



AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

MDS 202

A new reality for content production

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COO, Pop Family Entertainment

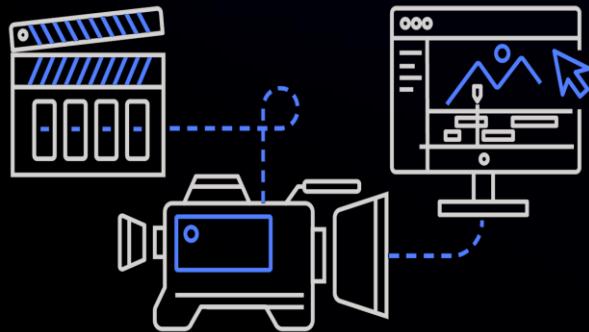


Agenda

- Content production with AWS
- Amazon Nimble Studio
- Implementing cloud-based workflows
- Pop Family Entertainment

AWS for M&E

The most purpose-built capabilities and partner solutions for reinventing content production, media supply chain, broadcast, direct-to-consumer & streaming, and analytics



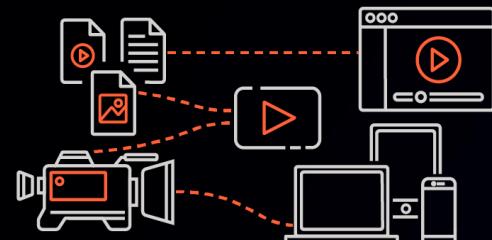
Content production



Media supply chain and archive



Broadcast



Direct-to-consumer
and streaming



Data science and
analytics for media

Content Production

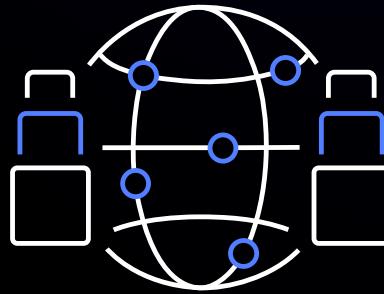
Content production | AWS investments



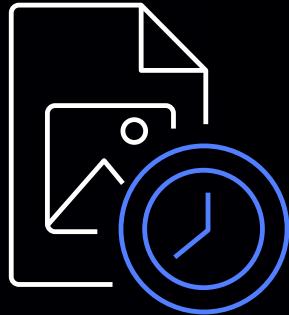
Content production | Community



Content production | Trends



Remote production



Accelerating pipelines



Controlling costs

Content production | Components



Virtual workstations

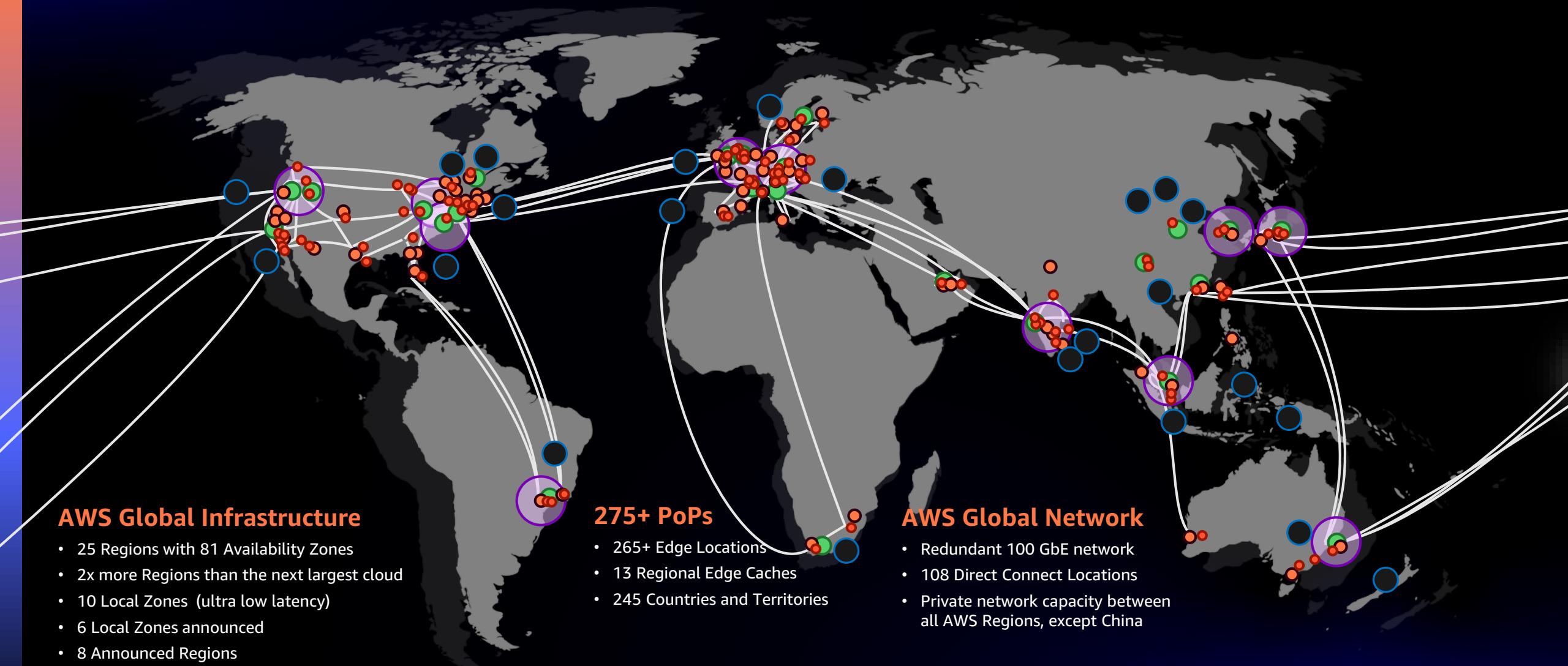


Rendering



Infrastructure

Content production | Global footprint



Content production | AWS Local Zones



AWS Local Zones

Single-Digit
millisecond latency
within local geography

Available in: Boston, Chicago, Dallas, Denver, Houston, Kansas City, Los Angeles, Miami, Minneapolis, Philadelphia

Coming soon: Atlanta, Las Vegas, New York, Phoenix, Portland, Seattle

Content production | Amazon EC2 G5 Instances



G5 instances

High performance GPU-based instances for graphics-intensive applications

Featuring up to 8 NVIDIA A10G GPUs with 24GB of GPU memory, 100 Gbps Network Bandwidth

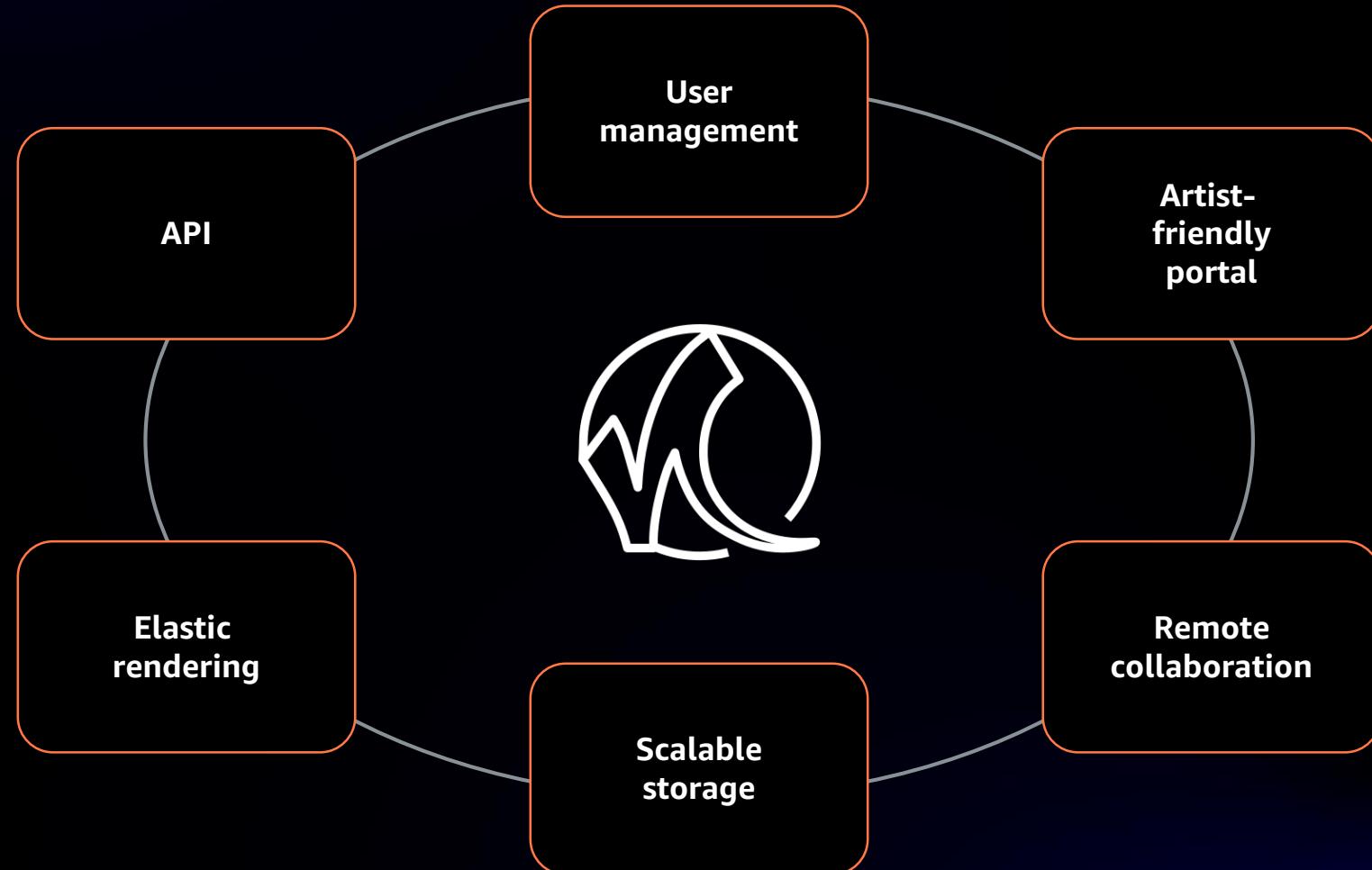
Up to 3x better graphics performance compared to EC2 G4dn instances

