



The Look's new 16-seat 4K DCI cinema

The Look manages the full picture post journey of high-end television drama and feature films. In April this year, The Look further expanded its offer with two new viewing theatres at its Margaret Street premises. But few people know exactly what goes on 'under the hood' at a modern post facility. Mark Maltby, CTO and director of the online team at The Look takes us on a deep dive through the pipeline from initial camera tests to final deliverables. Michael Burns reports

The Look is one of the few independent post-production facilities in the UK that can handle the complete picture post journey of a high-end television drama, from the first camera test in prep, through conform, grade, online and VFX integration, all the way to the IMF packages and LTO masters for streaming platforms and archive vaults.

Opened in 2007, The Look now spans three floors at its Margaret Street HQ in Fitzrovia. It houses four DaVinci Resolve grading suites alongside three large Flame online suites.

April marks the expansion onto the fourth floor, bringing with it a 16-seat 4K DCI cinema, a 7-seat VFX review cinema, an additional large Flame suite, and two smaller QC or review spaces.

Their Cardiff Bay site, opened in 2018, with three large suites to support both grading and online work, provides resources for regional productions as well as remote collaboration.

The headcount stands at around 26, led by CEO, founder, and senior colourist Thomas Urbye. Urbye is supported by senior colourist, Andrew Daniel, colourist Grace Weston and junior colourists Ollie Anderson and Sam

Viner. The six-strong online department includes editors Tom Boyle, Aidan Bennett and Corey Marand.

The recent slate includes *Rivals* for Disney+, *Hijack* season two for Apple TV, *Day of the Jackal* for Sky, *Dept. Q* for Netflix, and movies *We Live in Time* (A24 and StudioCanal) and *Ballad of a Small Player* (Netflix).

Before the rush(es)

The story of a project at The Look doesn't begin when the drives and LTOs first arrive. In prep, where the show DoP and director decide which camera to shoot on, one of The Look's colourists is usually already in the conversation.

"We tend to get involved at the camera test stage," says CTO Mark Maltby. "The colourist normally has a relationship with the DoP. If they haven't at the start of the job, they'll quickly be brought on board."

A camera test at The Look might mean putting a Sony Venice 2 against an Alexa: same scenes, same lenses, same lighting setups, and the footage needs to be on screen the same day. "We're normally getting 2-3TB of material, and we fight to



The Look's CTO Mark Maltby with online editors Aidan Bennett, Tom Boyle and Corey Marand

get everything on the screen in its best format ready that afternoon," says Maltby. "Then they'll sit until quite late, pushing the material in Resolve as hard as they can, until they come up with the chosen camera."

Once the camera choice is locked, baseline LUTs, typically representing day interior and exterior, and night interior and exterior, are created.

These travel through the entire pipeline as sidecar files, providing a consistency check at every handover point. As on-set grading has become increasingly common, with CDLs (Colour Decision Lists) applied by the DIT

during the shoot, The Look ingests those CDLs and applies them as a preview at every subsequent stage.

"It's up to us to make sure that vision is carried on through using a solid colour pipeline," says Maltby. "If at any point someone notices it's not matching, it begs the question: has something happened to this source footage?"

Ingest, digested

"It's up to us to make sure that vision is carried on through using a solid colour pipeline"

Every frame shot during a production is delivered to and managed by the post facility. On a high-end drama, this can work out to as much as 500TB of original camera files, arriving at The Look typically on RAID shuttle drives

or LTO tapes. For productions delivered digitally, Mistika Workflow can automatically connect to an S3 bucket to localise rushes



ELEMENTS

The Look's ELEMENTS BOLT 600 replaces two ELEMENTS ONE 60-bay HDD units that served the facility well for seven years. "The ELEMENTS ONE proved very reliable making our switch to BOLT that much easier," says Maltby.

The all-NVMe system delivers 600TB of usable capacity in a 2U chassis, with 24 x 30TB NVMe drives with four 100GbE connections to the network infrastructure at ERA's data centre. Maltby is impressed, "performance-wise, we're getting six streams of 4K raw playback, read and write at the same time."

Workstations connect via the ELEMENTS BLINK block-level client providing low-latency, local-like performance over the IP network. The BOLT also supports TPN compliance and integrates with wider workflow automation.

"When you're looking at the work that's got to be delivered, it has to have an enterprise contract with it," says Maltby. "We have to know our storage array is fully supported by engineers who understand the requirements and demands of M&E workflows. That's why we work with ELEMENTS."



