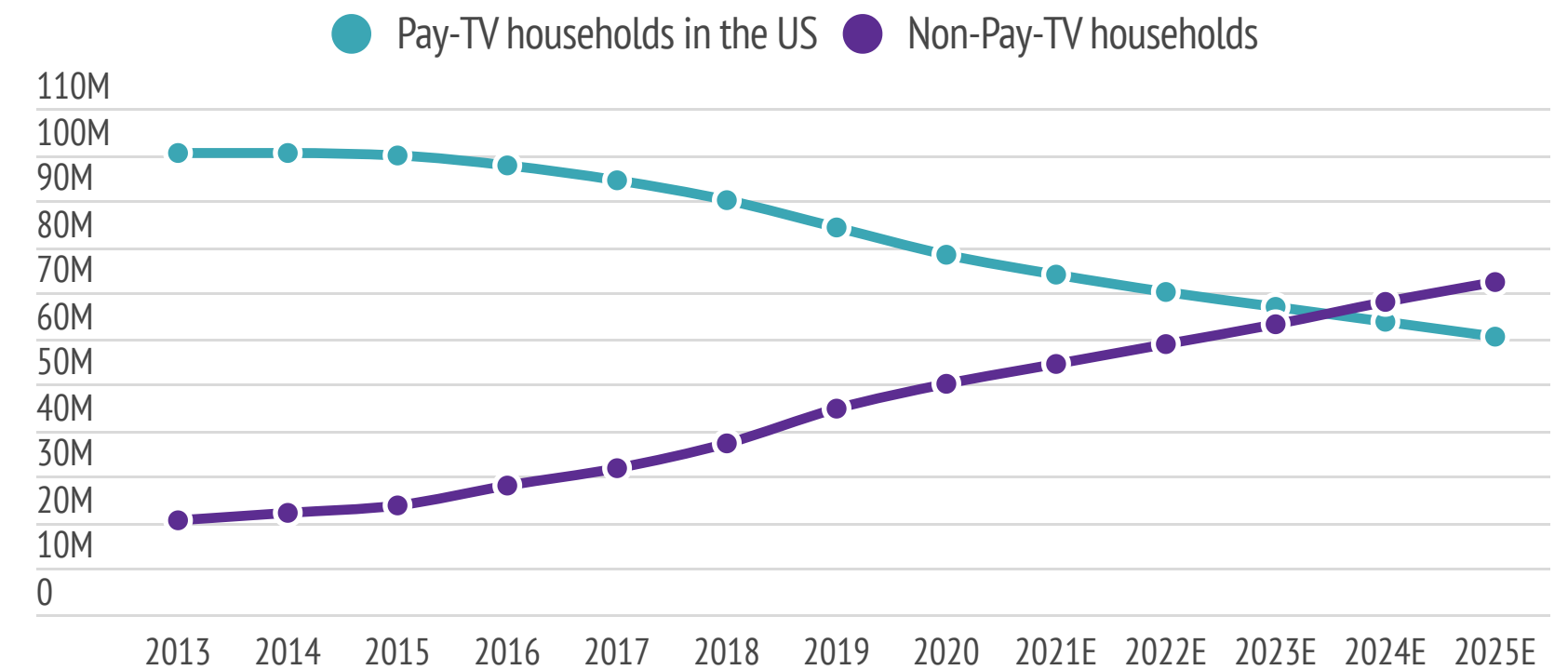
The content-led streaming boom caused by the COVID-19 pandemic accelerated cord cutting in the US, pushing cable and satellite Pay-TV businesses to further streamline their operations and move to DTC business.



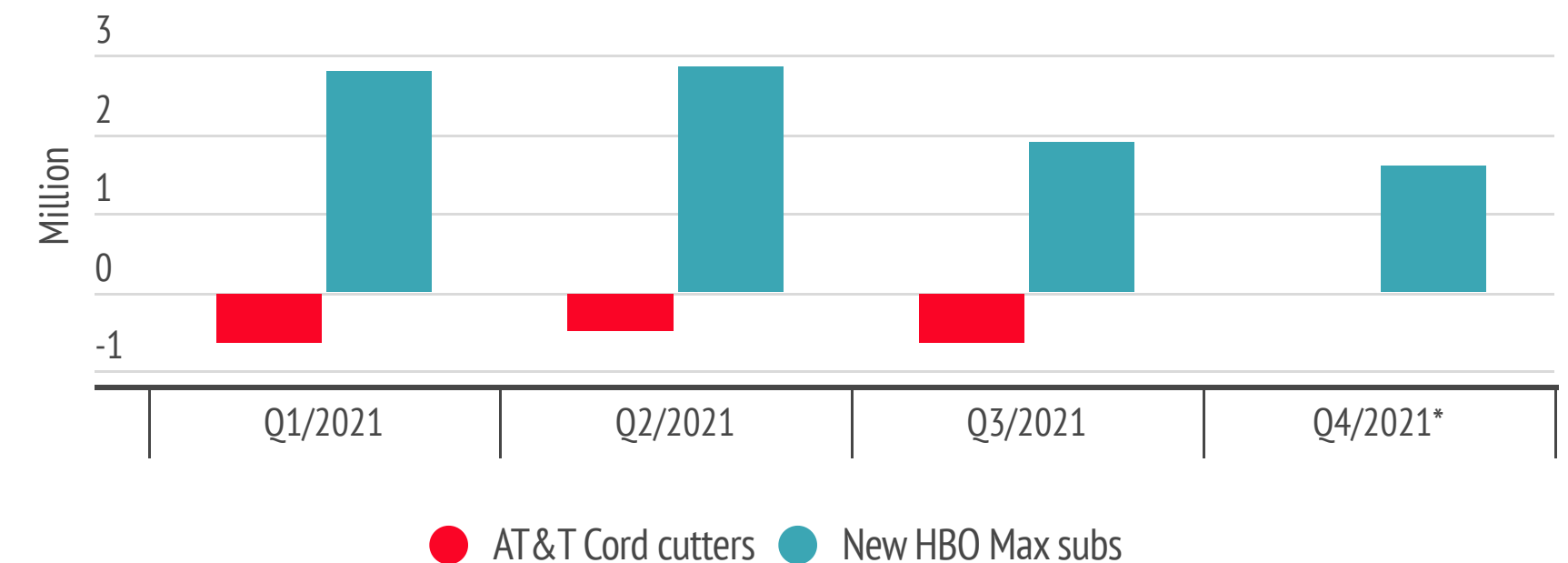
Even though both traditional and new OTT players continue to compete fiercely in the US OTT market, overall streaming is maturing and viewers are turning to bundles that aggregate multiple services.

Sources: IABM

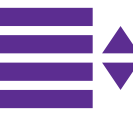
Number of Pay-TV households in the US



AT&T cord-cutters vs. HBO Max new subs



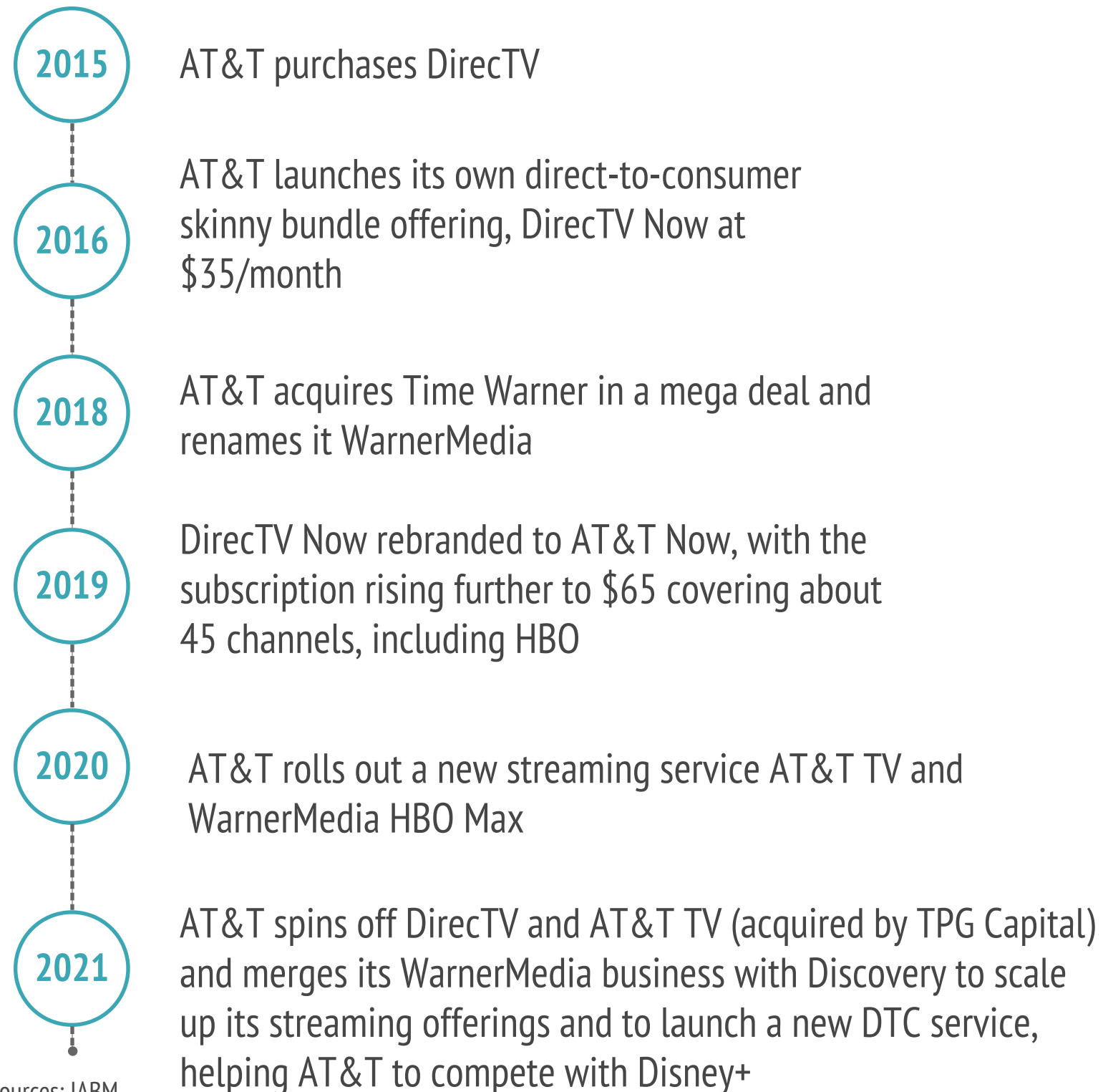
Sources: IABM, eMarketer, Protocol, Company Filings. Note: Numbers for satellite/IP-delivered services of AT&T not accessible after the spin off of DirecTV to a private equity firm TPG