Amazon Nimble Studio



Content production | Amazon Nimble Studio

BENEFITS



Content production | Amazon Nimble Studio

SIMPLIFIED PRICING

Hourly pricing for virtual workstations

Instance size

Region

Operating system

Content production | Amazon Nimble Studio

SIMPLIFIED PRICING

Hourly pricing for virtual workstations

Instance size

Region

Operating system

Features bundled for artists

Artist workstation

Root volume (EBS)

Pixel streaming egress

Content production | Amazon Nimble Studio



Launched **April 2021**



Generally available in the US West (Oregon), US East (N. Virginia), Canada (Central), Europe (London), Asia Pacific (Sydney) Regions and the US West (Los Angeles) Local Zone



What we're working on: **ease of use, collaboration, and openness**

Content production | Amazon Nimble Studio

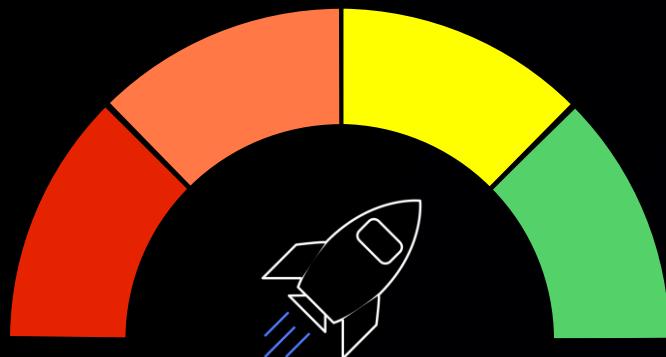


What we're working on: ease of use

Faster startup times

Single-instance persistence

Launch Profile Test Launch



Updated API

```
# Get a list of all the studios associated with this account
response = nimble_client.list_studios()

# Get id of existing studio
studio_id =
response['studios'][0]['studioId']

# Retrieve existing streaming sessions
response =
nimble_client.list_streaming_sessions(studioId=studio_id)
sessions = response['sessions']
```

Content production | Amazon Nimble Studio



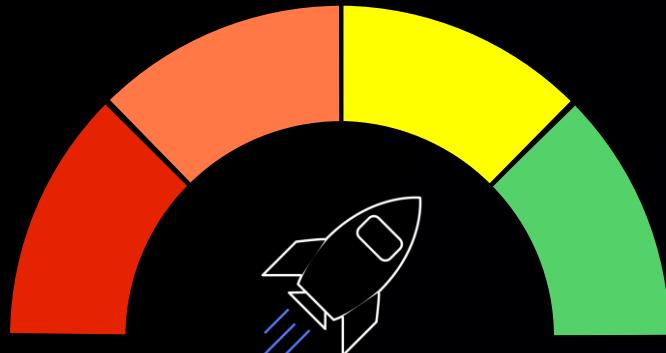
What we're working on: ease of use

Faster startup times

Single-instance persistence

Launch Profile Test Launch

Updated API



```
nimble_client.create_streaming_session(  
    ec2InstanceType='g4dn.4xlarge', launchProfileId =  
    profileId, ownedBy = artistId, streamingImageId = imageId,  
    studioId = studioId )
```

Content production | Amazon Nimble Studio



What we're working on: ease of use

Faster startup times

Single-instance persistence

Launch Profile Test Launch

The screenshot shows the 'Current Session' section of the Amazon Nimble Studio interface. It displays a cloud icon, the session name 'Workstation-Default', creation date ('Nov 24, 2021 11:25:32 AM EST'), region ('us-east-1'), and status ('Running'). Below this, the 'Disconnected Sessions' section is shown as empty. A context menu is open over the session row, listing options: 'Reconnect session' (highlighted in blue), 'Stop virtual workstation', and 'Terminate virtual workstation'. The background shows a dark-themed interface with other navigation elements.

Current Session			
Running	<u>Workstation-Default</u> Session ID: 90675588a9-6314d55b-727...	Created Nov 24, 2021 11:25:32 AM EST	Region us-east-1
		Will stop Nov 24, 2021 10:55:32 PM EST	Will terminate Nov 28, 2021 10:55:32 PM EST

Disconnected Sessions

- Reconnect session
- Stop virtual workstation
- Terminate virtual workstation

Content production | Amazon Nimble Studio



What we're working on: ease of use

Faster startup times

Single-instance persistence

Launch Profile Test Launch

The screenshot shows the 'Launch profiles' page in the Amazon Nimble Studio console. The navigation bar at the top says 'Nimble Studio > Launch profiles'. Below the navigation, the title 'Launch profiles' has an 'Info' link. A table lists two launch profiles:

Name	ID	Status	Active Sessi...	Region
Workstation-Default	EuTRvn3s...	Ready	1	us-east-1
RenderWorker-Default	6ZUjZMm...	Performing test launch	1	us-east-1

To the right of the table is a 'Actions' dropdown menu with options: 'Manage', 'Edit', 'Delete', 'Copy to new', 'Test', 'Perform test launch', and 'View errors'. The 'Test' option is highlighted with a blue background. A tooltip for 'Perform test launch' indicates it was created by render workers.

Content production | Amazon Nimble Studio



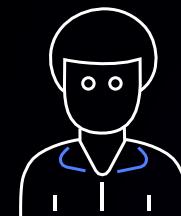
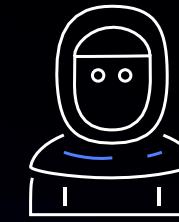
What we're working on: ease of use, collaboration and openness