"When it came to updating the ELEMENTS ONE with the BOLT we felt no need to look elsewhere. Performance-wise, we're getting six streams of 4K raw playback, read and write at the same time."

Mark Maltby
CTO, The Look

elements.tv



CTO Mark Maltby with online editor Corey Marand

as required.

Once at The Look, the rushes enter an isolation protocol built around five Mac Studio workstations. Two are fully standalone, used solely to scan incoming drives for viruses. Once clean, drives move to a network-connected but internet-isolated machine, and YoYotta

checksums the source, copies every file to NAS storage (of which more later), validates the copy, and flags any failures for a recopy.

The Look runs LTO 8, with five tape libraries each holding 50 tapes running continuously

— but unlike many facilities of this scale, it doesn't conform directly from tape. The rushes are kept spinning on NAS instead. "We value having the rushes spinning,"

says Maltby. "It means people can jump in quite quickly and pull new media without having to put in a request to have media recovered from a tape." LTO are, in this case, "effectively the transport drives".

Data diversified

Once material leaves the ingest Mac Studios, it travels not to a machine room, but to a data centre. For good reason: there is no machine room.

Everything that actually does the computing is miles away, deployed in a Tier

One data centre hosted by ERA. The Fitzrovia building now contains only client-facing spaces: grading suites, online rooms, cinema theatres, reference monitors and grading

"You can't be surprised that you come into work and deal with complexity and the unexpected."

panels. A single rack remains on-prem, housing a firewall and local switch.

The storage architecture is in multiple tiers. The largest is POLUS, ERA's Seagate-backed NAS platform, totalling around 1.5PB of IaaS Storage across two units. The Look also maintains a wholly-owned array of around 150 SSD drives, connected to the workstations over a dedicated 100Gb Mellanox fabric that carries nothing but binary EXR data. The final tier is an Elements BOLT 600 – 600TB all-NVMe, connected at 4 x 100GbE – which sits at the boundary between storage and workflow: the point where material arrives from editorial and finished work departs for mastering. ERA has physical access to the racks for maintenance, but network ownership and digital access control is retained entirely by The Look..

The Look and the data centre connect over dark fibre, using an Optical Transport Network system from Packettight. The OTN layer allows the facility to dynamically choose whether to send SDI video or data over the same fibre: currently, one Packettight box is running at up to 200Gbps, while the others run at 20Gbps. Workstation control and management via KVM runs over a separate VPN layer within the same infrastructure. "To us, it appears as if it's on the same network, in the same building as ourselves," says Maltby.

Signal success

Getting pictures back from the data centre to the suites is not a trivial task. The SDI signal must travel the length of the dark fibre and arrive at a reference monitor in Margaret Street with latency low enough

to be invisible during a live grade. Until recently, The Look was running a complex system of quad-link 3G-SDI for 4K over multiple Packettight boxes.

The replacement is an AJA Kumo 12G 32x32 router, installed at the data centre. Capable of a full 4K signal on a single cable, video leaves the Resolve and Flame workstations' Blackmagic cards at 12G, into the Kumo, onto the Packettight OTN, and back to London as 12G-SDI.

"You just literally select the suite, select the machine, and it will fire it straight in there," says Maltby. "It's quite a big step from where we were before."

The result is that a colourist in Fitzrovia, in front of a reference monitor and a DaVinci Advanced panel, is operating a workstation situated miles away.

Conforming to form

With rushes safely archived and spinning on nearline storage, the production pipeline begins its first major transformation: the conform.

As rushes arrive throughout a production, they are indexed into a running Resolve project. When an EDL or XML arrives from the offline edit, the operator links it to that already-indexed media: the conform is a relinking exercise against a project that has been growing in parallel with the production. Once the timeline is conformed and checked,



CEO and senior colourist Thomas Urbye with CCO and director of production Dan Marbrook

Resolve's Media Management function transcodes every shot to a ZIP EXR sequence and writes it to the SSD NAS. The original camera files are no longer referenced. "What you're left with is a timeline that's made of EXR media on a different drive," says Maltby. "We're not referencing the camera files anymore."

OpenEXR, the image format developed by Industrial Light & Magic, was specifically designed for visual effects and high-end post-production pipelines. Unlike compressed camera codecs optimised for recording efficiency, EXR stores full floating-point colour data - every pixel, every channel - preserving far more image information than grading workflows would otherwise have to work with.