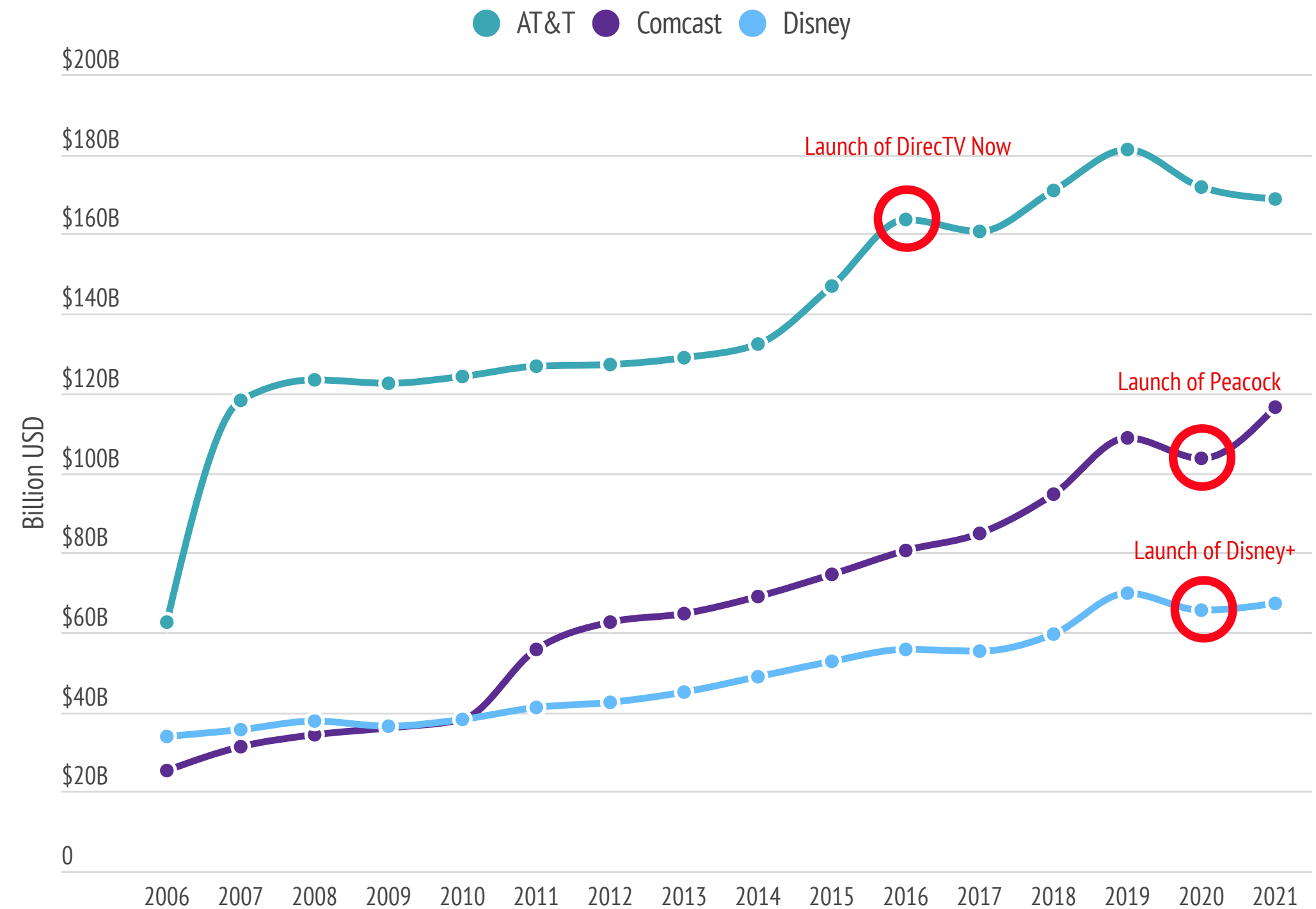
The Broadcast & Media Ecosystem

Traditional tech users - From Pay-TV to OTT

AT&T goes DTC



Revenue of the top three North American broadcast and media organizations



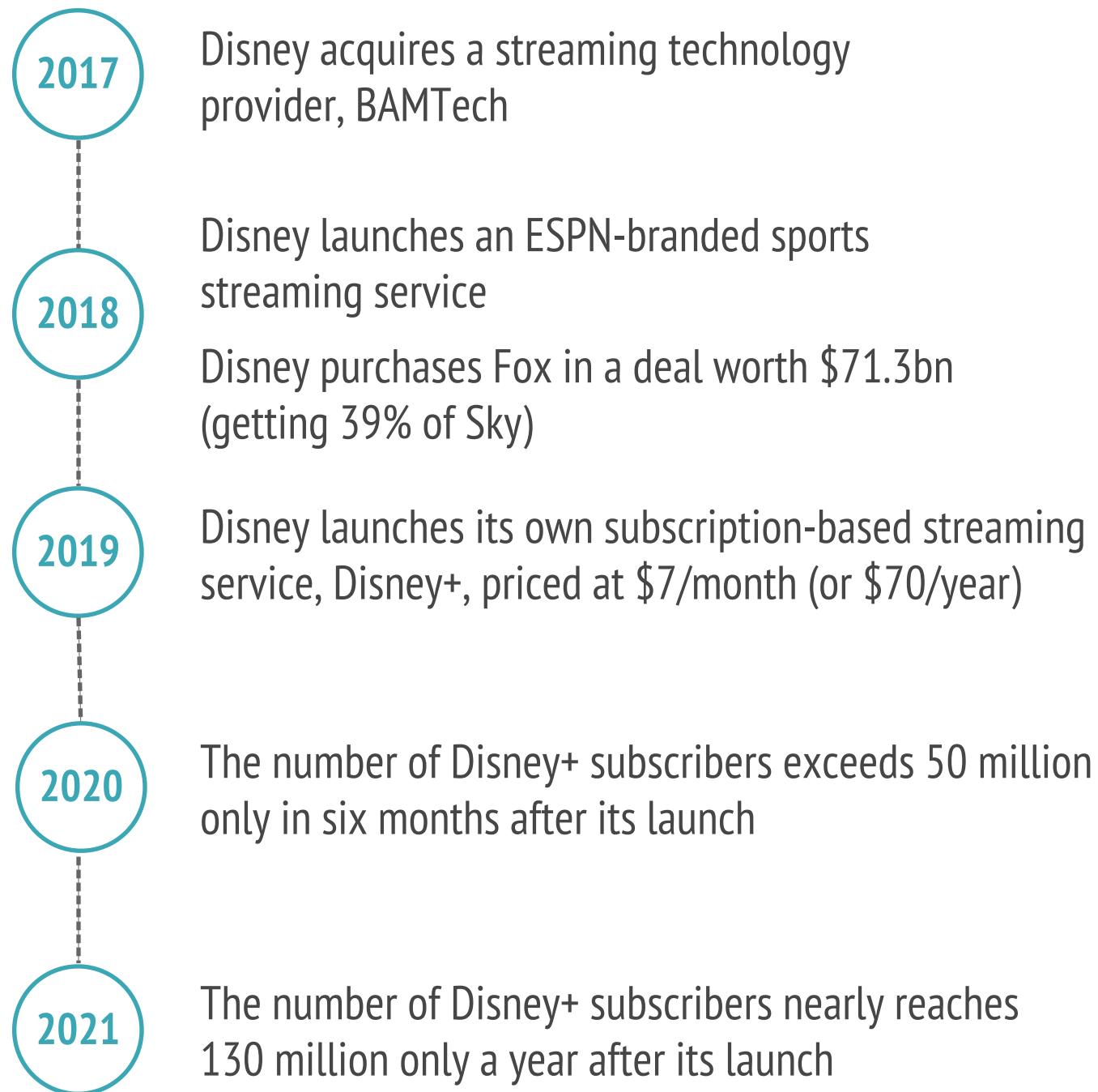
Sources: IABM, Company Filings



The Broadcast & Media Ecosystem

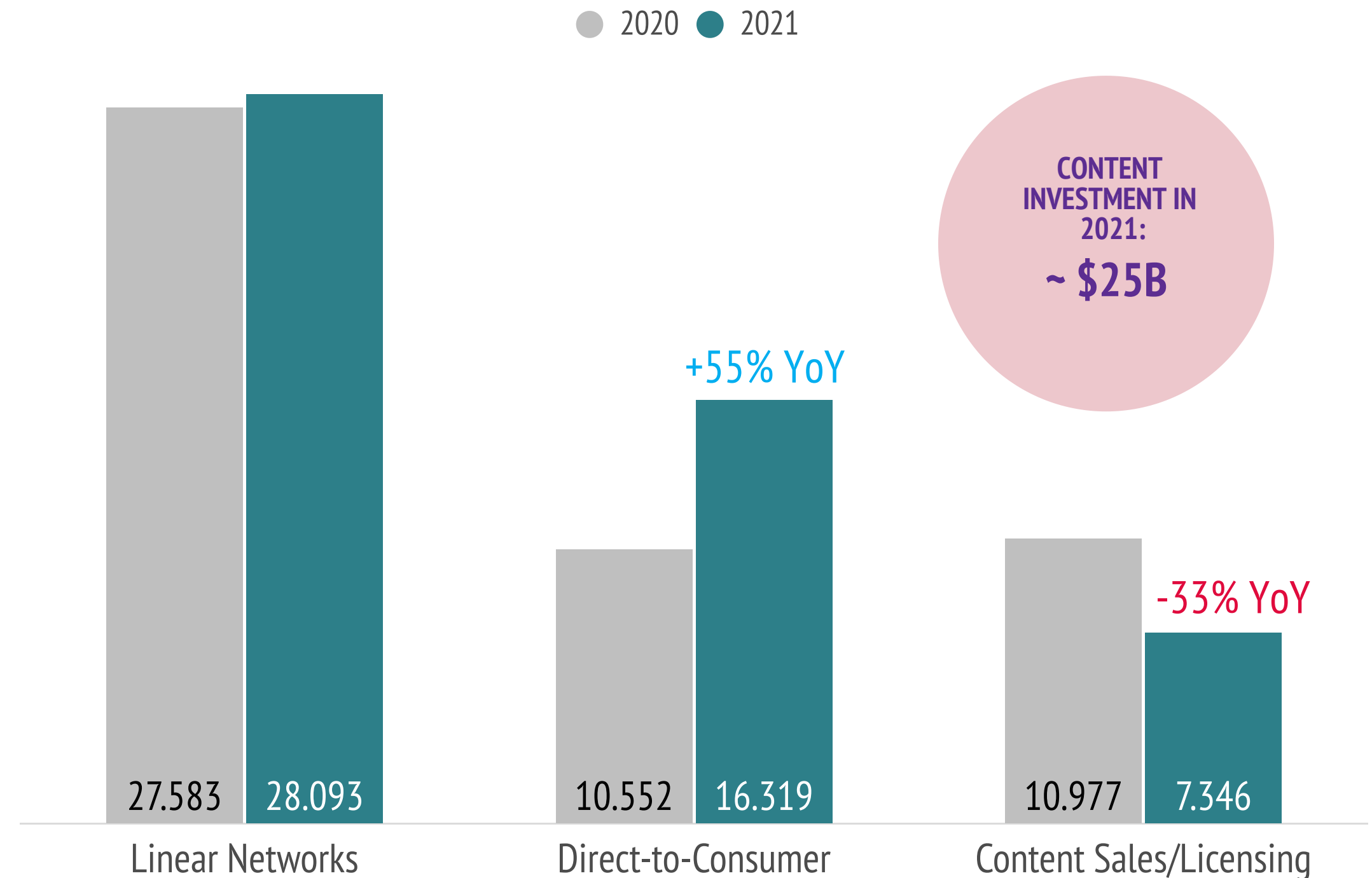
Traditional tech users - From Pay-TV to OTT

