Cloud Based Live Production

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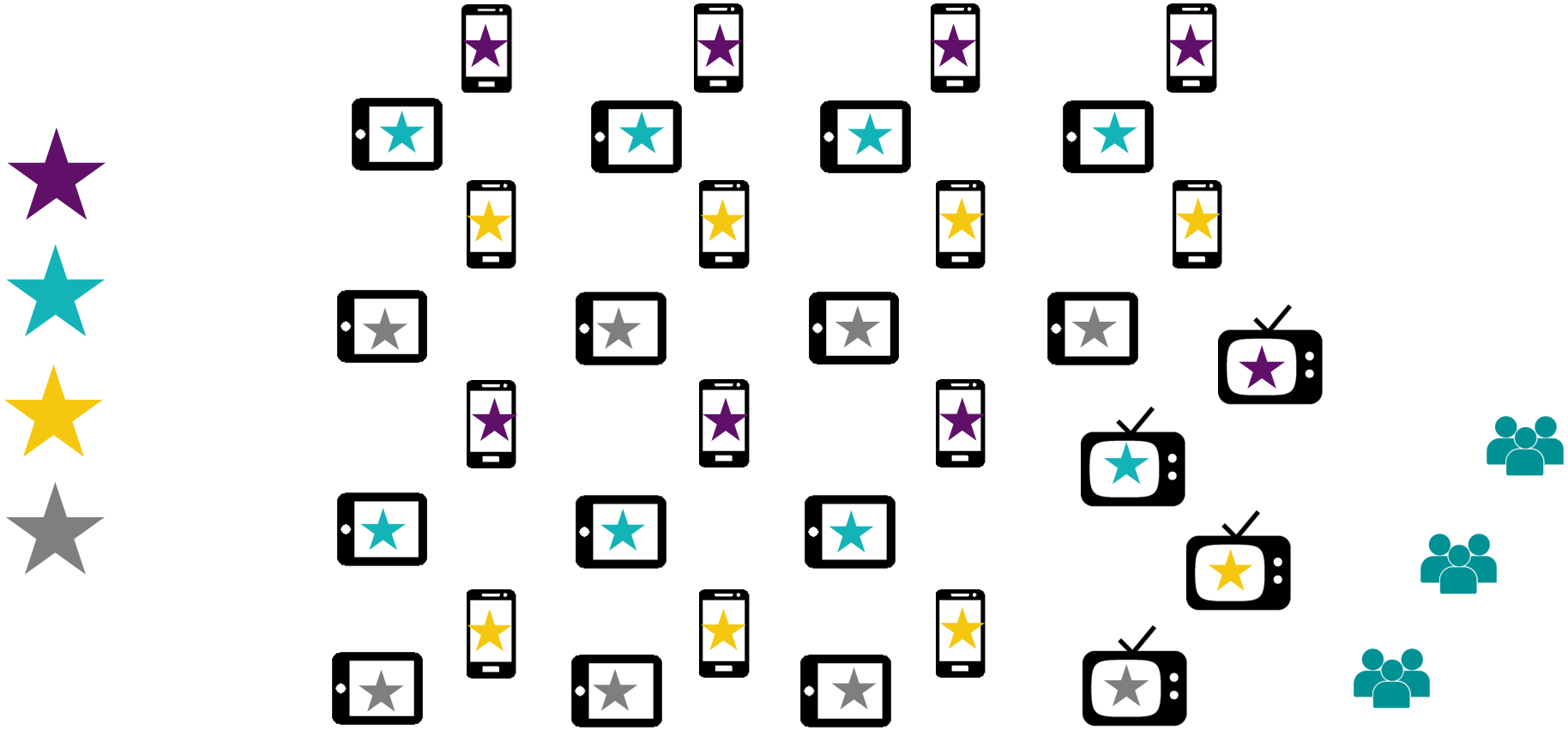
The Big Picture



