Captioning of Legislative Webcasts

NCSL Legislative Summit, Boston
Boston Convention & Exhibition Center
Sunday, Aug. 6, 2017
Have you ever noticed that all the dishes and telescopes searching for intelligent life are pointed away from Earth?
# SOUTH CAROLINA DAILY WEB STREAMING STATISTICS

January 1, 2017 - June 30, 2017

<table>
<thead>
<tr>
<th></th>
<th>Peak Date</th>
<th>Peak Value</th>
<th>Average Daily</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Connections</strong></td>
<td>4/26</td>
<td>11,805</td>
<td>1,517</td>
</tr>
<tr>
<td><strong>Max Simultaneous Viewers</strong></td>
<td>4/26</td>
<td>582</td>
<td>83</td>
</tr>
<tr>
<td><strong>Peak Bandwidth Utilization (Mbps)</strong></td>
<td>4/26</td>
<td>605</td>
<td>147</td>
</tr>
</tbody>
</table>
SOUTH CAROLINA LEGISLATURE DATACENTER

2015 - PRESENT
2015 - PRESENT
1996

South Carolina General Assembly

Today
- Today at the State House
- Meetings: Senate Bldg.
- Meetings: House Bldg.

Bills etc.
- Bills, Laws & Regulations
- Bills & Resolutions
- Regulations
- Laws-New

Inside...
- Insider Information
- Who's Who at the State House
- Budget: State
- The Basement: Archive
- The State Constitution
- Touring the Complex

Reference & Research
- Symbols & Emblems
- The Legislative Manual
- All About County Government
- All About State Agencies
- The State: Homepage
- E-Mail Your Legislators Here
- Where to Write
- Where to Call
- Contact Your Host: LPITR
- Sign the Guest Book

Contacts

For Fun
- For Kids of All Ages
- Our Wonderful Kids Page
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
</table>
| 1996 | LIS hosts House website at [www.leginfo.state.sc.us](http://www.leginfo.state.sc.us)  
LPITR hosts Senate website at [www.lpitr.state.sc.us](http://www.lpitr.state.sc.us) |
| 1998 | South Carolina Educational Television carries live House and Senate debate |
| 1999 | live streaming of House debate at [www.leginfo.state.sc.us](http://www.leginfo.state.sc.us)  
[www.leginfo.state.sc.us](http://www.leginfo.state.sc.us) wins NCSL Notable Universal Resource Locator Award |
| 2001 | live streaming of Senate and House debate at [www.scstatehouse.net](http://www.scstatehouse.net) |
| 2004 | official website address changed to [www.scstatehouse.gov](http://www.scstatehouse.gov) |
| 2013 | live streaming of committee meetings |
| 2014 | public video archive established  
live streaming of House and Senate debate WITH CAPTIONS  
social media (Twitter feed) added to announce committee meetings  
winner of Notable State Documents Award by the South Carolina State Library |
| 2015 | rolled out in-house-developed Dashboard applications for House and Senate  
winner of NCSL Legislative Staff Achievement award |
| 2016 | website infrastructure upgraded to high-availability cluster  
RSS feeds added for podcasting through Apple and Google technologies  
commissioned in-house-developed broadcast automation engine |
<p>| 2017 | video streaming infrastructure upgraded to high-availability cluster |</p>
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2015 - PRESENT

Notable Features:

- Senate and House Chamber Dashboards
- Twitter Meeting Announcements
- Live web streaming of Chamber debate
- Live web streaming of committees
- Video archive of all live broadcasts
CONTENT DELIVERY SYSTEM

Complete Platform Solutions:
• Sliq Harmony Hub - http://sliq.com
• Granicus - https://granicus.com

Cloud-Based Content Delivery Platforms:
• YouTube - https://www.youtube.com/live_dashboard
Reference Design Features:

- Fully redundant, high-availability approach
- Centralized core hardware in controlled environment
- Best of breed equipment to future-proof investment
- Support for captions and other accessibility technologies
- Dedicated bandwidth for web streaming content
- Scalable solution that grows as requirements evolve
- Metrics for utilization analysis and strategic planning
- Integrated with internal meeting schedule system
- Automation system monitors QoS and generates alerts
- Distributes to wide array of end-user devices
CONTENT DELIVERY STRATEGY