Disney, Disney+ going global



Sources: IABM

Disney Media & Entertainment Distribution Segment Revenues

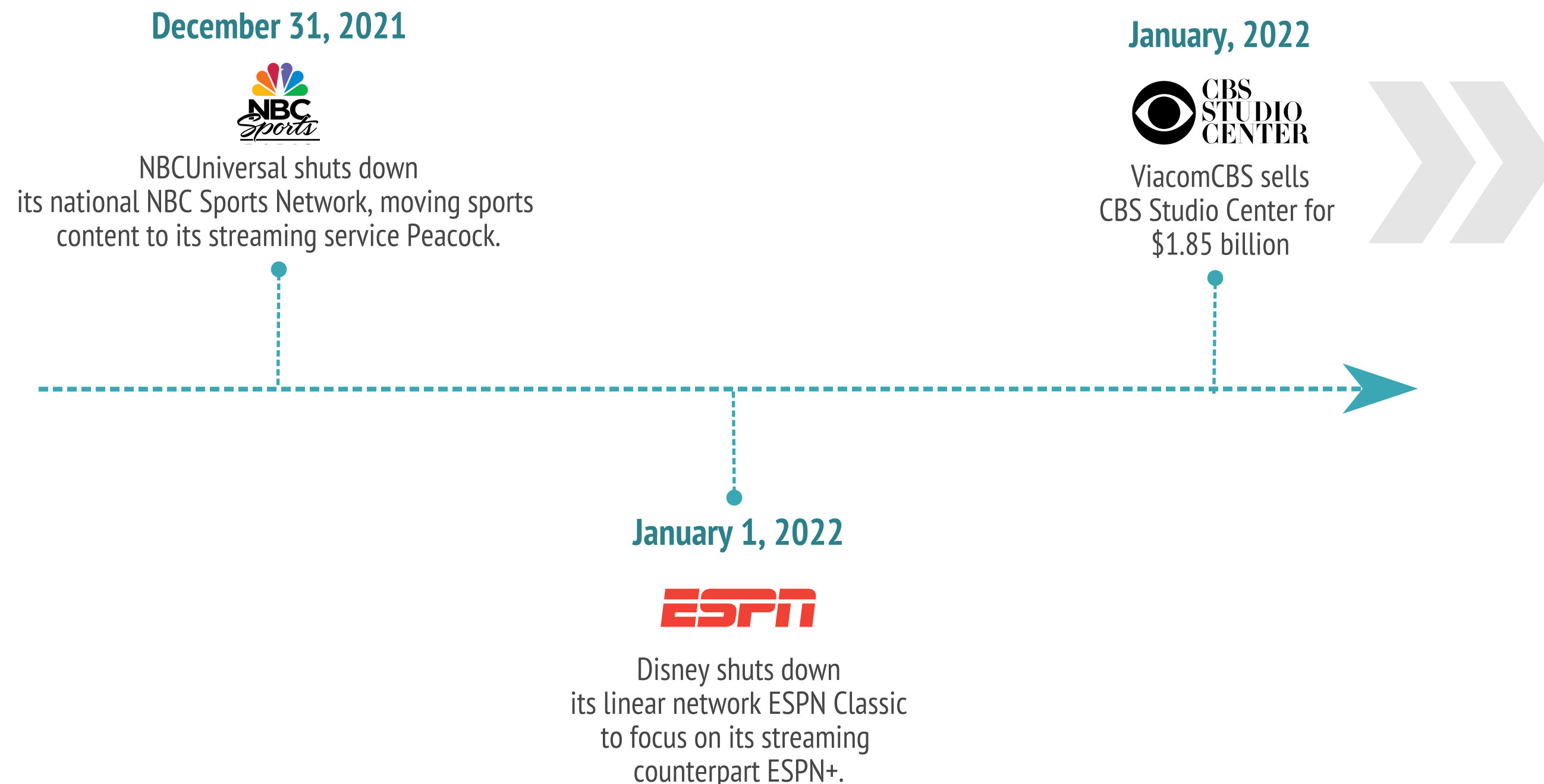


Sources: IABM, Company Filings

The Broadcast & Media Ecosystem

Traditional tech users - From Pay-TV to OTT

The rise in streaming consumption is forcing broadcasters to rationalize spending in legacy divisions.



