



AI MEDIA

Ai-Media Captions  
**the World's Biggest  
Sporting Event**  
with a Simplified  
Cloud Solution

CASE STUDY

In 2021, Ai-Media helped live caption the world's biggest sporting event for one of America's leading broadcast networks. We delivered a highly accurate, reliable end-to-end cloud solution that simplified the many complex demands of captioning this massive global event.

2,500

hours of live-captioned content

11,000

athletes spanning 50 sports

339

sports and athletic events



## The Challenge

The network's motivation to caption this sporting event went far beyond simply meeting US Federal Communications Commission (FCC) accessibility requirements. It was about providing a richer viewing experience, with the mission of sharing this global event with as many as possible.

For Ai-Media, the scope of work was extensive. It required live captioning over 2,500 hours of coverage for an awe-inspiring production featuring over 11,000 athletes and 339 events spanning 50 sports. Every event – whether airing on TV or live streamed – required high-quality captioning for in-game footage and commentary. Up to 50 simultaneous live streams could be taking place at any one time.

Coverage spanning thousands of hours and athletes, across hundreds of sports had the potential to reach a massive viewing audience – many of whom were hearing impaired or watch on mute.

## The Solution

Ai-Media solved the puzzle by delivering a complete live-to-air captioning solution that was sufficiently robust, scalable and flexible to meet these complex demands. The solution combined our cloud-based iCap Alta IP video encoder with Ai-Media's Smart Lexi automated captions, providing everything the network needed to maximize accessibility and the viewer experience, easily and affordably.

### Sports captioning made easy in the cloud

A fully virtualized, API-powered encoder, iCap Alta saves time and reduces costs with streamlined, next-gen workflows that are software-driven and native IP. It's configured for processing either MPEG Transport Streams, SMPTE 2110 or CDI uncompressed IP video.

iCap Alta seamlessly integrates with Smart Lexi – a ground-breaking captioning solution that combines human curation and automation to deliver accuracy approaching that of human captions, but at half the typical price.

## How Smart Lexi Enhances Accuracy

Smart Lexi achieves better quality and service with a unique layering of captioning techniques and technologies. This includes:

**Human curation:** Smart Lexi leverages in-depth research performed by the Ai-Media team, who refer to internal databases and customer-provided documentation. They help create highly customized, AI-driven Topic Models.

**Custom dictionaries:** Tailored key names and phrases for each captioning session further customize each project's Topic Model.

**Machine learning:** AI-powered automation delivers optimal Automatic Speech Recognition (ASR) caption accuracy.

### Captioning management, simplified

Smart Lexi is supported by Lexi Leash, which connects to an Ai-Media Cloud Services account to easily create, monitor, stop, re-start and log Lexi Automatic Captioning jobs. Using Lexi Leash, captioning managers overseen by Ai-Media personnel can quickly monitor session status and restart jobs similar to previous sessions with a single click. Ai-Media also provides full human support on three different levels, including:

#### Step One

Setup and commissioning of the system

#### Step Two

Advanced training of customized vocabulary models to maximize live caption accuracy

#### Step Three

Live support for job scheduling and management, including top-priority tech support

## The Result

Ai-Media's end-to-end cloud solution provided all the technology the broadcast network needed in one place, delivering unprecedented levels of caption accuracy, workflow automation and affordability.

For this massive sporting event, iCap Alta was specified to embed 608/708 captions into over 40 simultaneous real-time MPEG H.264 transport streams. And captions for all live streamed events were generated by Smart Lexi. These captions were enhanced by Ai-Media's team of experts, who reviewed captioning transcripts and constantly updated sports-specific Topic Models.

### The Power of Topic Models

A key component of Smart Lexi's high performance is its AI-driven Topic Models, also known as custom dictionaries. This feature greatly improves caption accuracy by recognizing unusual or domain-specific words and phrases, or proper names and places.

A Topic Model consists of text-training data such as common phrases expected to be heard during the audio program, proper nouns which are desired to be recognized but would not be found in a standard dictionary, and pronunciation clues for any new words.

For this sporting event, the broadcast network provided Ai-Media with a range of data that allowed Smart Lexi's Topic Models to recognize:

- ▶ Sport-specific terms and athlete names
- ▶ Commentator names
- ▶ Event-specific information like venue names and locations

### Thorough Research Enhances Topic Models

Prior to the event, Topic Models were created with general sports terminology. Next, they were updated with final rosters for each sport as these became available. The Topic Models were further updated during individual sporting events, based on news updates and observational feedback of Smart Lexi's performance.

Developing individual Topic Models for each sport, as well as each participating team and their rosters, was a task requiring meticulous research and organization. Ai-Media's experts thoroughly researched each sport, including table tennis, volleyball, fencing, judo, archery, BMX cycling, sport climbing, surfing and skateboarding. They even watched past videos of these sports to listen for common words or phrases spoken by announcers.

Content curation of Topic Model data for each of the 206 participating nations was also needed. These included names of nations, their demonyms and national anthems. Building out the "athlete roster" Topic Model proved particularly painstaking. Roster information supplied often proved highly unreliable – a source for one national team featured at least 8,000 additional names, just 10 days before the sporting event. Ai-Media's highly experienced team helped quickly locate the correct roster information while developing efficient research workflows.



## Minimizing Errors to Boost Caption Accuracy

Throughout the airing of the sporting event, Ai-Media's team analyzed incorrectly captioned words from the day before. Topic Models were then updated for higher performance, ensuring a consistent increase in accuracy over the course of the sporting event. This process allowed for a highly efficient corrections system.

As Ai-Media's team reviewed errors, they realized that the source of many incorrectly captioned words and phrases was not the Topic Models. Rather, they stemmed from issues with the announcer's audio - an element beyond the team's control. By recognizing that the announcer's audio was the issue, the Ai-Media team were able to increase their efficiency by focusing on specific areas of the Topic Models.

Ai-Media also provided extensive support throughout to help make Smart Lexi scheduling and logistical management easy for the broadcast network. For instance, our team provided scheduling and routing documentation ahead of time. From there, our team ensured Smart Lexi resources were associated with the correct iCap Alta video channel and sport-specific Topic Model.

## iCap Alta and Smart Lexi – a Winning Combination

This massive global sporting event pushed the broadcast network to challenging new heights. Between broadcast operations and the advanced digital systems needed to support massive streaming, the network's personnel had to formulate new workflows at every turn.

Ai-Media helped simplify these complex requirements and realize the network's vision for accurate captioning on a huge scale. Combining next-gen technology and expert teams, our end-to-end captioning solution provided everything they needed in one place, raising the expectations of what captioning can accomplish.

With Ai-Media, the network had the perfect captioning partner to deliver highly accurate and reliable live captions, easily and affordably.



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Find out more about Ai-Media's captioning solutions at [ai-media.tv](https://ai-media.tv) or contact [sales@ai-media.tv](mailto:sales@ai-media.tv)