EXR is frame-based: each file is a single frame rather than a compressed clip, which means a VFX vendor can deliver a revised shot by replacing individual frames in a sequence rather than re-rendering an entire file. That structure also makes the interchange between Resolve and Flame straightforward: Flame artists link directly



Seagate Exos: Consistent performance for always-on operations



In environments where downtime isn't an option, Seagate Exos delivers. With durable, always-on performance and trusted Seagate engineering, these enterprise hard drives provide the consistency and reliability mission-critical workloads demand.

Built on Mozaic's next-gen precision engineering, Exos hard drives deliver more capacity in the same footprint. With 24TB to 32TB options and high areal density, you get consistent performance, better efficiency and the scale to keep data-heavy workloads moving.

Each drive includes Seagate Secure technology to protect sensitive data at rest, supporting compliance while enabling confident, secure scaling.



"The Seagate Exos HDD storage is the foundation layer of POLUS. We've never had an issue accessing our data."

Mark Maltby
CTO, The Look

seagate.com



The Look partnered with ERA to move all IT infrastructure off-premise, unlocking valuable studio space and benefiting from the resilience of a fully managed datacentre environment. With ERA's hosting and POLUS platform, they've gained scalable, high-performance workstations and storage, all supported by a dedicated team providing proactive monitoring and real-time support.

The Look can seamlessly expand capacity without the constraints of on-premise power, cooling, or infrastructure management.

ERA delivers the flexibility, performance, and reliability needed to support creative workflows - enabling The Look to focus on production, not technology.

"The best thing I can say about POLUS is that I don't even have to think about it. It just gets on with the job."

Mark Maltby, CTO, The Look

eraltduk.com





The new 16-seat 4K DCI cinema

to the EXR plates on the NAS, make their fix, render the updated frames back, and Resolve relinks automatically.

The key practical consequence is a dramatic reduction in the working dataset.

A production might arrive with 500TB of camera originals; the conformed EXR timeline for a single episode might be a few terabytes in size. The archive remains intact and accessible; the working environment is built entirely around the fraction that actually made the cut.

Four DaVinci Advanced panels, two smaller Elements panels for the technical operators' room.

The workstations run a mix of Rocky Linux and Windows Server. Resolve handles

conform, online and grade. Tools like Magic Mask, the AI-driven tracking and isolation utility underpinned by the Neural Engine, are in active use. "You don't have to spend time looking for and tracking particular features," says Maltby.

"You can just say, track, and it knows what you're looking at."

Project sharing across multiple seats is also used extensively: technical operators can drop VFX into a timeline, and a colourist can open it on a different

machine and continue immediately.

Flame runs on six workstations: three HP Z8 machines and three Supermicro units, all on Linux. All six also run Resolve, using path mapping to move between Linux and Windows instances of the same project without relinking. Though some work is completed in Fusion Resolve, Flame is still used for paint, compositing, phone screen work and complex finishing. "In practice, the Flame operators will always default to working in Flame, because old habits die hard!" says Maltby.

VFX pulls run in parallel with the conform, with The Look using either Mistika Workflow or Origami Phoenix to handle the automate processing. Regardless of the platform used, the process is similar. The VFX editor lays all the VFX shots end-to-end on a single timeline, generates an EDL, and uploads it to either The Look or Origami Phoenix. From there, either system will read the EDL, extract frames from the OCFs, and deliver the plates, along with a CDL file for each shot, to the vendor. Though simple in theory, this can involve weeks of work, particularly on multi-camera productions.

When finished shots return from VFX, automated scripts drop them into the grading timeline, apply the grade, and flag anything that needs attention before the client sees it. The facility is doing significant custom development around Resolve's API - feeding live VFX shot status from a Google VFX tracking database directly onto the screen as a burned-in overlay, automating VFX drops. "If there's an updated version of a shot available, the operator will be able to see it straight away, without flicking through a spreadsheet," says Maltby.

In review

Client reviews take place directly from the Resolve timeline. A producer's note can be acted on immediately, in the room; a colourist adjusts a grade while the director watches. If a shot needs a paint fix, it moves to Flame and returns without rebuilding the edit.

From April, client reviews and VFX sessions can take place on The Look's newly opened fourth floor, which adds a 16-seat 4K DCI cinema built around a Christie projector and a 7-seat VFX grading cinema with a JVC projector on a three-metre screen. A Tetratune LUT box sits between Resolve and the JVC for output LUT application and calibration assistance (the Christie 4K offers in-built calibration tools). The cinemas are available for dry hire, and the facility can connect clients' cloud instances directly to the projection system. "If you've got something on Amazon, we can connect that into our ecosystem and put it up on the projector," says Maltby.