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This sale is part of an ongoing optimization of ViacomCBS' real estate and operations portfolio and will allow the company to re-deploy capital to strategic growth priorities, including streaming

Naveen Chopra
EVP and Chief Financial Officer
ViacomCBS



Sources: IABM

The Broadcast & Media Ecosystem

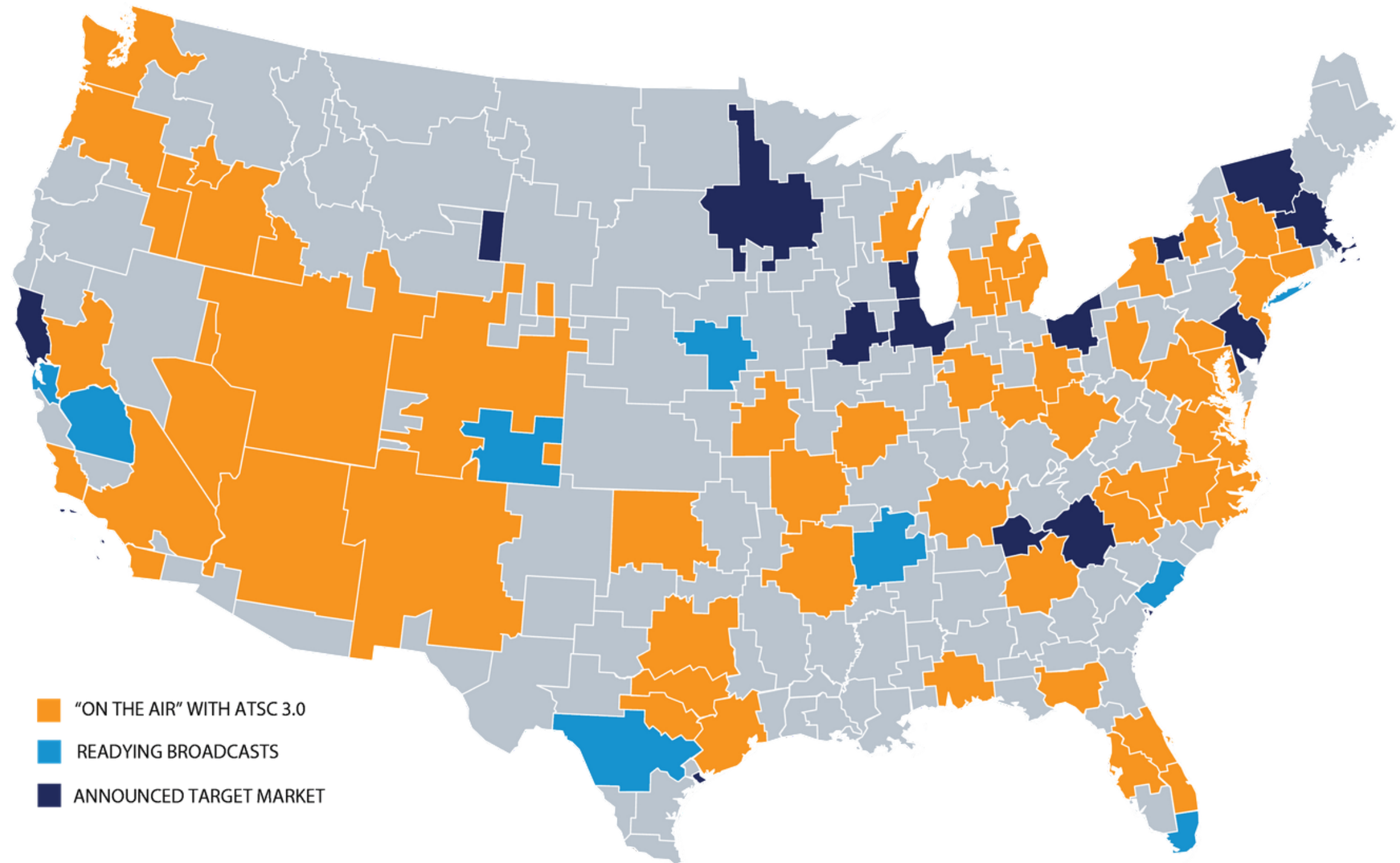
Traditional tech users - ATSC 3.0

The on-going, collaborative rollout of the ATSC 3.0 ("NextGen TV") standard is being implemented by individual broadcasters and it is currently on the air in over 50 Designated Market Areas (DMAs). Major station groups involved in the deployment include Fox Television Stations, NBCUniversal outlets, Nexstar Media Group, Univision, Pearl TV, Tegna, Telemundo and Spectrum (including Sinclair). However, due to the voluntary nature of the standard, for many its adoption has been relatively slow.



Sources: IABM, ATSC.org

ATSC 3.0 Deployments - Status quo





The Broadcast & Media Ecosystem

Traditional tech users - ATSC 3.0



Targeted advertising: ATSC 3.0 enables accurate geotargeting of viewers, when ads are provided over the internet. This is crucially important for broadcasters witnessing their ad revenues declining constantly, as viewers cut the cord and switch to streaming services.



Immersive experiences: ATSC 3.0 enables 4K/UHD picture quality upgrades (e.g. HDR, WCG, HFR), extensions to 8K and advanced Dolby audio, being a major driver for investments in immersive content. The standard will also enable viewers to get more channels in higher quality without investing in a large antenna.



Addressability: The two-way signal enables broadcasters to gather data about their viewers. ATSC 3.0 will work for both broadcasters and OTT providers, allowing for two-way interactivity and multiscreen applications - augmenting UX.

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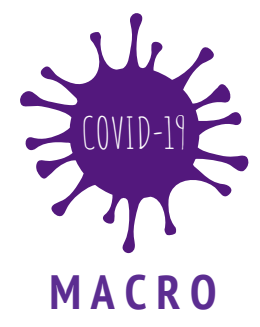
When the COVID-19 pandemic hit the country and students and teachers were sent home, we saw the negative impacts on remote learners without access to adequate broadband. Issues like homework gaps and equity in education became even more acute, and we quickly realized we could help to bridge the digital divide through our technology and the enhanced advances offered by ATSC 3.0, in the same way we've supported public safety and law enforcement customers.

Mark O'Brien, President & CTO, SpectraRep

Sources: IABM, nexttv.com

Market Trends

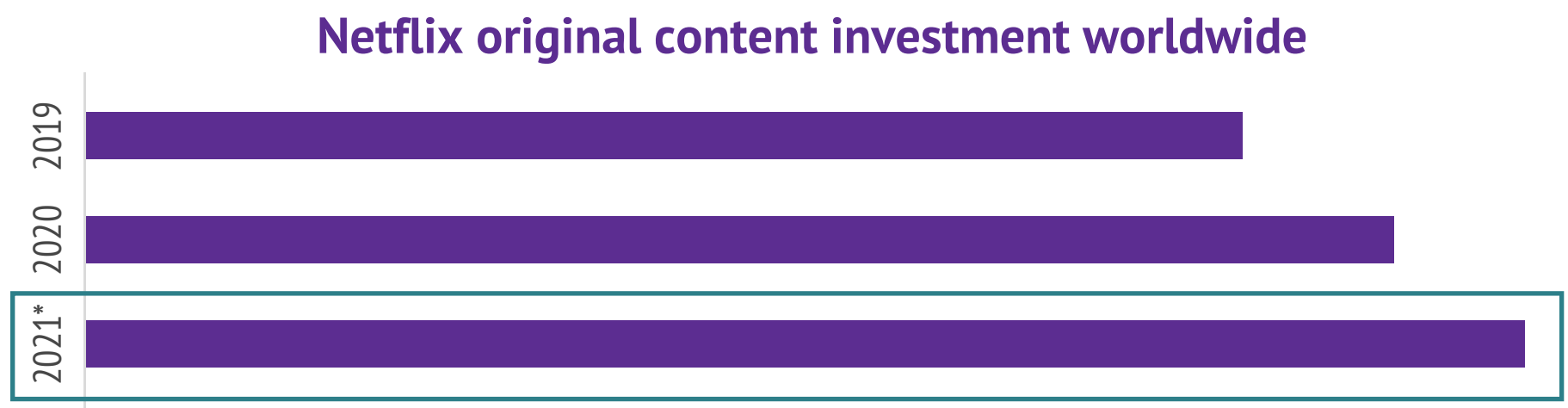
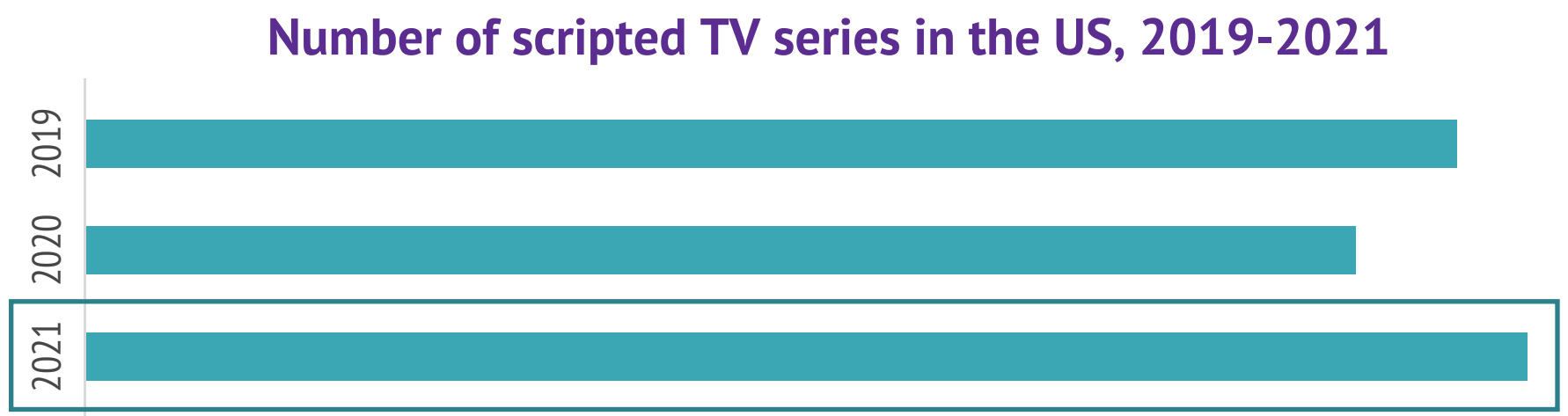
New media - Battle over original content



After a dip in 2020, the number of original scripted TV series in the US hit a new record in 2021 thanks to the launch of delayed series from 2020 as well as new streaming services (e.g., HBO Max, Peacock, Paramount+) entering the market.