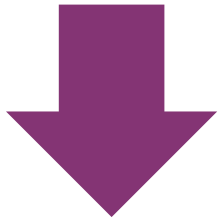
What This Means

REVENUE

Need to get more out of your current assets

Need to generate new revenue streams

COST



Better align cost structure with revenue

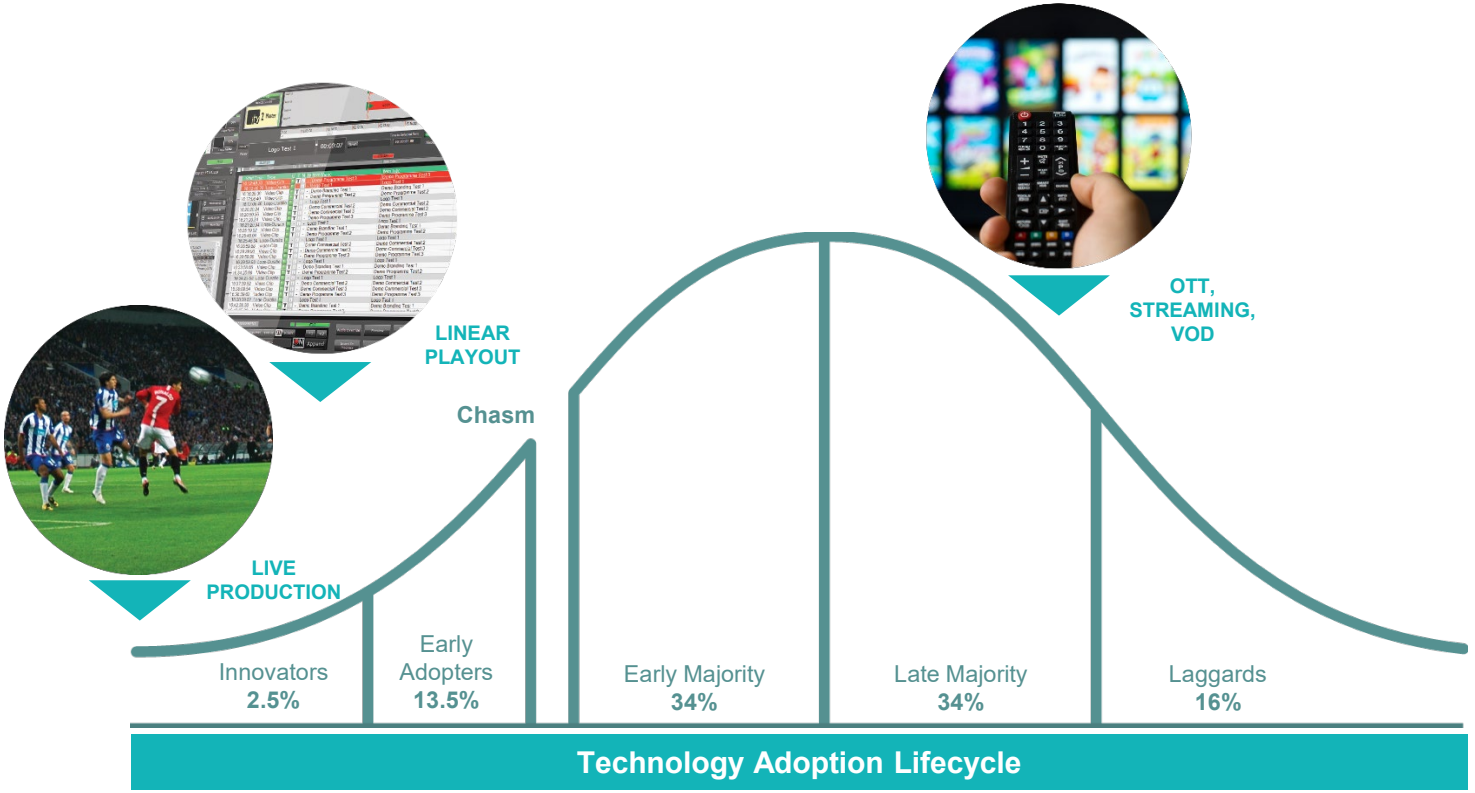
Need for more efficiencies

Key Challenges

Generating new revenue opportunities is hard as technology is too static / inflexible or requires too much investment upfront.

Integrating SW is hard, especially if multiple vendors are involved. Add cloud and it's even harder.

Broadcast Adoption of Elastic Compute

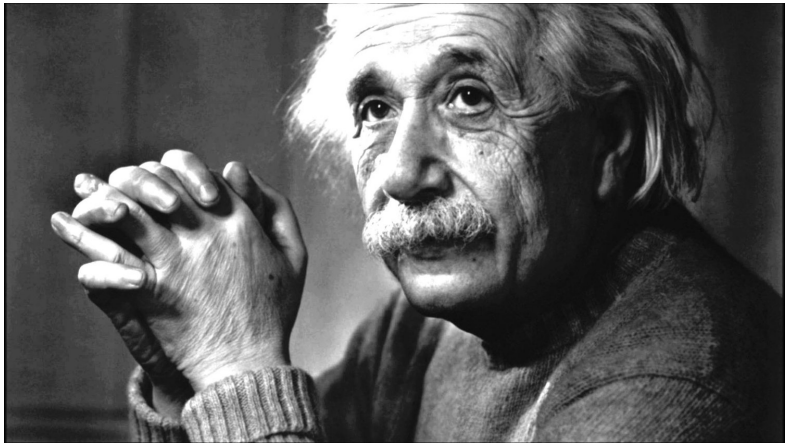


Obstacles to Adoption

- Latency?
- I/O Scaling?
- Integration with on-premise ops?
- Business Model?
- Functional Sufficiency?