Faster startup times

Single-instance persistence

Launch Profile Test Launch

More to come

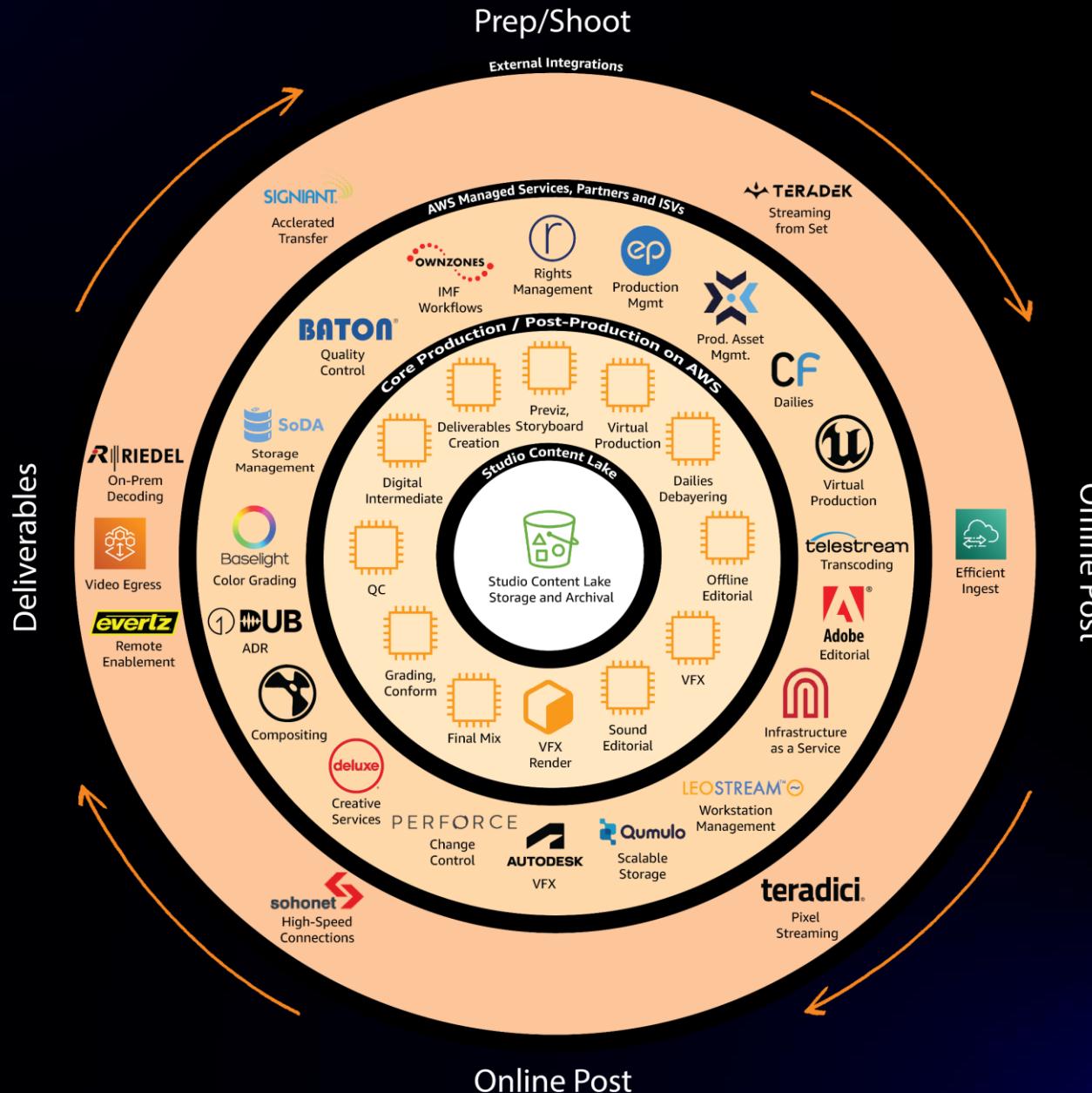


Implementing cloud-based workflows

Katrina King
Sr. Specialist SA , AWS



Cloud-based production: A holistic approach



Post-Production in the cloud | Best practices

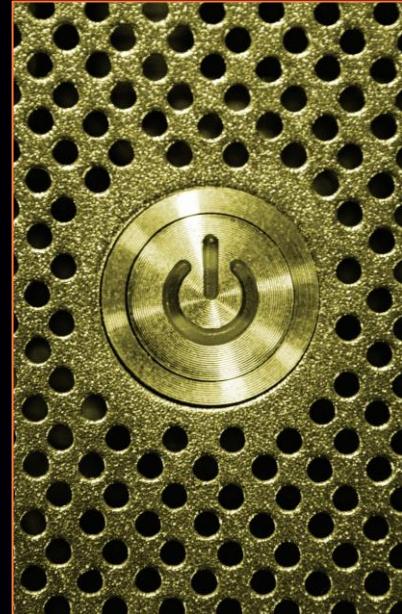
Efficient
ingest



Templated
workstations



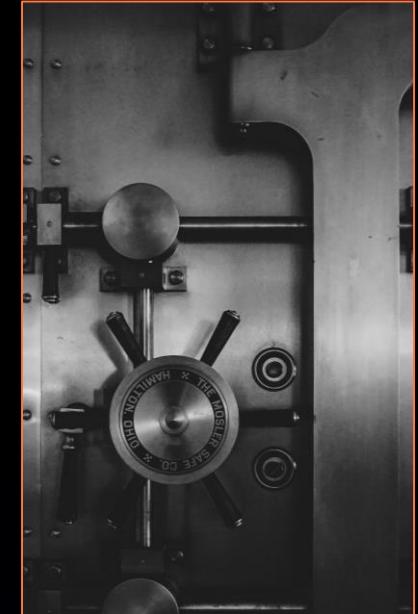
Workstation
management



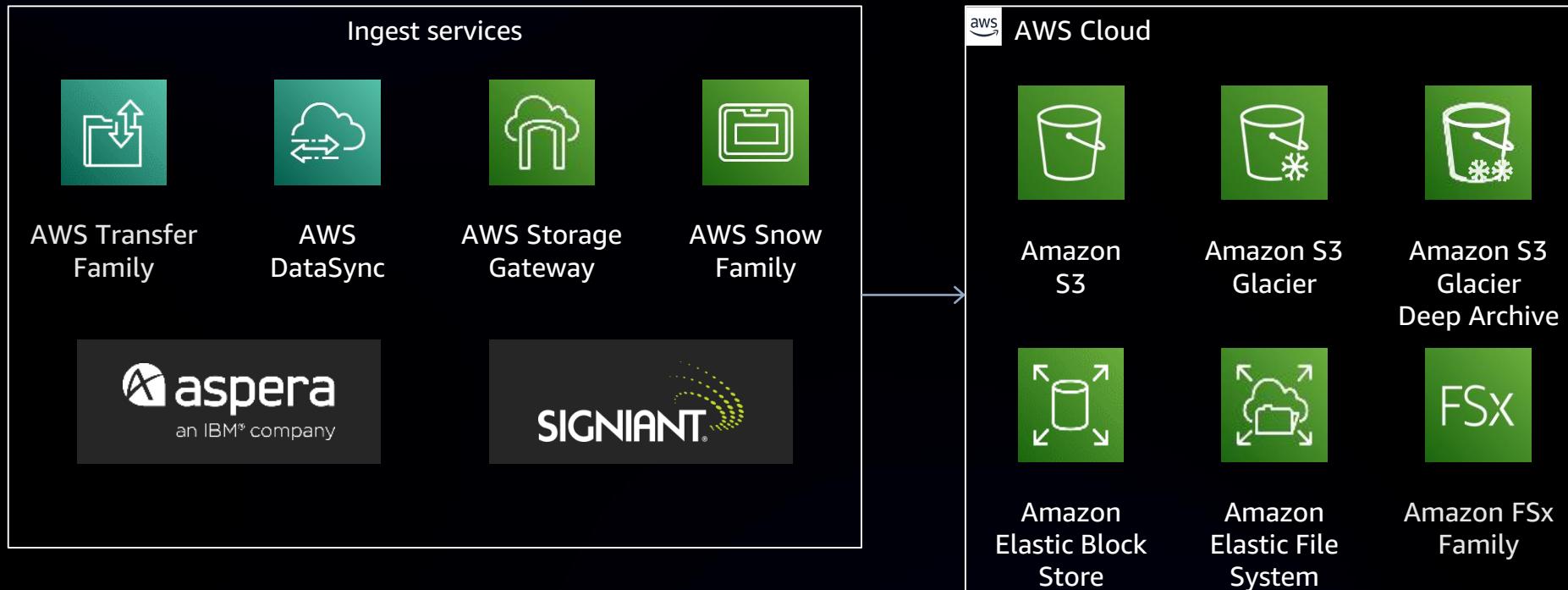
Remote
enablement



Studio-grade
security



Easy and efficient file ingest options



Editorial proxies with AWS Elemental MediaConvert

- Wide variety of codec support
- Easy to use and cost-effective
- Integrated watermarking



AWS Elemental MediaConvert

Templated workstations for efficient scalability

- Pre-install applications, plug-ins and drivers
- Create Amazon Machine Images (AMIs)
- Replicate and deploy globally as required



Workstation management for scalability



Managed experience



Connection broker and
workstation management

Remote enablement | Pixel streaming

- Low latency, high-performance remote desktop access
- Up to 7.1 channel support
- Encrypted sessions