Major revenue drivers like sports events and studio productions made a comeback in 2021, boosting investment in original content and remote production. For example, Netflix is again increasing its investment in original content saying that it expects about 50% of its content spending to be on original programming.



Sources: IABM

Sources: IABM, FX Networks Research, Variety, FilmLA, Netflix

Market Trends

New Media - Battle over original content

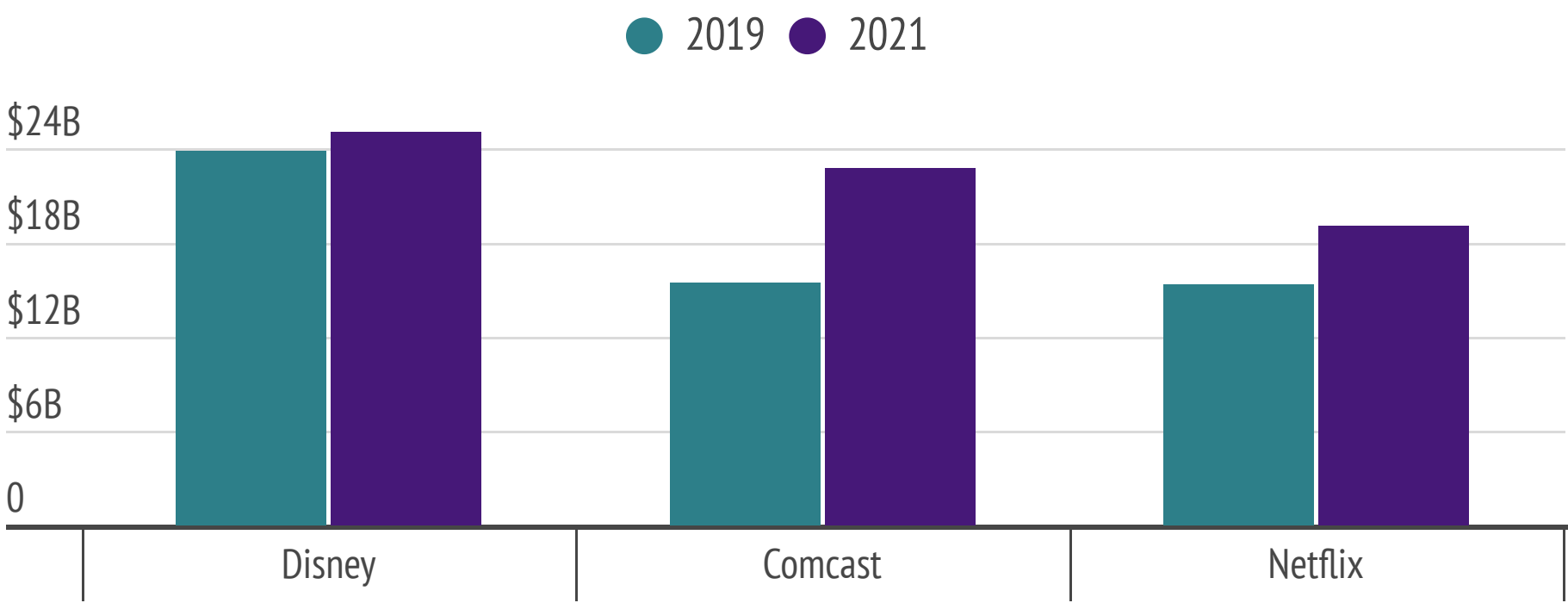
Content genre: In the US, streaming services - looking to expand their menu of originals - are increasingly investing in unscripted programming, which is significantly cheaper to produce. According to Bloomberg's estimate, an entire season of a reality show such as "FBoy Island" on HBO Max costs approximately the same as 1-2 episodes of a top drama. As a result, streaming services are now quickly buying up all available unscripted programming to enrich their content portfolios.

Relocation of production: Major streaming services' increasing investment in original content in 2021 generated huge demand for studio space and skilled film crew, particularly in the UK, where the biggest American streaming players have recently shifted their productions thanks to attractive, novel filming locations, generous tax relief systems and lower production costs. This trend is expected to continue, driven by the biggest US streaming players entering new markets with local originals.

Sources: IABM



Top 3 Content investors in original content



US streaming services film studio investments in the UK

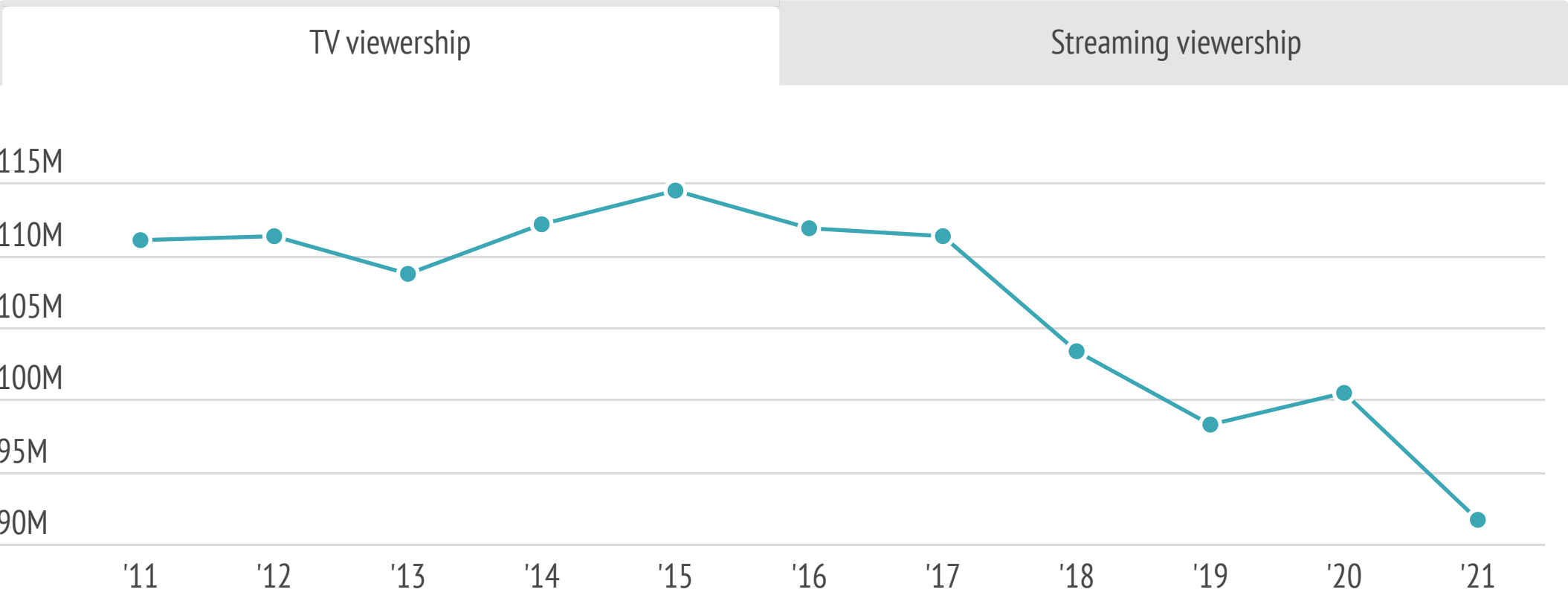
Client	Contracted UK film studio	Year
NETFLIX	Shepperton Studios	2019
NETFLIX	Longcross Studios	2021
The WALT DISNEY Company	Pinewood Studios	2021
aws	Bray Film Studios	2021
aws	Bovingdon Airfield	2021
The WALT DISNEY Company	Shinfield Studios	2021
WarnerMedia	Hanna-Barbera Studios Europe	2021
VIACOMCBS	Wattpad Webtoon Studios	2021
NBCUniversal	Carnival Films	2021