Addressing Latency with Intelligent Timing Management

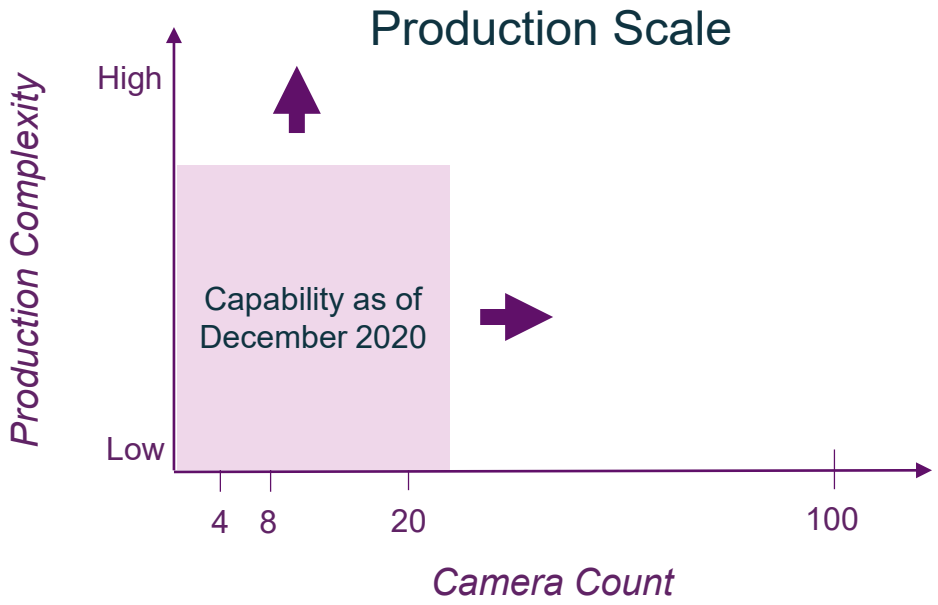
- Source Time Alignment
- Low-Latency, High Quality Monitoring
- Low Latency Control
- System Level Timing Management



You can’t cheat physics…
…but you can manage it

Addressing I/O Scale

- Software Optimization
- Scale Up
- Scale Out



Addressing Integration with On-Premise Ops

- Transport Integration
  - SDI
  - ST 2110
  - NDI
- Control Integration
  - NMOS IS-04/05
- Monitoring
- Intercom

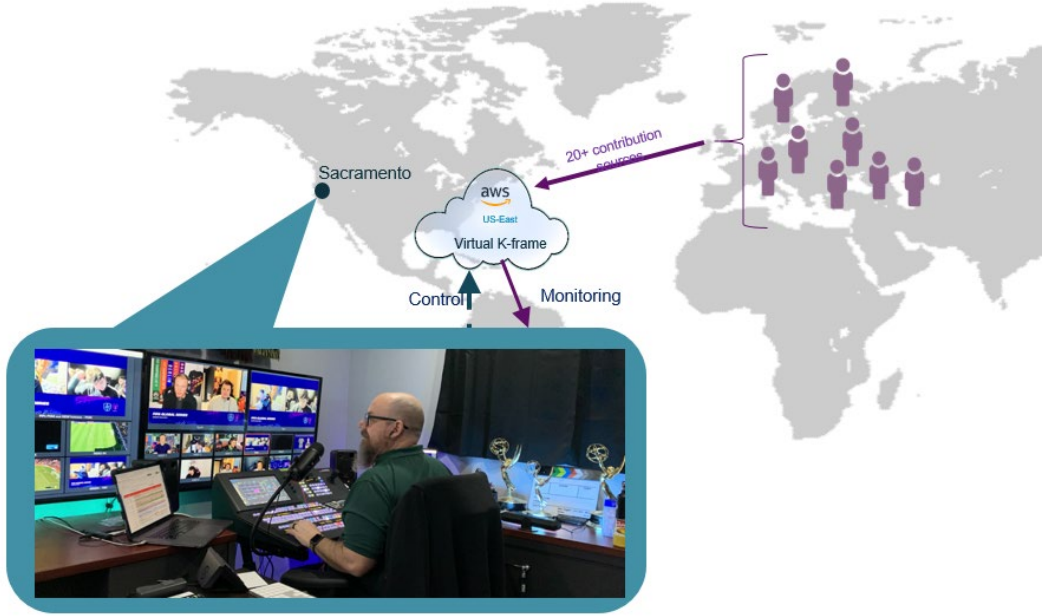
Addressing the Business Model

- Model Flexibility
- Total Cost of Ownership
- Driving Efficiency

Addressing Functional Sufficiency

- Production Switching
- Audio
- Graphics
- Replay
- Camera Shading
- Probing/Monitoring

