Federal Communications Commission
Disability Advisory Committee ("DAC")
Internet Protocol Closed Caption Files
Working Group
Potential Challenges and Potential Opportunities

Overview of Final Report

November 1, 2022

THE ASSIGNMENT

• *Identify issues and best practices regarding the transmittal and receipt of captioning data for full-length content viewed online, with the shared goal that captioning associated with such programming remains available regardless of the distribution method.*

• *Identify potential solutions to increase the amount of captioned programming online.*

THE CHALLENGE

- *Produce a draft quickly when few, if any, parties have full knowledge of all parts of the captioning ecosystem.*

- *Find a level of detail that is helpful to those less familiar with captioning, while providing enough technical information to illustrate challenges and opportunities.*
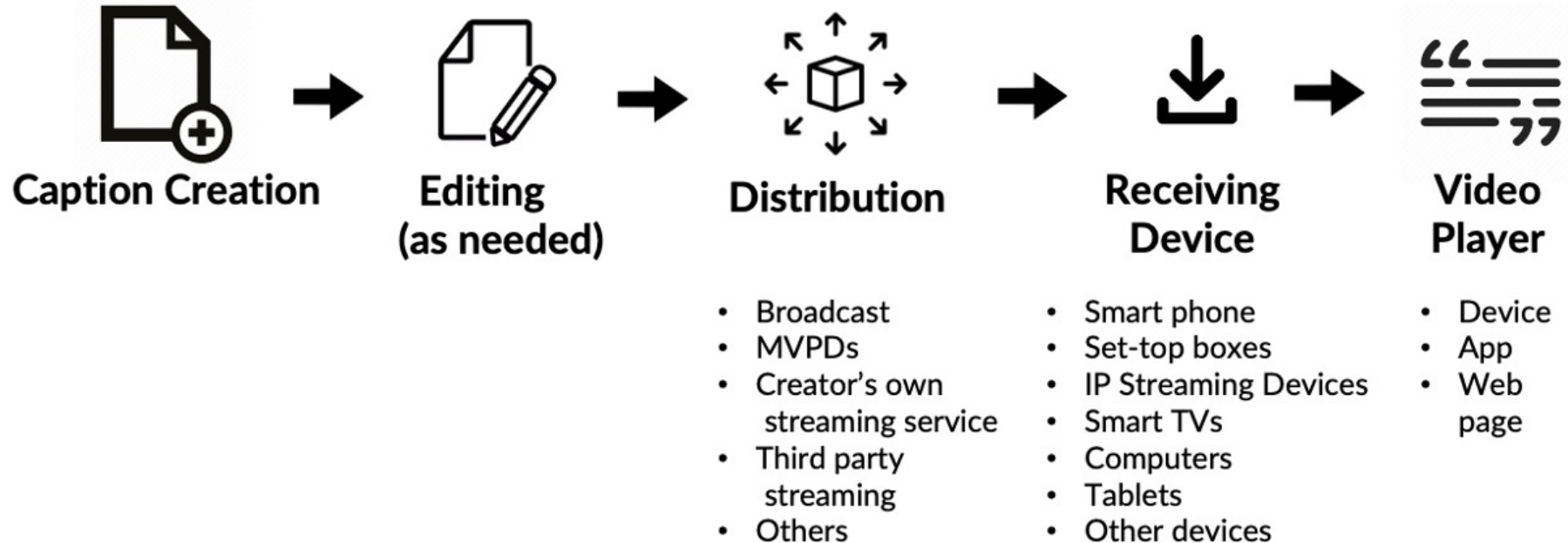
OUR APPROACH*

- *Closed Captioning Ecosystem*
- *Potential Challenges in the Captioning Ecosystem*
- *Potential Opportunities in the Captioning Ecosystem*

* <u>NOTE</u> – These slides paraphrase the final report. Please refer to the final report for clarity and important caveats.

CLOSED CAPTIONING ECOSYSTEM

Caption Creation → **Editing (as needed)** → **Distribution** → **Receiving Device** → **Video Player**

Distribution
- Broadcast
- MVPDs
- Creator's own streaming service
- Third party streaming
- Others

Receiving Device
- Smart phone
- Set-top boxes
- IP Streaming Devices
- Smart TVs
- Computers
- Tablets
- Other devices

Video Player
- Device
- App
- Web page

CAPTION CREATION

- *Captions are initially created by a content creator, owner, or provider, either internally or through a vendor.*

- *As an individual program may be distributed in multiple ways (e.g., broadcast, multichannel video programming distributors, streaming), the captions may need to be converted to multiple different formats or specifications.*