Market Trends

New media - Battle over sports rights

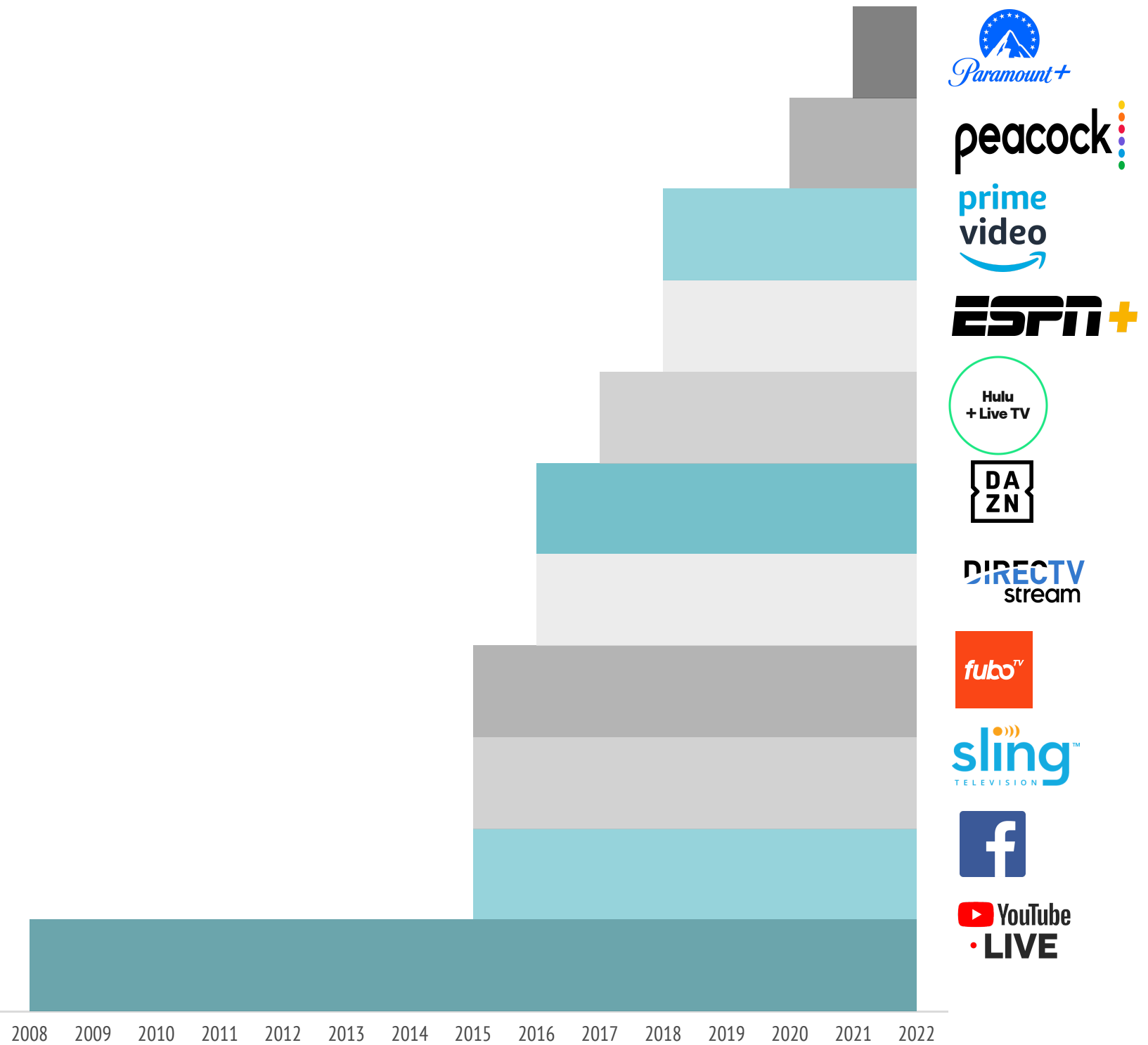
Sports rights is another key focus of content investment for both traditional media companies - like Comcast and Disney which allocated over a third of their total content spend on sports rights in 2021 - and streaming services such as Amazon, resulting in an increasingly intense competition for broadcasting rights and a smaller number of games per broadcaster. This is incentivizing media companies to invest in interactive features, leading to the convergence of sports with gaming and betting.

Super Bowl viewership in the US



Sources: IABM

Sports rights' purchases by streaming players



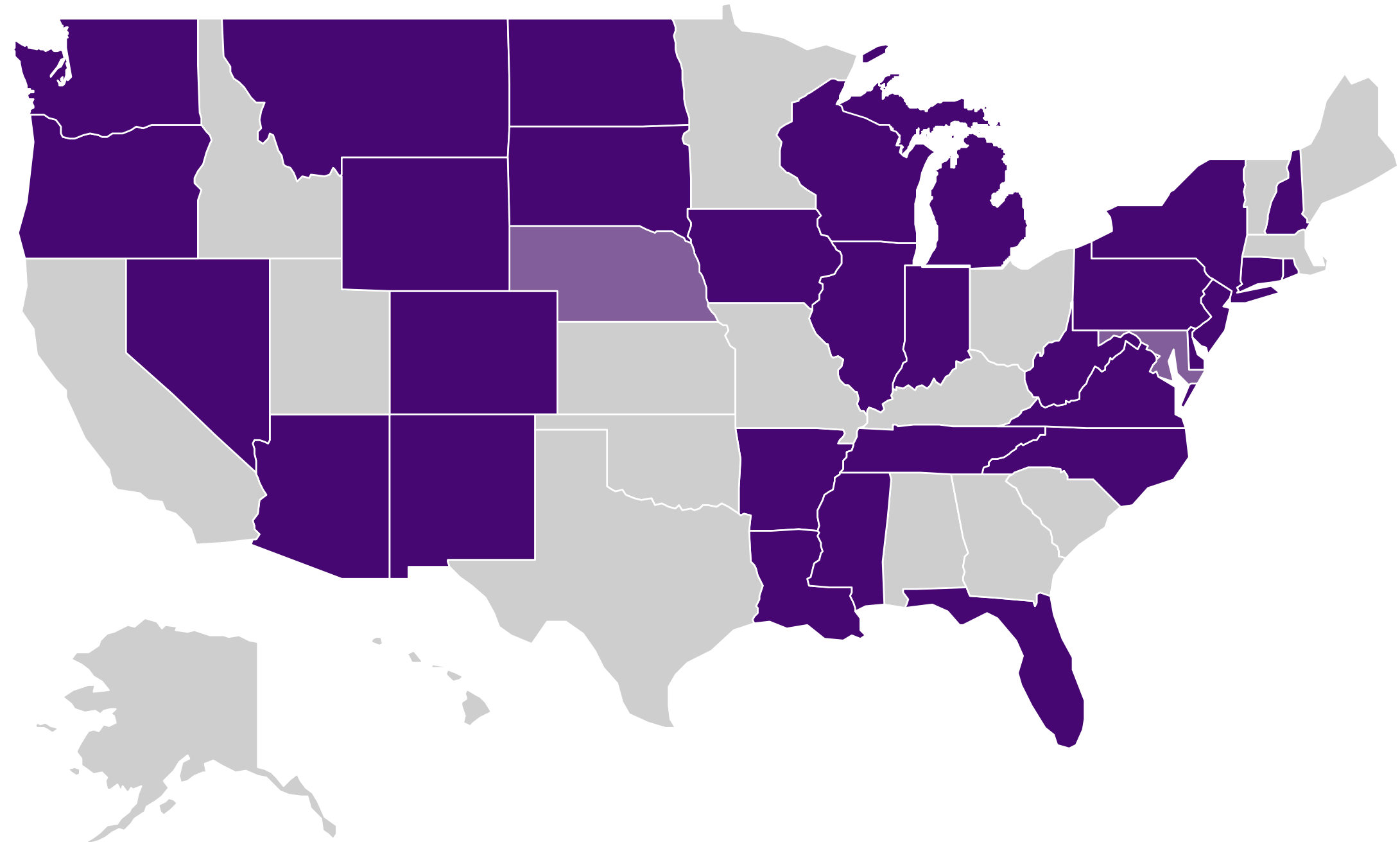
Market Trends

New media - Sports betting

In the US, streaming services - boosting interactivity to compete with linear broadcasting - are increasingly investing in sports betting, driven by the victory of New Jersey's Supreme Court in 2018 deciding that any state in the US can legalize sports betting. Several streaming players like Disney's ESPN are ramping up their sports betting offerings bound to streaming. For example, in 2021, fuboTV, a live sports streaming platform, launched online sports betting software Fubo Sportsbook to be later integrated into the fuboTV streaming service.

Sports betting legislation - Status quo (2021)

= Sports betting market launched
 = Legislation in place
 = No legislation in place





Market Trends

Transition to 5G

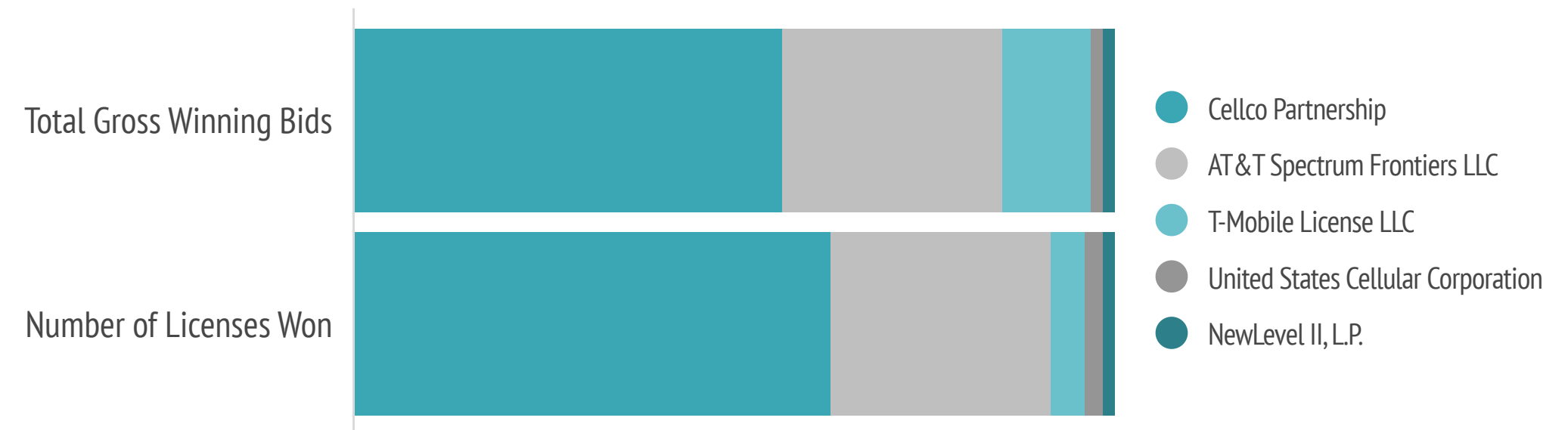
On 24 February 2021, the FCC announced the results of its spectrum Auction 107 – or C-band auction – for mid-band spectrum for 5G services. Net winning bids totaled \$81.11 billion, making it the most expensive mid-band 5G spectrum auction worldwide.