Content Security in the Cloud

How to secure

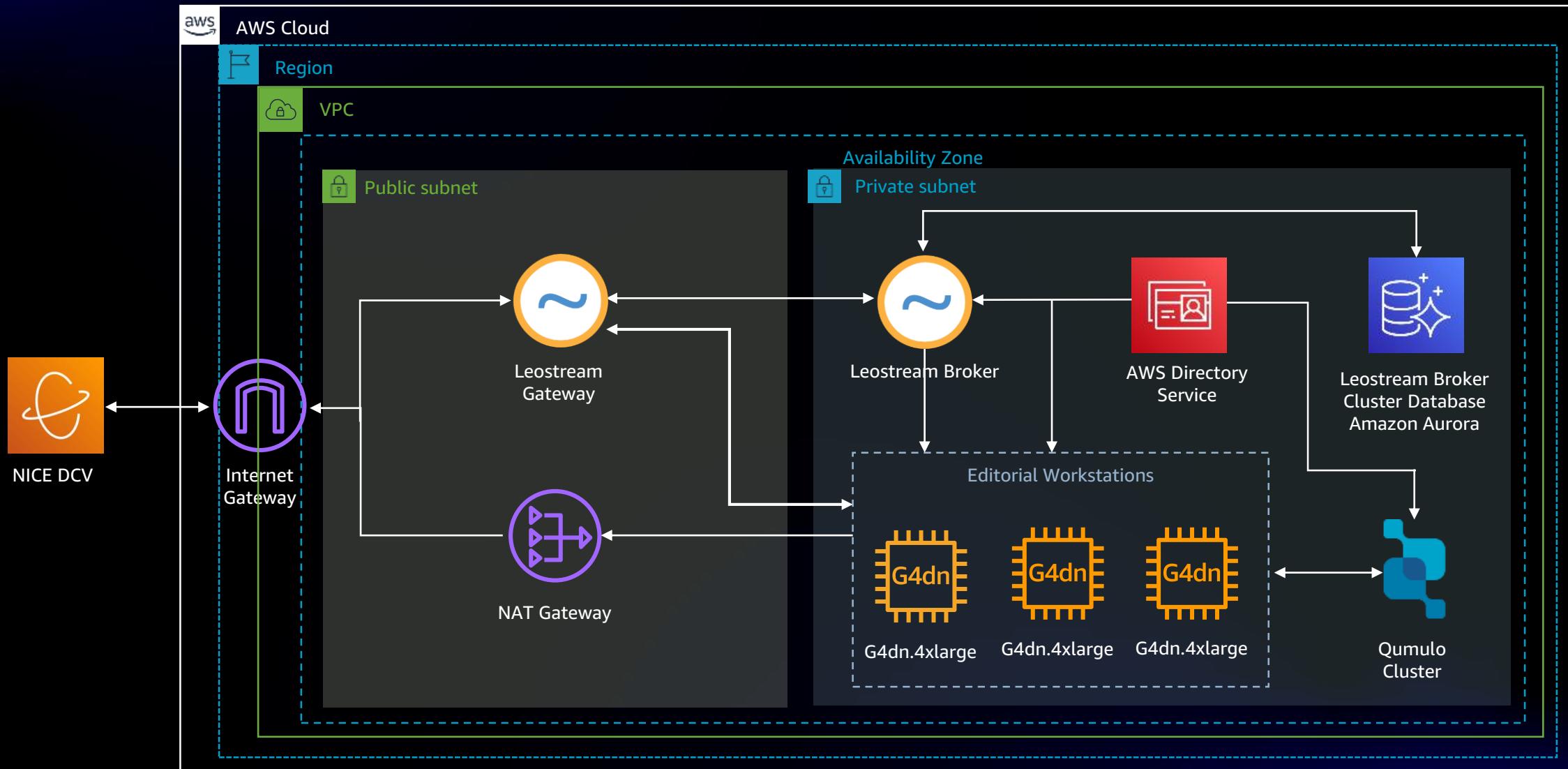
- Access control and identity management
- Encryption
- Audit controls

M&E industry efforts

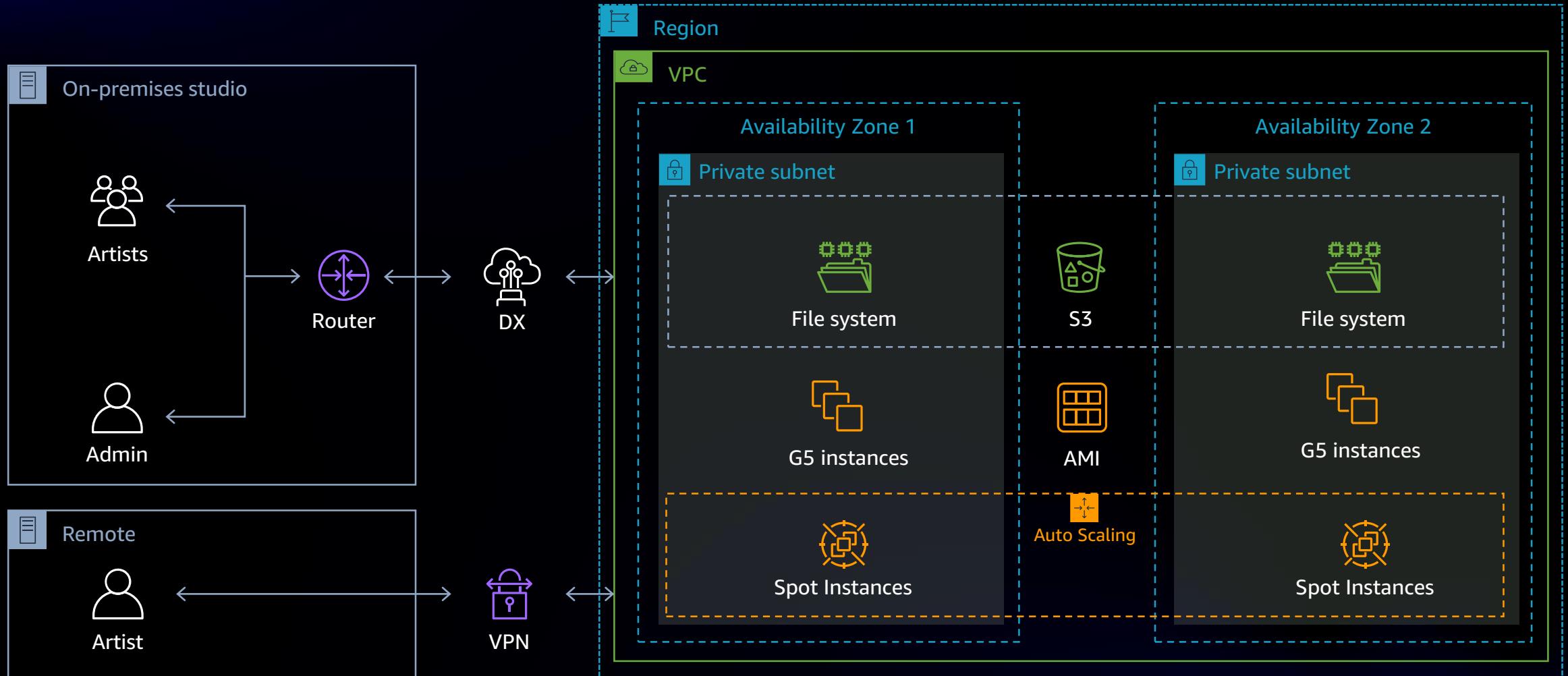
- Industry engagement
- Third-party hardening guide



Edit at scale in the cloud



VFX/Animation studio in the cloud



Pop Family Entertainment

COO
Gerry Travers



Agenda

- Pop Family Entertainment
- Pop-nimble pipeline
- Rendering
- Artist onboarding

Pop Family Entertainment

POP FAMILY Dreamlight

POP FICTION

- Long and short-form narrative productions
- Co-Production with Muse Entertainment in Canada
- 8 x 60" live-action episodes
- Starring Helene Joy from Murdoch Mysteries