Simple Cloud-Based System

- H.264 Web Encoders
  - 3rd Party CDN
    - Public Viewers
    - On-Premise PCs and Mobile Devices
CONTENT DELIVERY STRATEGY
Robust On-Premise System

Diagram showing the flow from Public Viewers to Wowza Origin1, Wowza Origin2, Wowza Edge1, Wowza Edge2, and On-Premise PCs and Mobile Devices.
CONTENT DELIVERY STRATEGY
Efficient Hybrid System
CAPTION INGEST STRATEGY

Direct Caption Ingest

- Caption Encoders
- Live Transcription
- Meeting Rooms
- H.264 Web Encoders
- Wowza Origin1
- Wowza Origin2
- Wowza Edge1
- Wowza Edge2
CAPTION INGEST STRATEGY

Cloud-Based Caption Ingest
# U.S. Population with Hearing Problems

Statistics from 1997-2003
(includes deaf and hard of hearing)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Total Population</th>
<th>People with Hearing Problems</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>294,043,000</td>
<td>38,225,590</td>
<td>13%</td>
</tr>
<tr>
<td>Ages 18-34:</td>
<td>67,414,000</td>
<td>2,309,000</td>
<td>3.40%</td>
</tr>
<tr>
<td>Ages 35-44:</td>
<td>38,019,000</td>
<td>2,380,000</td>
<td>6.30%</td>
</tr>
<tr>
<td>Ages 45-54:</td>
<td>25,668,000</td>
<td>2,634,000</td>
<td>10.30%</td>
</tr>
<tr>
<td>Ages 55-64:</td>
<td>21,217,000</td>
<td>3,275,000</td>
<td>15.40%</td>
</tr>
<tr>
<td>Ages 65 and over:</td>
<td>30,043,000</td>
<td>8,729,000</td>
<td>29.10%</td>
</tr>
</tbody>
</table>

Sources:
- Disability Compendium - [https://disabilitycompendium.org](https://disabilitycompendium.org)
- Federal Census - [https://www.census.gov/](https://www.census.gov/)
BENEFITS TO PROVIDING CAPTIONS

• **Inclusiveness:**
  ▪ Deaf and hearing-impaired populations have a right to take equal part in political discourse

• **Transparency:**
  ▪ Information about government activity is more accessible when not limited to a single medium

• **Convenience:**
  ▪ Screens in public areas like cafeterias (where intelligibility is lost) or libraries (where silence is the norm) have captions enabled for everyone

• **Searchability:**
  ▪ Metadata can be used for bill tracking and other applications
OBSTACLES TO PROVIDING CAPTIONS

• **Initial Cost:**
  - Capital investment in infrastructure can be significant

• **Recurring Costs:**
  - Additional IT support personnel or outside services
  - Equipment maintenance and ongoing improvement
  - Transcription:
    - Hiring dedicated internal personnel
    - Using paid 3\textsuperscript{rd} party services

• **Technology:**
  - Finding compatible equipment and software can be difficult
  - Advancements are ongoing, which makes it a moving target
JUSTIFICATION

• Empowerment
  ▪ Doing nothing disenfranchises a sizeable population segment

• Compliance
  ▪ FCC rules in the past only regulated programs on traditional broadcast television but now also apply to programs on new media

• Accessibility
  ▪ Openness and transparency are legitimate costs of public discourse

• Cost is a fraction of other acceptable expenses
  ▪ For point of reference, in 2014, one legislative session day in South Carolina cost taxpayers approximately $34,000 (reference: www.wbtw.com)
LIVE CAPTIONING RESOURCES

Human Transcription:
• EEG iCap service - https://eegent.com/icap
• EEG HD492 - https://eegent.com
• Hire dedicated personnel or use existing resources
• Long meetings require multiple people due to fatigue
• Concurrent events require additional resources

Automatic Speech Recognition (ASR):
• EEG EN537 Smart Encoder (with Lexi) - https://eegent.com
• Apptek CC Appliance - http://www.apptek.com/cc-appliance
ARCHIVE CLIP CAPTIONING RESOURCES

Human Transcription:
• EEG FilePro CCPlay - https://eegent.com

Automatic Speech Recognition (ASR):
• EEG FilePro Scribe (with Lexi) - https://eegent.com
• Microsoft MAVIS - https://www.microsoft.com/en-us/research/project/mavis/
• 3Play Media - www.3playmedia.com