Professional Tools

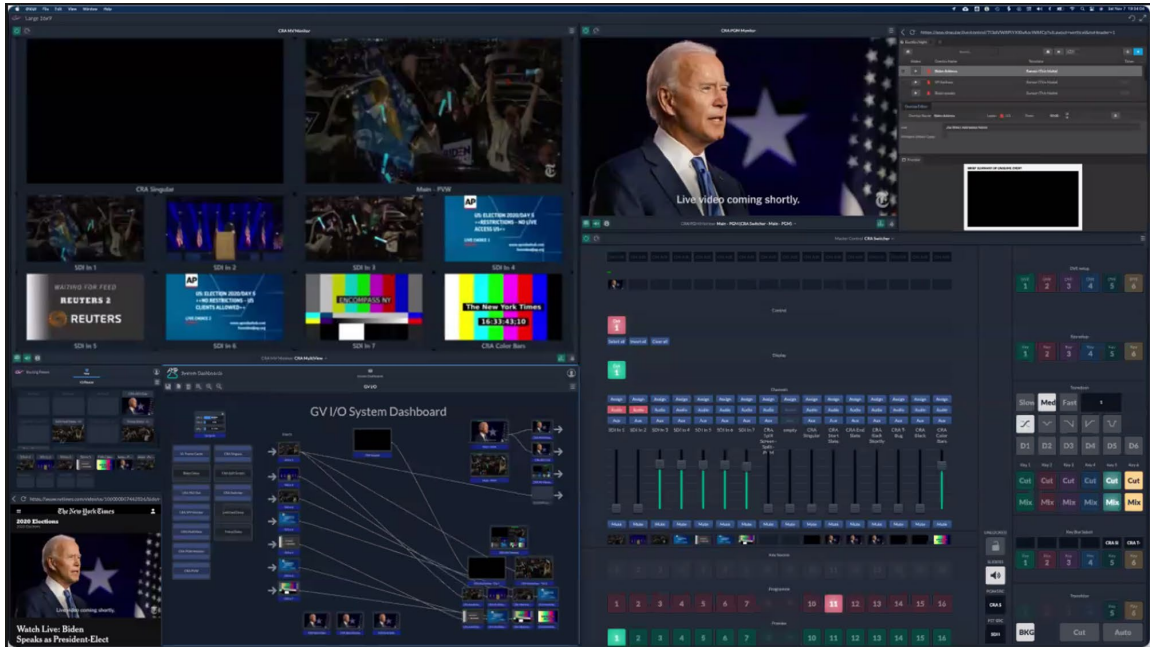


Addressing Functional Sufficiency

Agile Media Processing Platform

- Production Switching
- Audio
- Graphics
- Replay
- Camera Shading
- Probing/Monitoring