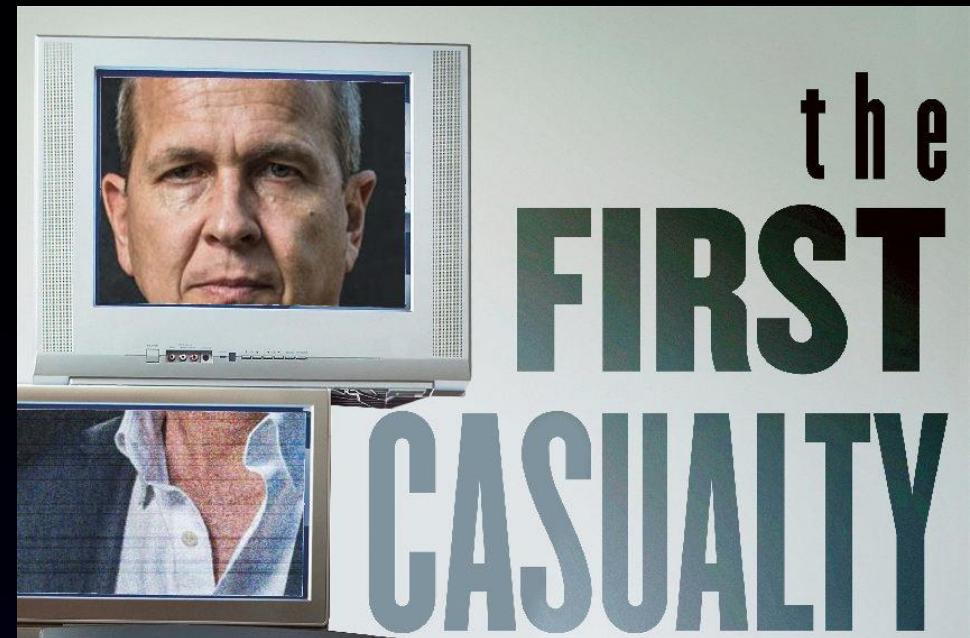
Madison Knight



POPFACTUAL

- Documentaries and **factual** productions
- Feature-length documentary based on the memoir by Peter Greste
- Producing using VPS technology and historical archive

The First Casualty



POP FAMILY

- Productions for kids and families
- 78 x 7" episodes
- Co-production with eOne in Canada
- Two seasons available on Netflix

Alien TV



being Betty Flood

- 3D animated feature film
- “Being Betty Flood” is a **universal story** of every teenager’s search to find themselves
- A journey of self-discovery, identity, and embracing our differences



Synopsis

- From a fantastic world where magic rules the land, a wild, free-spirited girl is about to celebrate her thirteenth birthday
- Betty and her family, The Floods, are fugitives on the run from a malicious King
- Betty's world is turned upside down when the King eventually finds her, and she uncovers her family's secret past
- Betty must find her **true voice** to rescue her family



The audience



- A child's world in 2021 is more chaotic, diverse, changeable, and complicated than ever before
- Kids today are more progressive
- Our film will appeal to both kids and parents alike (family co-viewing)

Art direction | Floods On The Run



Art direction | Quicklime Games



Art direction | Murkhart's Castle



Art direction | Murkhart's Castle



Art direction | Murkhart's Castle



Characters | Betty



Characters | Verushka



Characters | The Family



Being Betty Flood | By the numbers



1,510
shots



129,600
frames



150
artists



818,768
render
hours



216 TB
storage



4,000,000
files



Our 3D film production requirements

- High-end computing power
- Bespoke workstations
- Scalable rendering capacity
- Centralised data and assets
- Access to a wide geography of talent
- Provide remote working environment

Pop-Nimble pipeline

Amazon Nimble Studio | Background

- New AWS service for content creation
- Started in 2015, Nimble Collective acquired by AWS in May 2019
- Team of M&E industry professionals