Most 5G markets have been focused on mid-band spectrum, particularly the 3.5 GHz band, due to its good balance between coverage and capacity. The US, instead, has invested heavily in mmWave (millimeter wave) spectrum – relatively newer high-capacity, high-frequency bands.

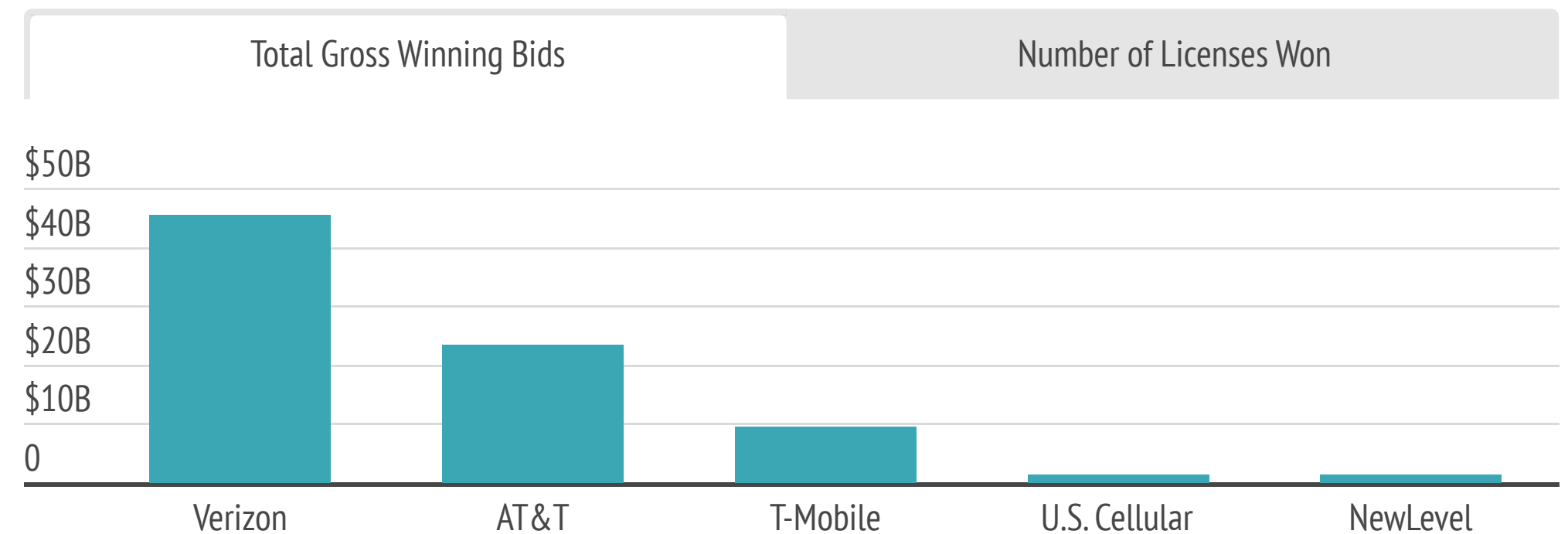
"I believe this move is right for all of our stakeholders, including the Media employees. Our purpose is to create the networks that move the world forward, and this will help us better focus all our energy and resources on our core competencies." (Hans Vestberg, CEO, Verizon)

Sources: IABM

C-band auction for mid-band spectrum for 5G services



Top winning bidders of the C-band auction





Market Trends

Transition to 5G

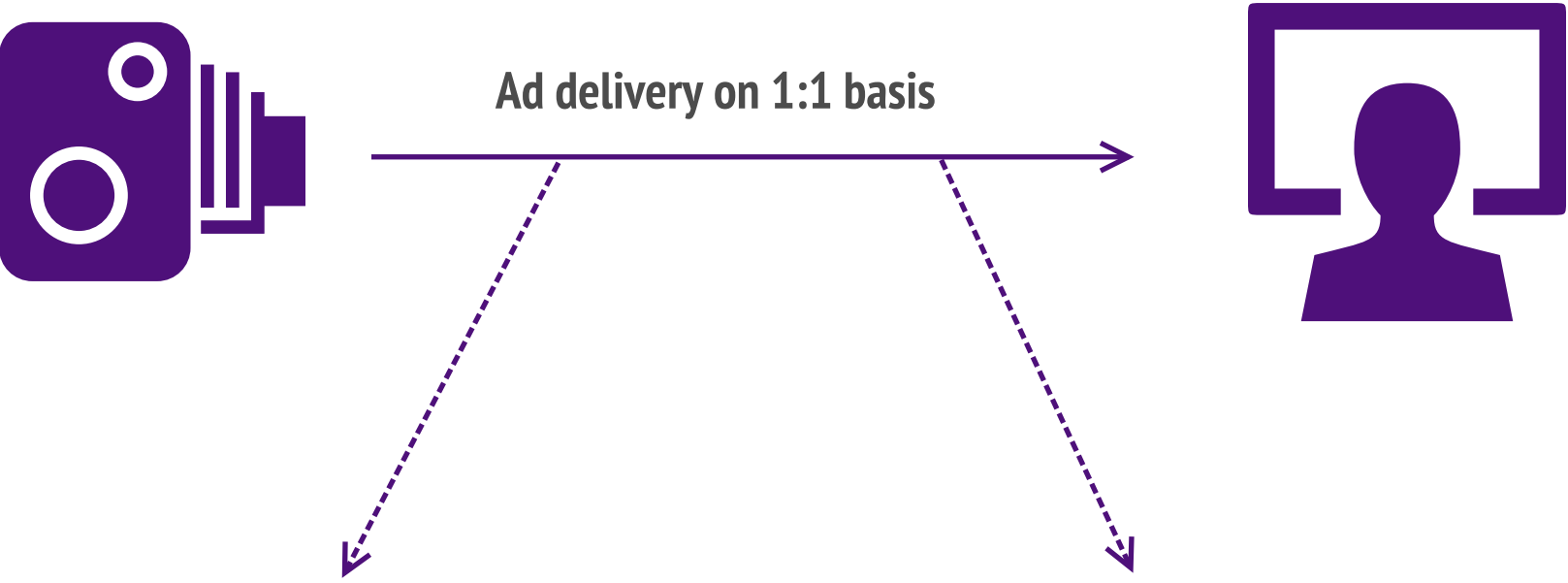
Commercial rollout of 5G networks by provider (As of April 2022)

	Fixed 5G	Mobile 5G	Coverage
Verizon	Yes	Yes	Nationwide
AT&T	No	Yes	Thousands of citites
T-Mobile/Sprint	Yes	Yes	Thousands of cities
UScellular	No	Yes	California, Iowa, Maine, few other states
C Spire	Yes	Yes	Mississippi
Charter's Spectrum Mobile	No	Yes	na
Comcast/Xfinity	Yes	Yes	Nationwide
Starry	Yes	No	Boston, Denver, LA, NYC, Washington DC
Mint Mobile	No	Yes	Thousands of cities
Nex-Tech Wireless	Yes	Yes	na
US Mobile	No	Yes	na
Cricket Wireless	Yes	Yes	na
Google Fi & Simple Mobile	Yes	Yes	Nationwide
Dish	na	na	na
Visible	No	Yes	na
Cellcom	No	Yes	Wisconsin