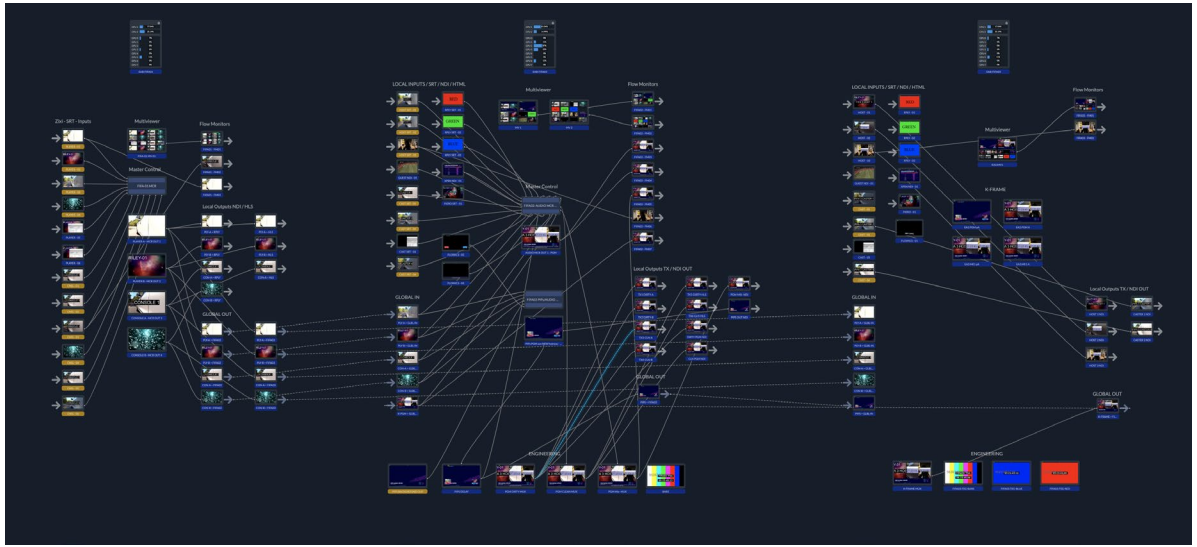
Easily Customizable UI's per User



Addressing Functional Sufficiency

- Production Switching
- Audio
- Graphics
- Replay
- Camera Shading
- Probing/Monitoring