Why we love Nimble



Rendering



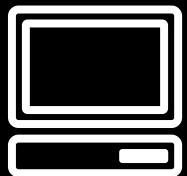
Security



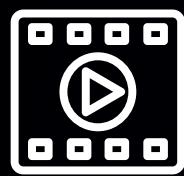
User-friendly
interface



Scalable
resources



High
performance



Software
integration

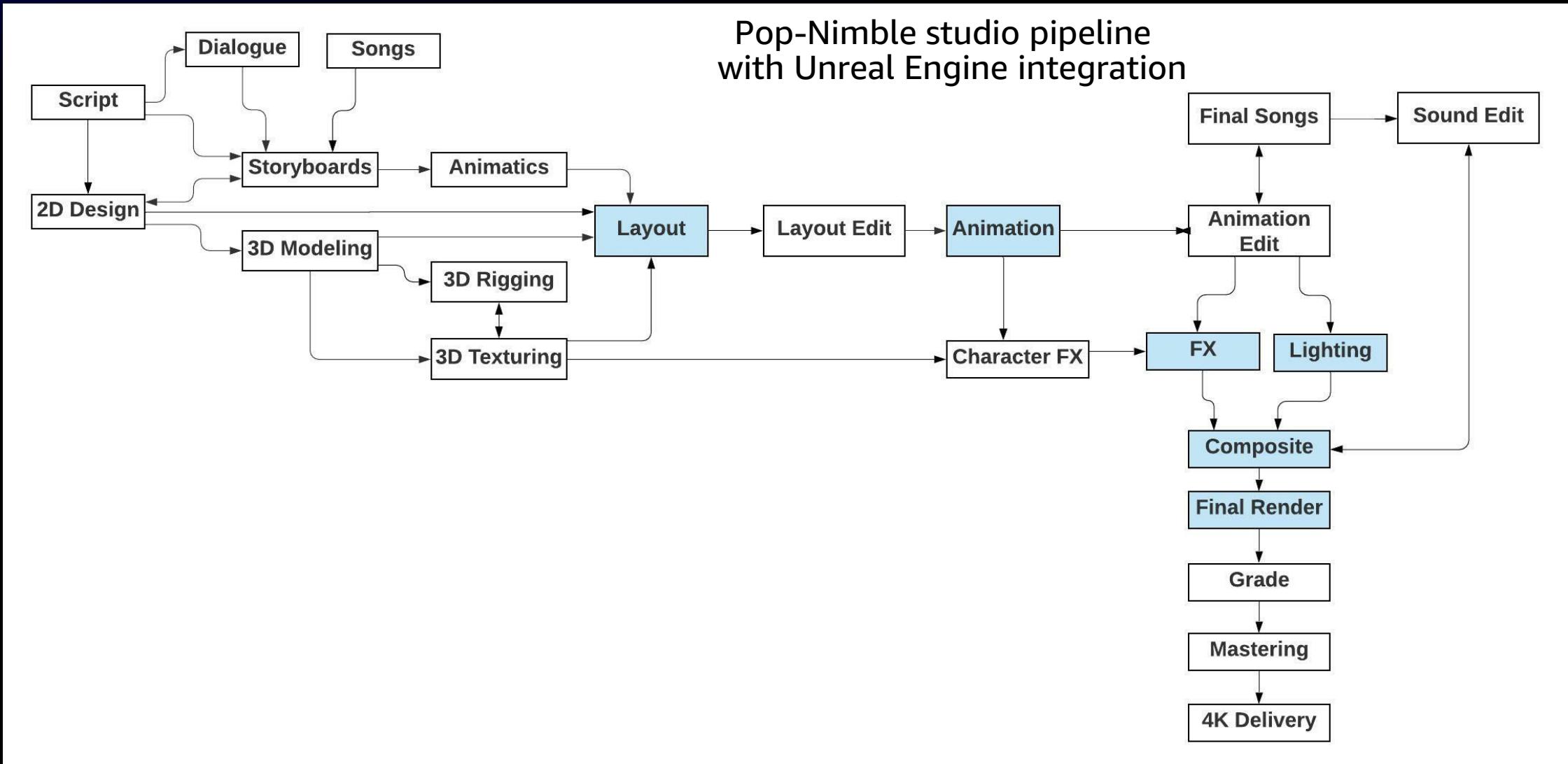


Artist workflow



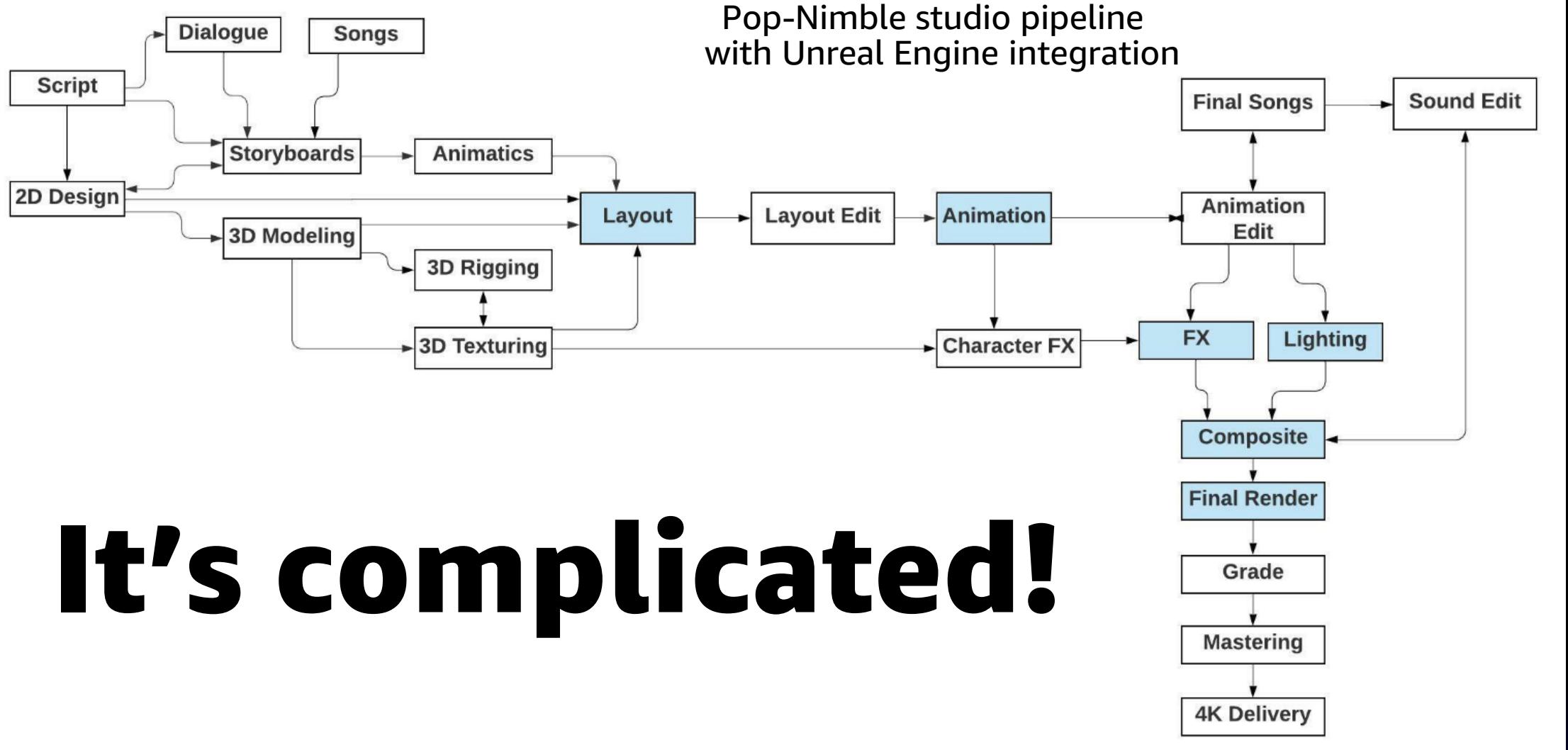
Remote working

Nimble Studio



Nimble Studio

Pop-Nimble studio pipeline
with Unreal Engine integration



It's complicated!

Nimble Studio

We needed a simple
and flexible solution

Nimble Studio

Something
that's more...

Nimble



Pop-Nimble pipeline | Global inputs

3D feature animation is a collaborative process involving many artists and technicians