Sources: IABM, lifewire.com







Market Horizon: #1 Ad-supported streaming

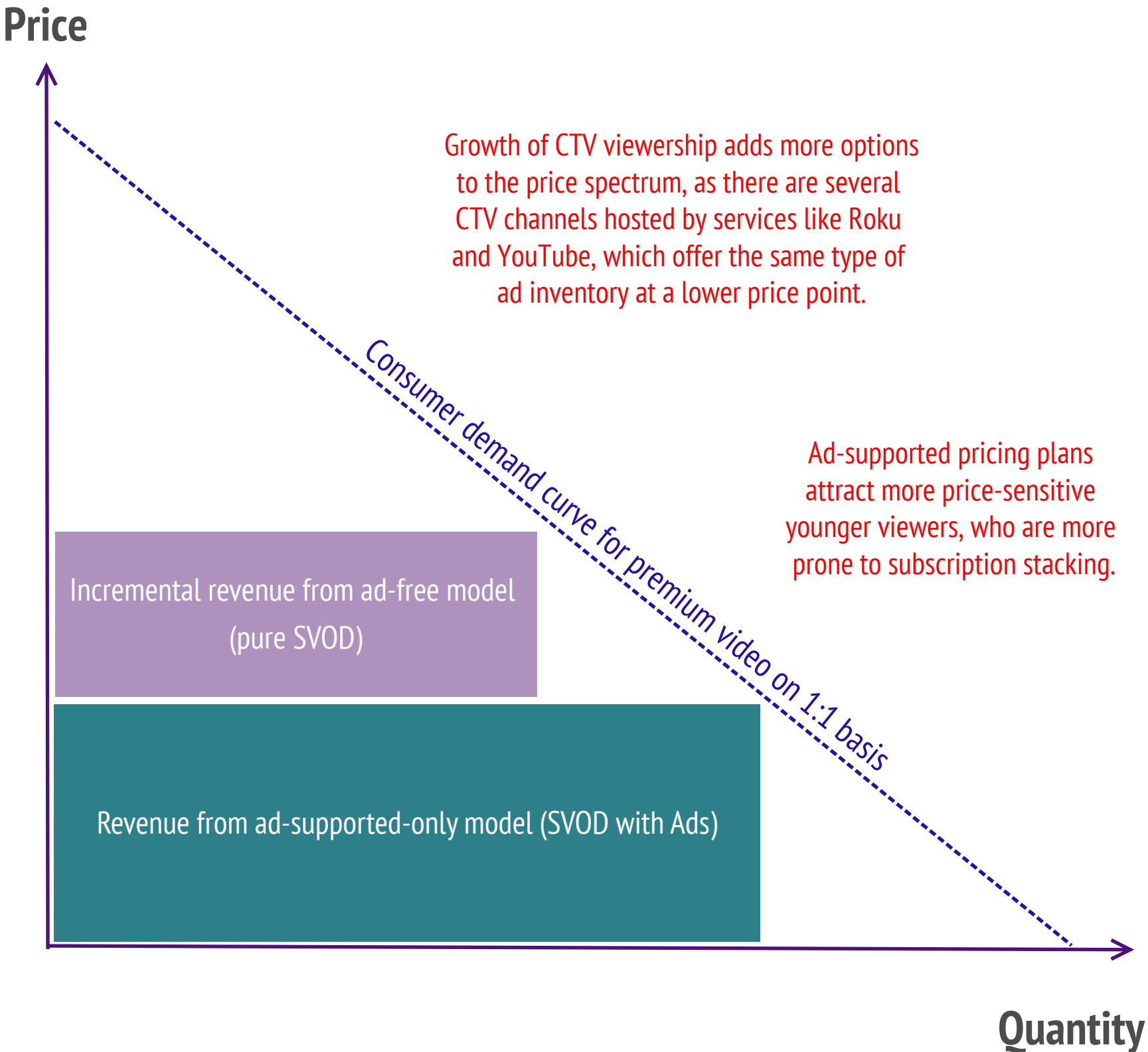
Streaming players extending subscriber reach with cheaper pricing plans



Price point 1: Ad-free
~ Pure SVOD

Price point 2: Ad-supported
~ SVOD + Ads

	Ad-free (SVOD)	Ad-supported (SVOD + Ads)
	\$8	n/a
	\$12	\$6
	\$10	\$0/\$5
	\$15	\$10
	\$10	\$6
	\$7	\$5



Source: IABM, Omnicom Media



Market Horizon: #2 NFTs

Emergence of blockchain-backed streaming platforms

Content creators

Direct access to viewer data

Micro payments & smart contracts

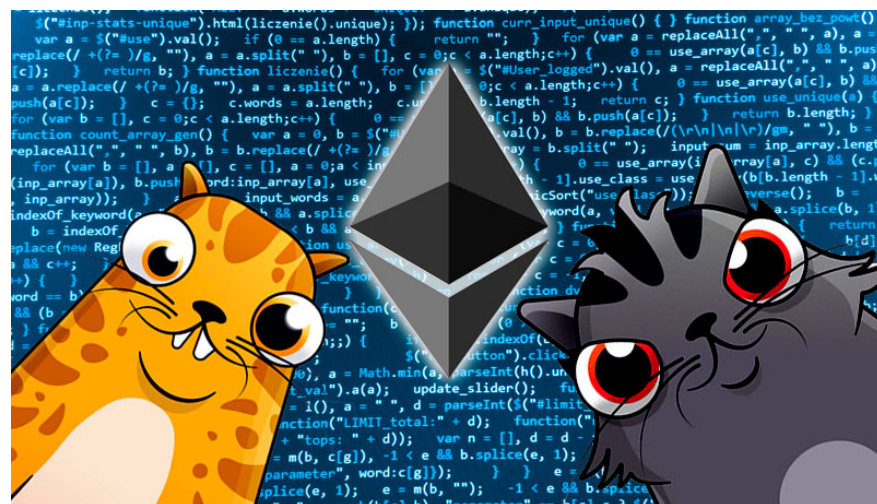
Native distribution of content

Viewers

Customized content

Partial ownership of content

Cheaper content



June 2021

Invests \$100 million in a "creator fund" for NFT and plans to mint NFTs for new animated series



September 2021

Launches two NFT collections/digital accessories for a blockbuster movie Godzilla vs. Kong



July 2021

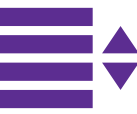
Launches a digital collectibles app for Marvel fans globally



October 2021

Launches collaboration with Google, Samsung and Sony around Theta platform with an NFT marketplace

Source: IABM, IBC365, coindesk.com, The Nifty Crypto Nomad, The New Stack



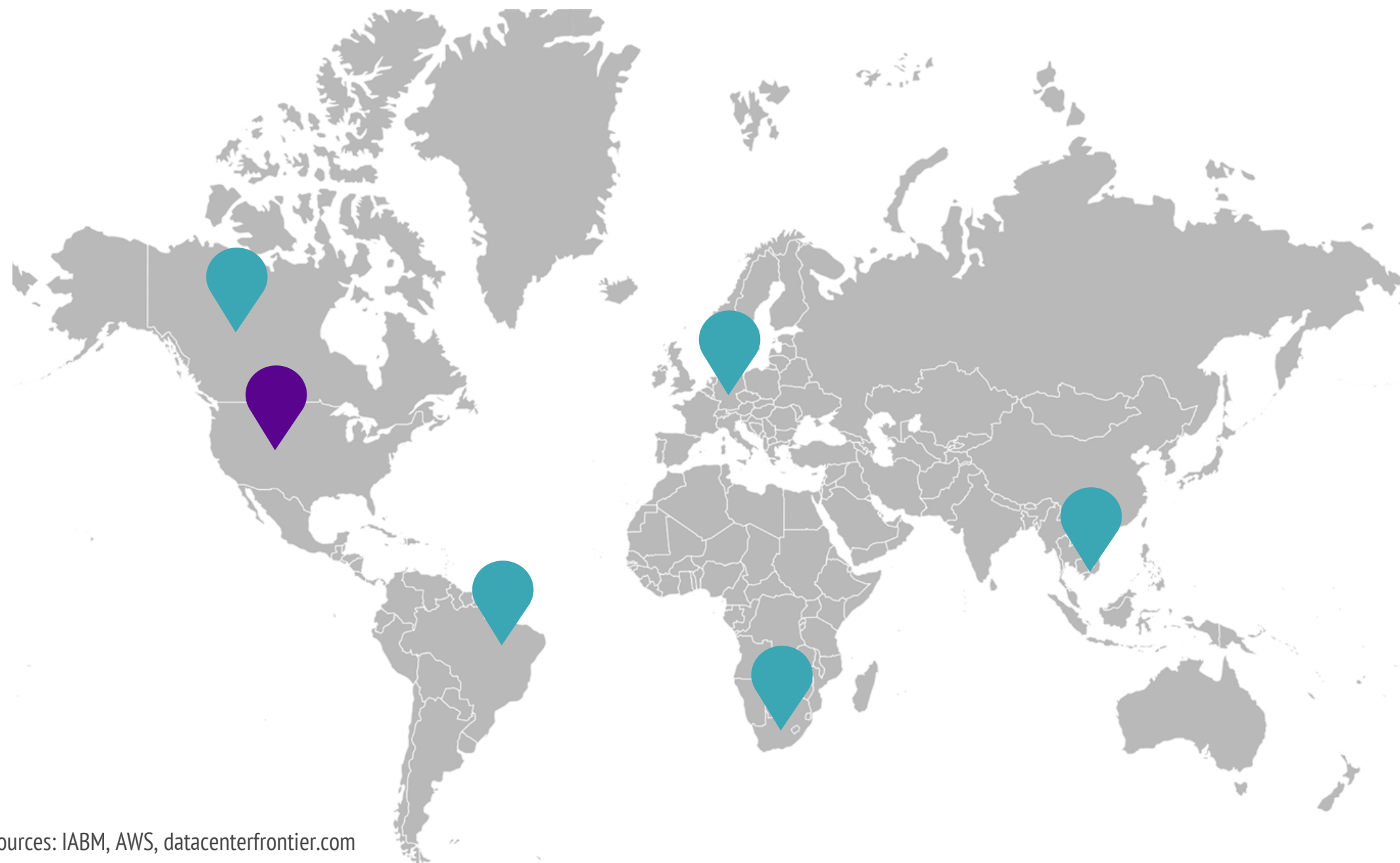
Market Horizon: #3 Edge Computing

Edge computing supporting US' streaming players local production in new markets

AWS Local Zones

Global expansion of Edge Computing Infrastructure

Existing Local Zones New Local Zones



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*In order to provide a good working experience for our artists, they need **low latency** access to their **virtual workstations**. AWS Local Zones brings cloud resources closer to our artists and have been a game changer for these applications. By taking advantage of AWS Local Zones, we have migrated a portion of our content creation process to AWS while ensuring an even better experience for artists. We are excited about the expansion of AWS Local Zones globally, which brings cloud resources **closer to creators**, allowing artists to get to work **anywhere** in the world and create without boundaries.*

Stephen Kowalski
Director of Digital Production Infrastructure Engineering
Netflix

Sources: IABM, AWS, datacenterfrontier.com