System Monitoring/Visualization

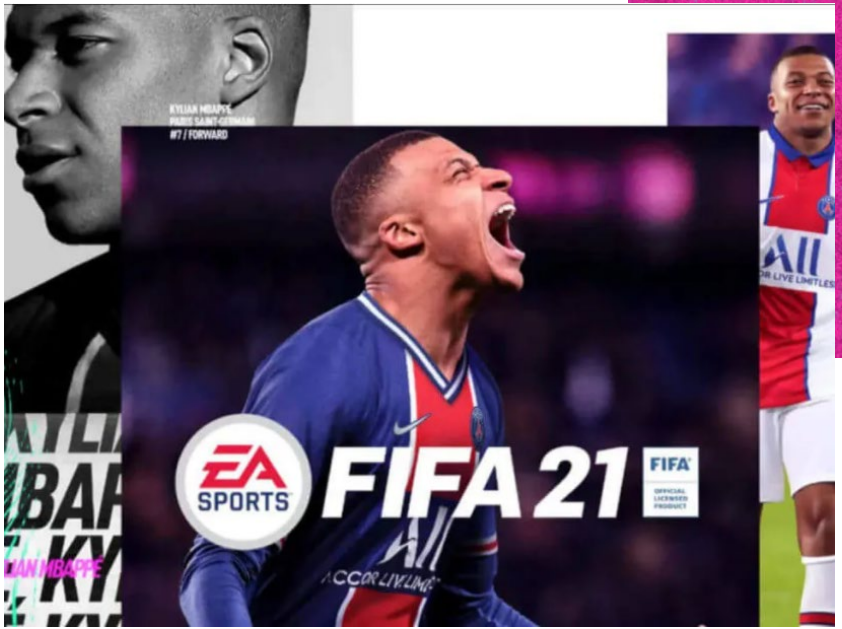


Cloud Based Live Production Use Cases

eSports

Activision Blizzard

Electronic Arts

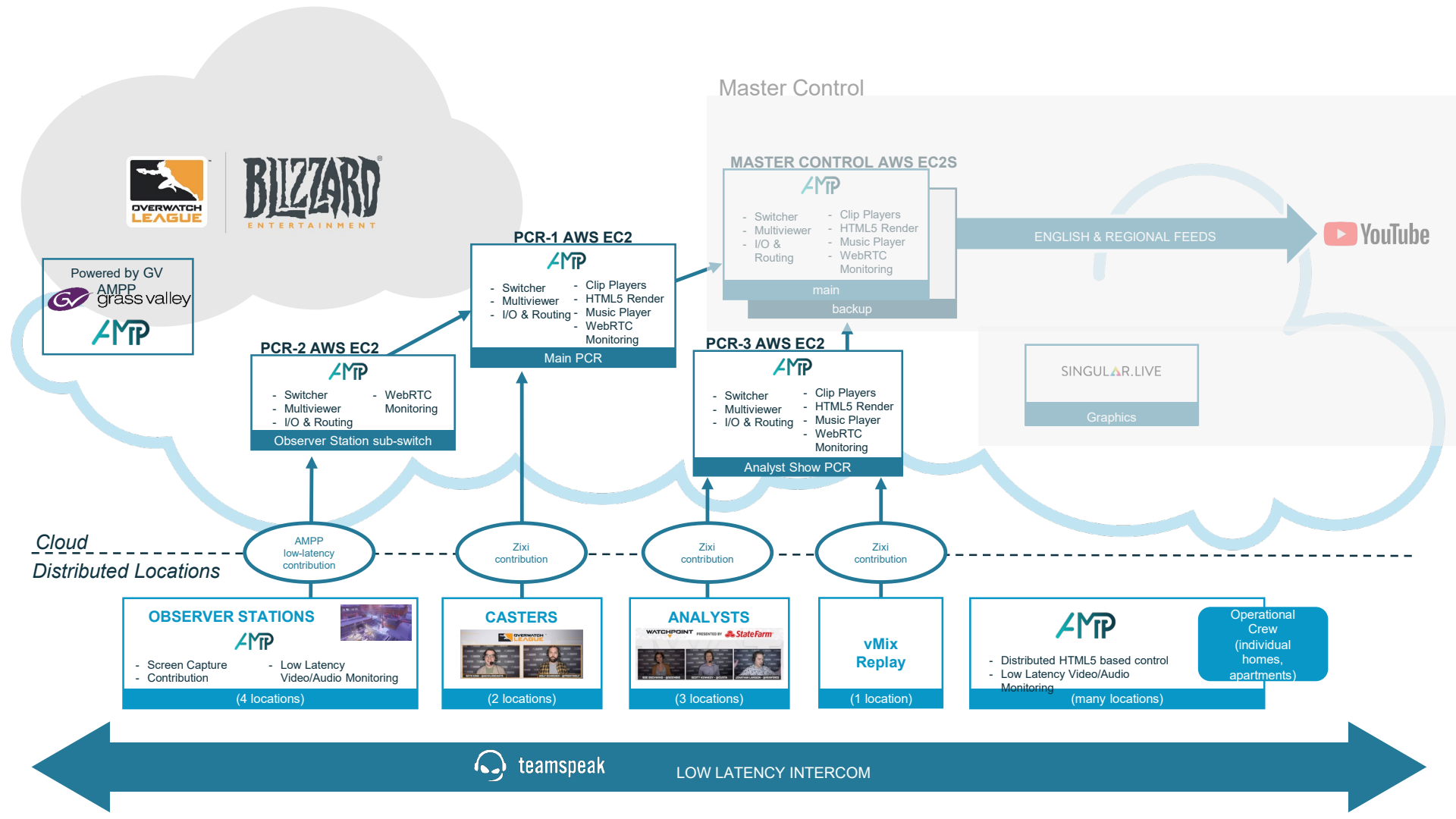


The Need

- Flexible, agile way to enable true, worldwide home/away format → drives fan engagement
- Ability to experiment with eSports broadcasts for games without a significant broadcast revenue stream (yet)
- Efficient way to handle regional branding and advertisement opportunities

The Need

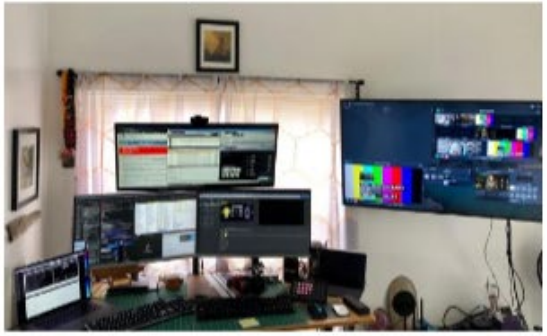
- Completely Distributed Remote Production Capability (“work from home”)
- Broadcast Production Quality Storytelling
- Geographically Pivotable Scalability
- Extensive Probing/Monitoring Capabilities


Master Control
MASTER CONTROL AWS EC2S
- Switcher
- Multiviewer
- I/O & Routing
- Clip Players
- HTML5 Render
- Music Player
- WebRTC Monitoring
main
backup
ENGLISH & REGIONAL FEEDS
YouTube
PCR-1 AWS EC2
- Switcher
- Multiviewer
- I/O & Routing
- Clip Players
- HTML5 Render
- Music Player
- WebRTC Monitoring
Main PCR
PCR-2 AWS EC2
- Switcher
- Multiviewer
- I/O & Routing
- WebRTC Monitoring
Observer Station sub-switch
PCR-3 AWS EC2
- Switcher
- Multiviewer
- I/O & Routing
- Clip Players
- HTML5 Render
- Music Player
- WebRTC Monitoring
Analyst Show PCR
Powered by GV AMPP grass valley
SINGULAR.LIVE
Graphics
Cloud
Distributed Locations
AMPP low-latency contribution
Zixi contribution
Zixi contribution
Zixi contribution
OBSERVER STATIONS
- Screen Capture
- Contribution
- Low Latency Video/Audio Monitoring
(4 locations)
CASTERS
(2 locations)
ANALYSTS
(3 locations)
vMix Replay
(1 location)
- Distributed HTML5 based control
- Low Latency Video/Audio Monitoring
Operational Crew (individual homes, apartments)
(many locations)
teamspeak
LOW LATENCY INTERCOM