IP

Script

Storyboard

IT

R&D

Art Direction

Audio

Grade

Edit

Pop-Nimble pipeline | Departments

Modelling

Surfacing

Rigging

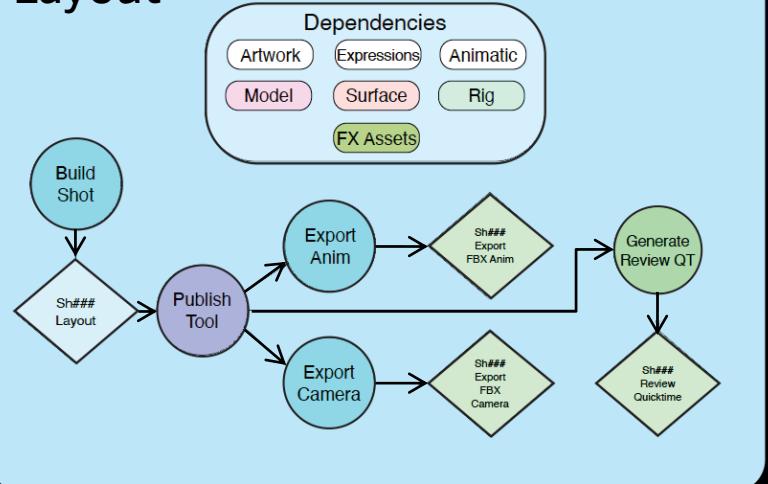
Animation

FX

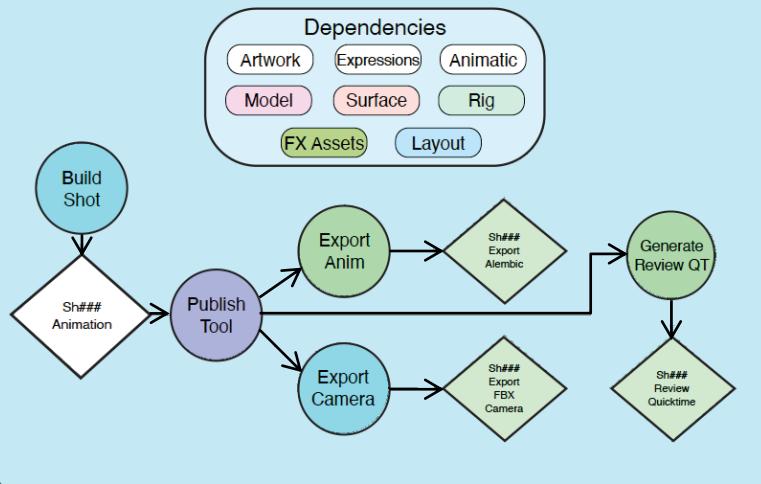
Grooming

Pop-Nimble pipeline | Dependencies

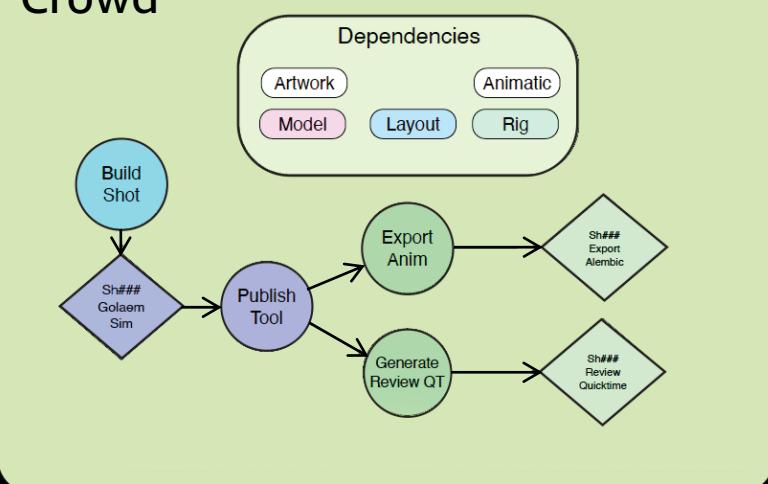
Layout



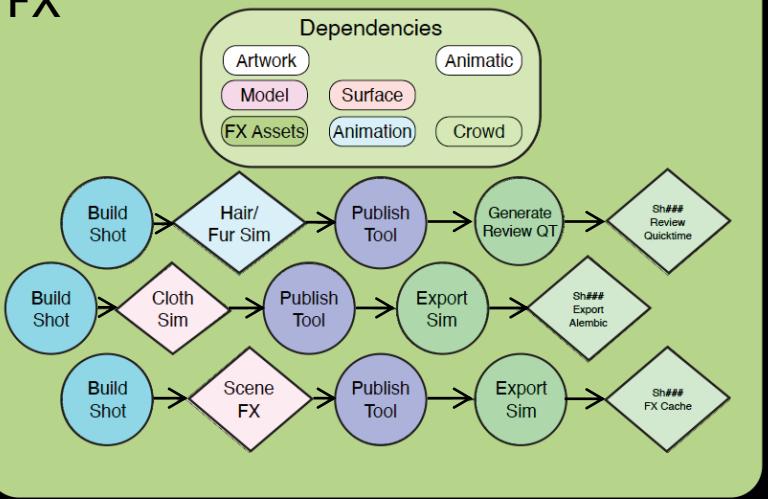
Animation



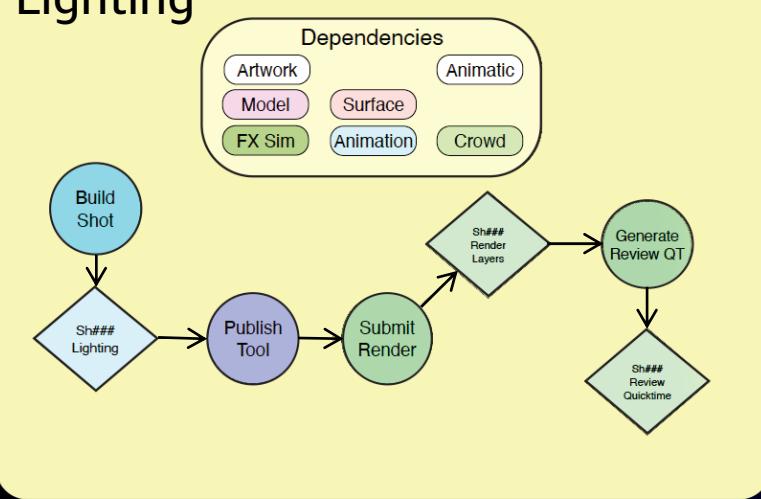
Crowd



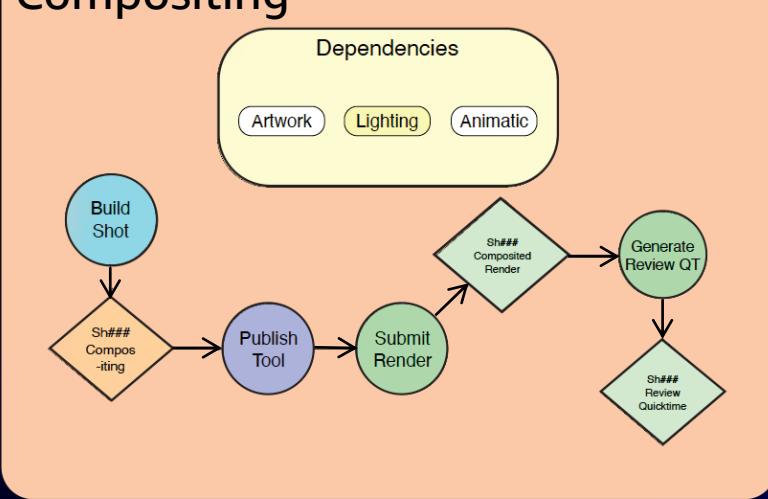
FX



Lighting



Compositing



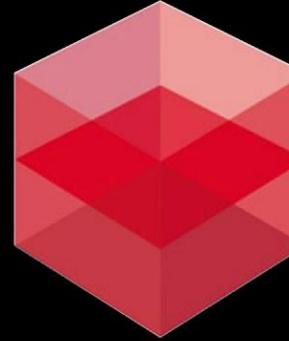
Rendering

Renderers



**UNREAL
ENGINE**

Unreal Engine is a complete suite of graphics development tools that delivers cutting-edge entertainment



R E D S H I F T

Redshift is a GPU-accelerated renderer, built for high-end production rendering

Unreal Engine

Version 4.27 - current

- Powerful game engine
- Real-time rendering
- Open-source software
- Scene optimization
- Virtual Production Studio (VPS)
- Replaces green screen
- Allows for greater iteration in production

Version 5.0 beta

- While we don't have the final makeup of version 5, we look forward to some of these:
- Film rendering capabilities
 - Full refractive ray tracing
 - Evaluate caustics on transparent surfaces
 - Multi GPU bucket rendering per node
 - Access to source textures for all Unreal Marketplace Assets

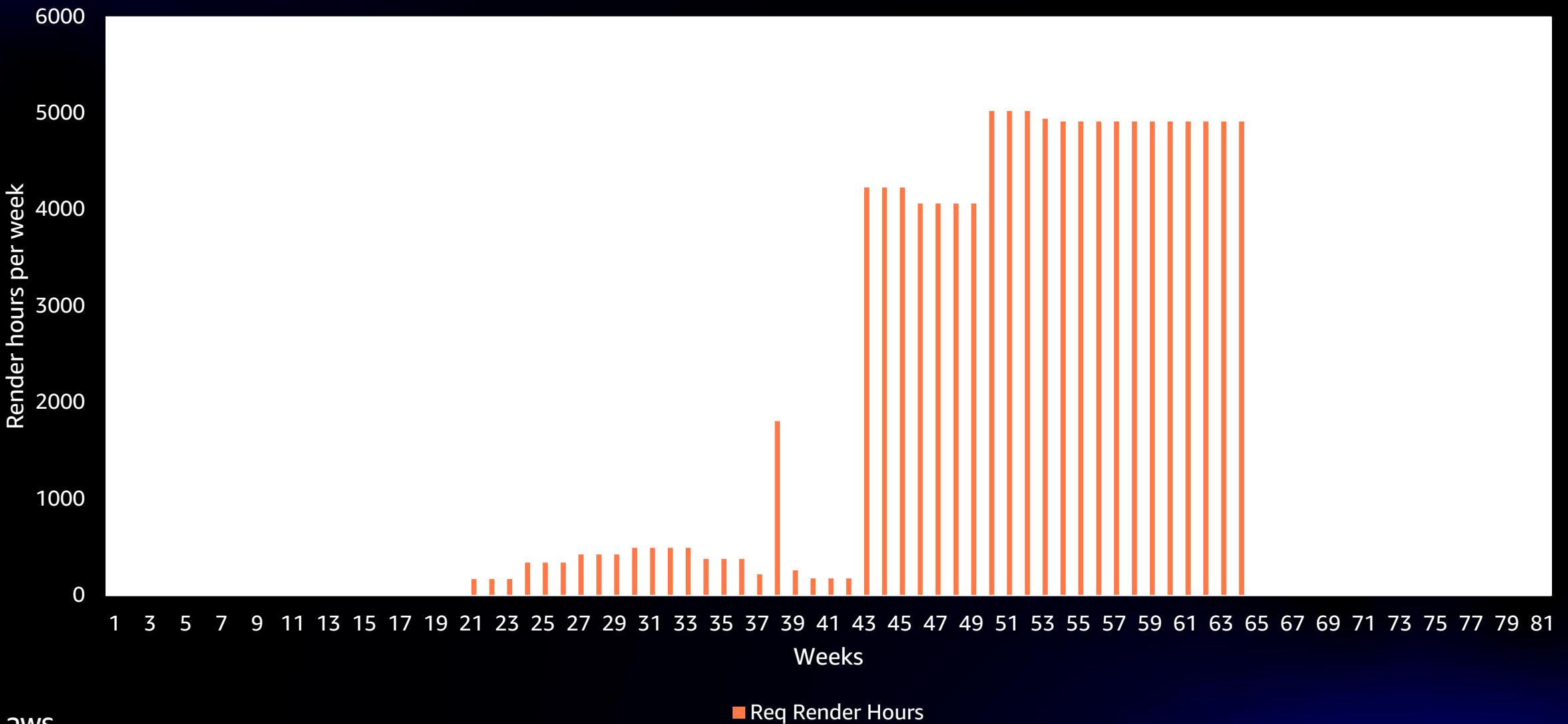
GPU advantages over CPU

- GPU rendering today is considerably faster than CPU was
- In 2014, DreamWorks released “How To Train Your Dragon 2,” which took 90 million hours to render
- In the same year, Redshift released the first film-quality GPU renderer