EDITING CAPTION DATA

- *Captions may be edited at various points in the workflow. For instance, pre-recorded broadcast/cable programming may be reformatted for timing and commercial insertion (which can greatly vary among services), then played out from a national or regional source, where it is encoded in multiple transmission formats.*

- *In addition to technical format edits, there are often recuts of a show or film (e.g. Director's Cut, or edits for length) as well as other factors (e.g., service identifiers or advertising interstitials) which can impact the program duration and the accuracy or synchronicity of the associated captions.*

DISTRIBUTION

- *The content provider delivers the video and time-coded caption data to the content distributor, which may take a variety of delivery forms (e.g., embedded, sidecar).*

- *If a content distributor offers programming to consumers in more than one way, it may receive more than one video and/or caption format depending on the technical needs of its distribution platform(s).*

- *The distributor will then make the media, including captions, available for transmission over its distribution platform to the end-user's receiving devices.*

- *Captions will be rendered through the device or an application.*

RECEIVING DEVICE

- *Captioning formats associated with an older device might produce an inconsistent experience compared to a recently manufactured smart TV.*

- *Additionally, most devices offer their own proprietary player environment, which can result in different viewing experiences.*

VIDEO PLAYER

- *Depending on the digital platform used by the viewer, either the content provider or a third party displays digital programming through a software or firmware video player with captioning functionality.*
- *For pre-captioned programing, the existence of multiple specifications among SDK manufacturers means that programmers need to deliver multiple captioning format types for digital delivery of full-length content.*

DIFFERENCES IN CONTENT WORKFLOWS

Examples of how workflows can differ:

- For pre-produced programs with a broadcast or traditional cable layout, the broadcast or cable network's studio sends recorded video footage to a captioning vendor (which is often a third party), which in turn, provides time-coded captions within days – typical processing time can range from eight to 72 hours.

- For live-produced programs (including news and sports with captioning) due to the short time for delivery from camera to digital player, there is less preparation time and human-generated captions are created in parallel with content transmission and added at the playout encoder at the national/regional/or local source.

- For on-demand programs (i.e., those made available on-demand via a website, app, set top box or streaming service) content may be received by the content aggregator in either separate components or as a complete encoded single file.

POTENTIAL CHALLENGES

Potential Technical Challenges

- *Caption corruption.* Captions may unintentionally become corrupted at some point in the workflow.
- *Timecode shifts.* These may arise when a service or content owner inadvertently changes the time code of the content by adding interstitial content like advertising or service bumpers.
- *Captions for certain older programming.* Older programming may have captions dependent on older technologies, preventing distribution and/or display.
- *Software bugs.* There may be software bugs at some point in the chain – server bugs, client/player parsing or rendering bugs, ingest bugs, etc.
- *Editing tools.* Situations in which captions may need to be recreated because program content and timing are changed but the participants in the ecosystem lack access to program masters as well as an editing suite that is able to keep the captions in sync during the editing process.

POTENTIAL CHALLENGES

Potential Human Organizational Process Challenges

- *Caption is missing through the distribution chain* because of the different technical formats and various procedures for sharing caption files among vendors and other parties in the production and distribution chain.

- *Captioning is available but may not be usable by end user.* This may include situations in which captions are created at various parts of the distribution chain.

- *Lack of expertise or awareness among small content creators.*

- *Lack of awareness among app developers* which may create apps with interfaces that do not support captions, or that use playback methods for advertising that impede captions.

- *Recut or edited video.* For example, when a caption sidecar file is created and the video is recut or edited in a way that changes its timing and thus the sidecar file no longer matches, such that the captions need to be adjusted to match the video.

- *Lack of awareness among those authoring content creation, ownership, and delivery contracts* such that these contracts do not define expectations and next steps if a content owner cannot deliver captions.

POTENTIAL OPPORTUNITIES

- Participants in the ecosystem can:
  - Develop internal policies and procedures to test pass-through of captioning throughout their distribution chains, help ensure the consistency of captioning availability across video platforms and devices, and include captioning delivery requirements in licensing and distribution agreements.
  - Where quality control issues are observed, offer separate caption delivery to avoid re-exporting full video assets.
  - Develop opportunities to support the secure exchange and sharing of captioning files to avoid duplication of captioning work.
- The Commission can:
  - Encourage app stores, captioning vendors, distribution platforms and other organizations to promote education, awareness, and documentation of development and use of accessible video technologies, APIs and development practices to help ensure that app developers incorporate captioning support.
  - Encourage efforts by developers, vendors and providers of video editing/production/distribution tools to ensure that such tools are available to creators to promote the availability and utility of captions in their videos.
  - Educate video creators at all levels about the importance of treating captioning as integral to the creative process.

THANK YOU!

- The IP CC Files Working Group