ONLINE PRODUCTION

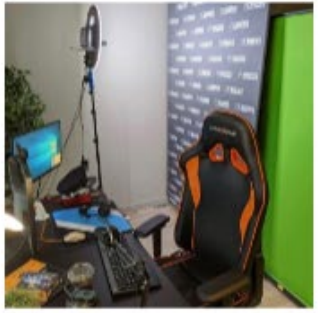
ACTIVISION BLIZZARD ESPORTS

Graphics Control



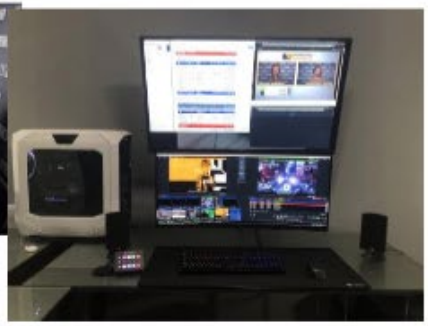
Production Control

Talent Setup



Observers

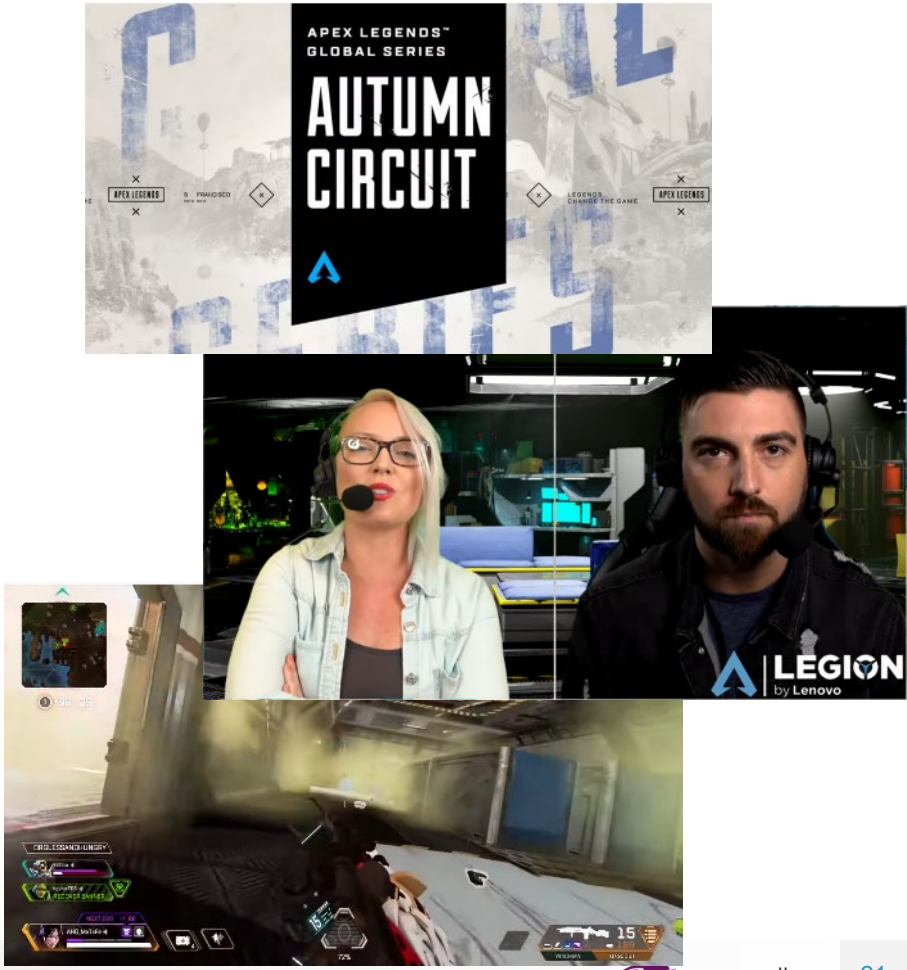
Replay Control



October EA Apex Production Scope

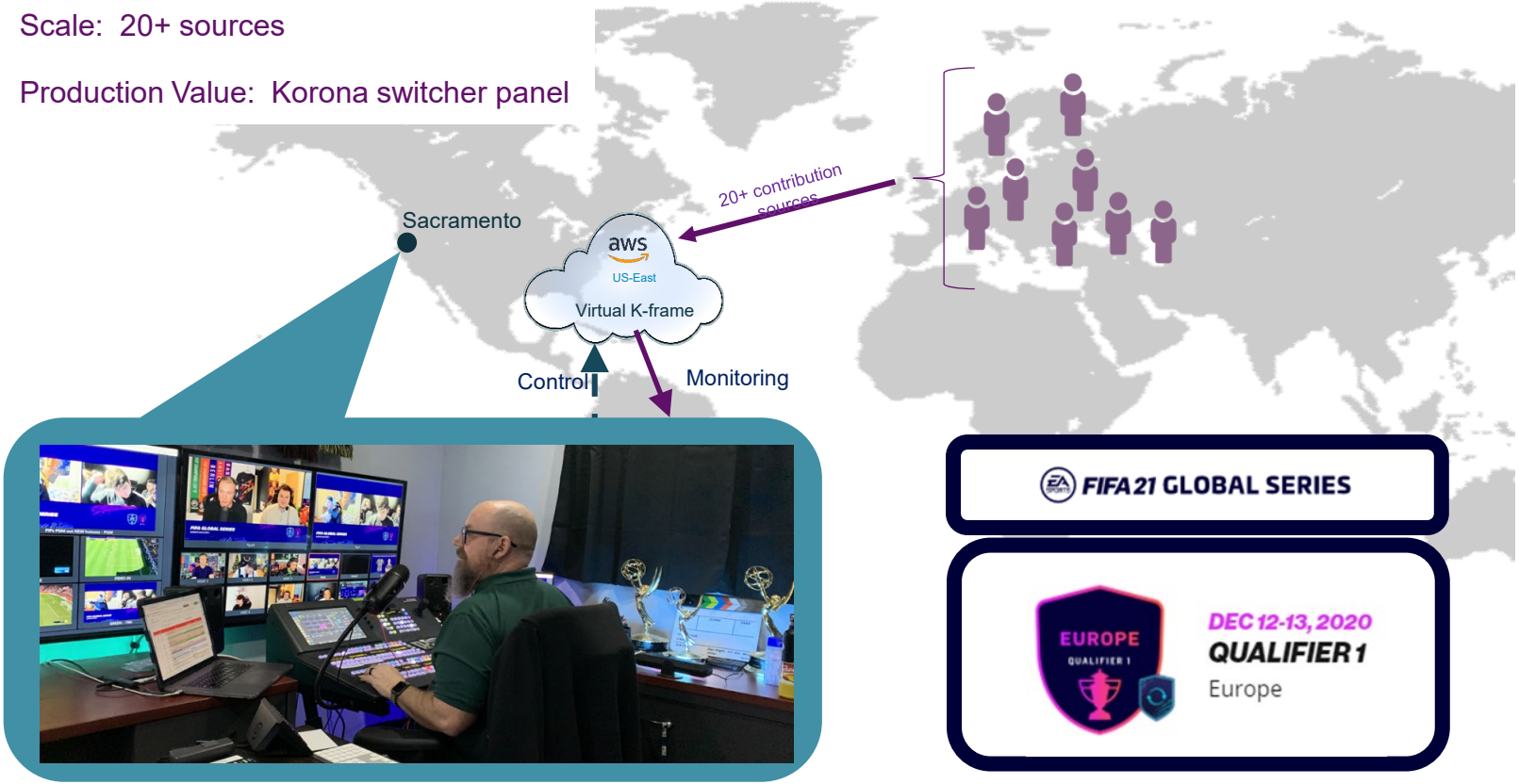
- 8 virtual cameras (observer stations)
- 8 contribution links for talent
- Live switching, graphics, audio, clip playback
- Contribution from EMEA, US, APAC

100% Cloud Based Processing



December EA Sports FIFA Production Scope

- Scale: 20+ sources
- Production Value: Korona switcher panel



2020 Cloud Production Checklist

- Fully elastic, globally pivotable production
- Ultimate distributed remote production
- Significant list of functionality
- Capable of doing a 20+ camera show in 1080p60

Areas to Improve

- Continued Scalability
- More tools
  - Replay
  - Audio Mixing
- Broader Ecosystem
- Capable of doing a 20+ camera show in 1080p60

Conclusions

- 2020 was a breakthrough year in proving that the fundamental challenges to broadcast grade cloud production can be solved

- We are at the beginning of an adoption curve and there remains much to do to address a wider range of use cases