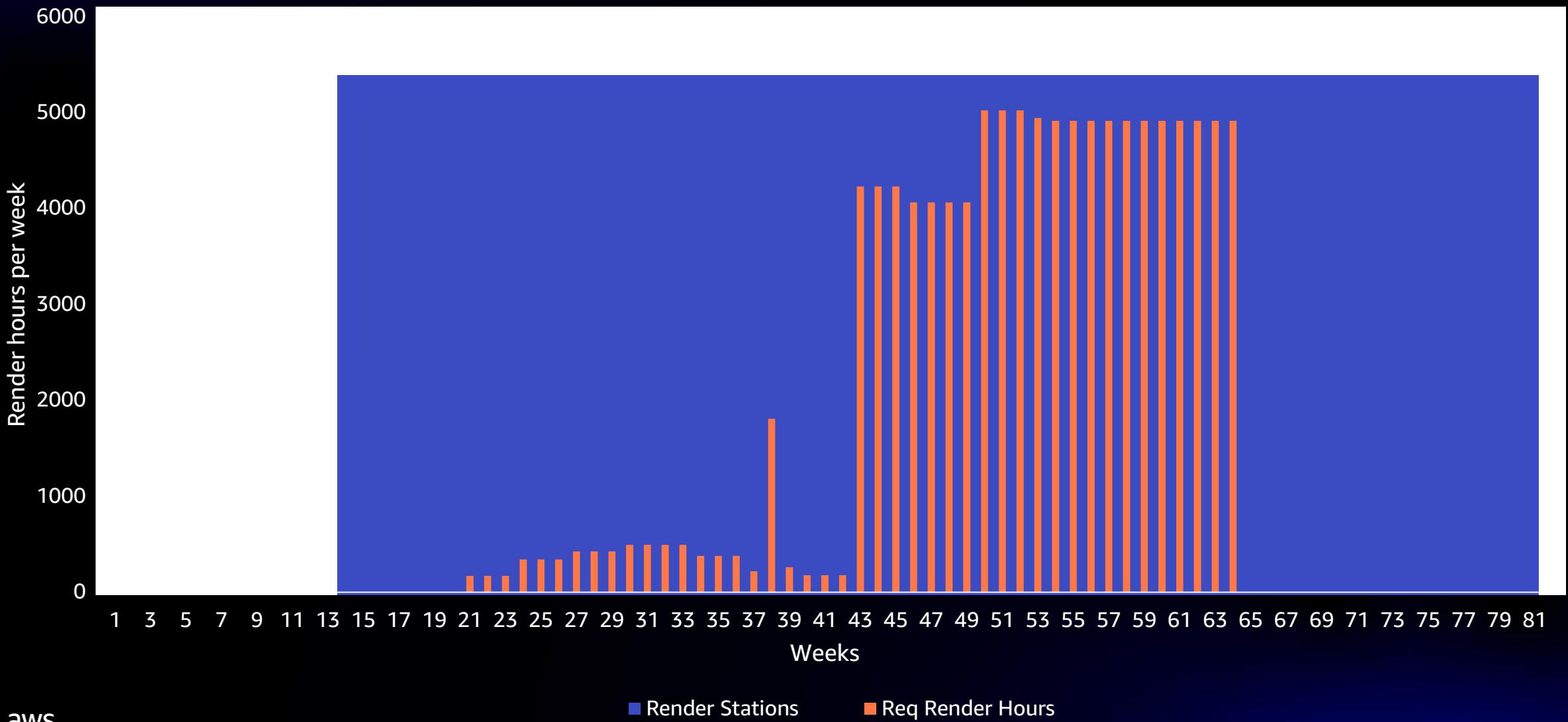
Today we can render the same “How to Train Your Dragon 2” files in less than 2 million hours



Rendering resources required



On-premises | Rendering

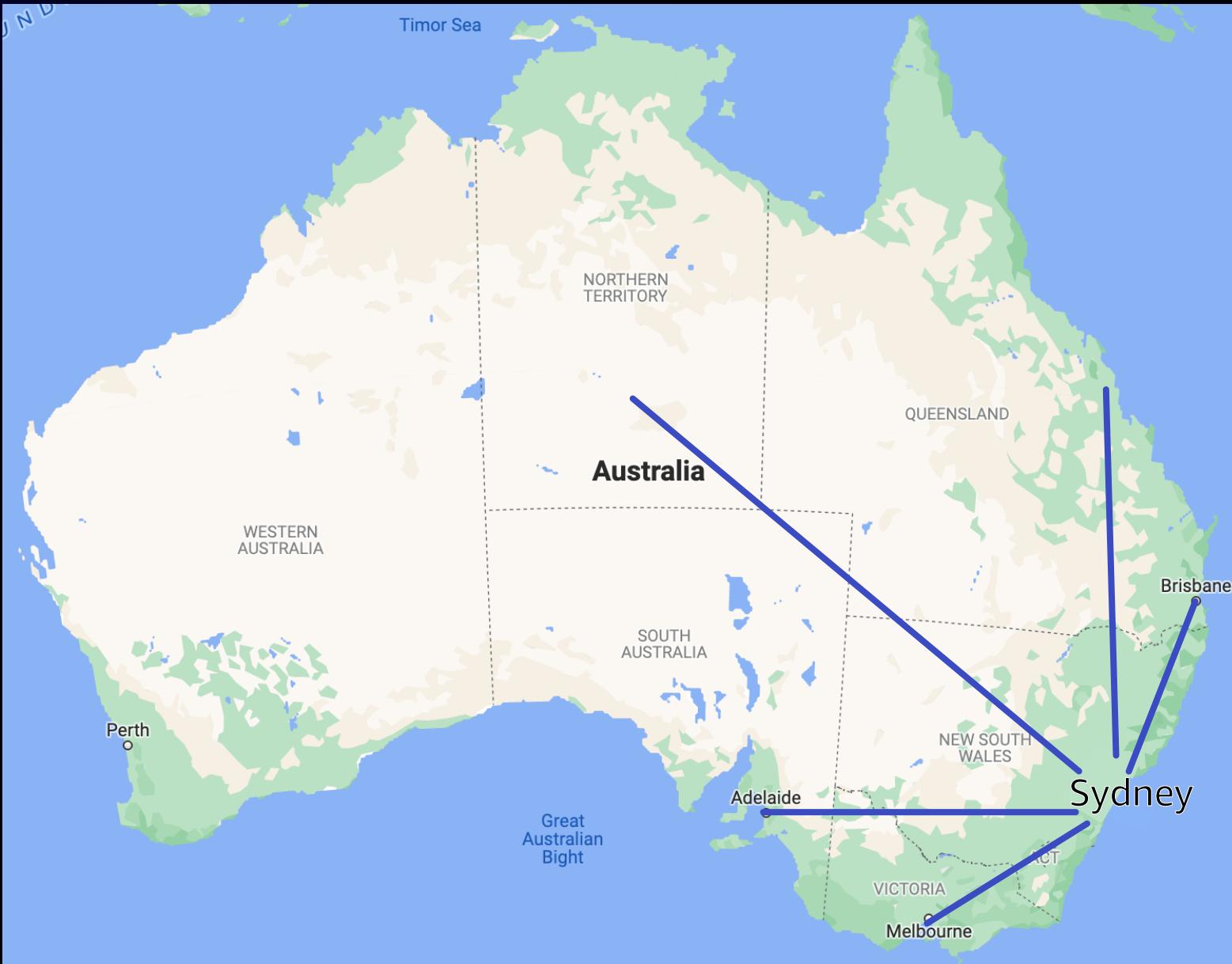


Artist onboarding

Sydney | Remote working



Remote artists



Remote artists

Alice Springs



Barossa Valley



Noosa



International co-productions

- Animation is a global co-production business in order to get projects financed
- Australia has official co-production treaties with over a dozen countries such:
 - Canada
 - China
 - France
 - The United Kingdom
 - Germany
 - Ireland
- Pop Family believes that data movement and data management across regions would be a good next step for Nimble Studio

Recommended M&E sessions

MDS303 (Chalk Talk)

Build metadata-rich media libraries with ML

Liam Morrison – Principal M&E SA, AWS

Katrina King – Sr. Specialist SA M&E, AWS

MDS304 (Chalk Talk)

Live, from the cloud: It's production on AWS

Aaron Tunnell – Principal NAMER M&E GTMS, AWS

Peter Riordan – Head WW Broadcast GTMS, AWS

MDS301 (Workshop)

Build an interactive live streaming platform

Sam Patzer – Sr. Solutions Architect, AWS

Shawn Przybilla – Principal, Solutions Architect, AWS

MDS305 (Chalk Talk)

Automate video clipping and highlight generation

Aravindhara Rajendran – Solutions Developer, AWS

Kyle Huang – Solutions Developer, AWS

MDS201

Transform and innovate with AWS for M&E

Eric Iverson – CTO for M&E, AWS

Jason Lenhart – VP of DTC Eng & Op, WarnerMedia DTC



M&E at re:Invent Info Hub

Thank you!

Kyle Roche

Head of Immersive Technologies, AWS

Katrina King

Sr. Specialist SA, AWS

Gerry Travers

COO, Pop Family