For remote review, The Look now uses Moxion (operating as Autodesk Flow Capture) with two Streambox Chroma 4K and a Clearview Flex service used to cover different client requirements.

Mastering the master

The finishing pipeline culminates in a "glass master"; an image sequence that, once approved, becomes the definitive source for all downstream deliverables. This is exported



The Look grades on DaVinci Resolve

by the online editor directly to the Elements Bolt over a 100Gb network.

The Bolt is a 600TB all-NVMe system, connected via 4 x 100GbE, with workstations accessing it through the Elements BLINK block-level client. The priority here is throughput and consistency during finalisation and delivery.

Editorial turnovers, offline references and audio are ingested into the Resolve NAS for production, while finished sequences are exported to Bolt for mastering and delivery. This ensures final deliverables are created on infrastructure optimised for performance and predictable behaviour under load.

"Once you're dealing with final deliverables, you want a system that's fast and dependable," says Maltby, noting that access to enterprise vendor support helps reduce risk when working to tight deadlines.

Because the Bolt sustains real-time playback, Colorfront Transcoder can QC the glass master directly, without local caching, reducing turnaround time. "You don't have to move it anywhere," says Maltby, who likens the process to 'tapeless layback'.

"To us, it appears as if it's on the same network, in the same building as ourselves."

Colour parade

Grading takes place on twelve DaVinci Resolve workstations: six physical HP Z8 Fury machines and six are Supermicro.



Designed to provide accurate display calibration and colour management to HDMI devices, Tetratune works in conjunction with ColourSpace calibration software to ensure high-end displays produce accurate results, particularly important in post production.

Tetratune can apply a user chosen 3D LUT to the



videworks.com

signal, store up to 100 customisable LUTs and can be used in bypass mode, as required. Its split screen feature makes comparisons easy, further enhanced by its built-in test pattern generator (TPG) that streamlines the process of display calibration too.

With its Web UI, Tetratune can be easily added to existing systems where optimised display performance is critical.

"Having such robust calibration for our displays mitigates any concerns from either our colourists or clients, and Videworks and Light Illusion have handheld the development of the product with us to an Enterprise level. It's a very valuable addition to post production companies like ours"

**Thomas Urbye
CEO & Senior Colourist, The Look**



AJA KUMO 12G-SDI Routers: Flexible routing fit for modern pipelines

More sources and destinations are in play across production, post, and proAV environments than ever, making a reliable, compact 12G-SDI router essential for any facility OB truck, DIT cart, post suite, or install. AJA's KUMO 12G-SDI line delivers convenient, dense routing solutions that handle even the most complex projects.

Built with broadcast, production, post, and AV pros in mind, AJA KUMO 12G-SDI routers are easy to operate, enable 4K/ UltraHD routing on a single BNC for rates up to 12G, and come in three different configurations. Whether choosing a model with 64, 32, or 16 inputs and outputs, users can leverage the KUMO Control Panel for quick physical access to manage source and destination routing.

All models offer integrated web-browser UI control. For higher resolution workflows, users can gang the KUMO 12G-SDI ports together for dual and quad port routing.

"From the Hi5-12G and other Mini-Converters in our suites to the KUMO 3232, and openGear rackmount systems in the data centre, AJA provides the digital glue that seamlessly connects our workflows across the facility. FIDO handles fibre-to-copper conversion, while the AJA Dante AV 4K enables us to stream 4K content to Cardiff with extremely low latency. We have found AJA products to be consistently reliable."

**Mark Maltby
CTO, The Look**



aja.com

That master sequence then goes into Transkoder, where it can be watched as HDR or with Dolby Vision XML applied to transform it into SDR. Working HDR-first means the SDR version can be derived via a Dolby Vision Trim Pass in Resolve. Any QC fixes are patched: a targeted export is dropped into the image sequence and signed off again. "It's like editing into a tape," says Maltby. "You watch it, and then you can sign off and say: this image sequence is intact and correct."

Once the glass master is locked, the deliverables team takes over. Transkoder reads it and generates the platform deliverables: IMFs for Netflix and streaming platforms, broadcast masters, and ProRes distribution files. Transkoder's Peak Signal-to-Noise Ratio (PSNR) comparison tool validates each output against the QC master.

Resolve is used to create archival masters - graded and ungraded - for the production company's long-term vault, and for clients who want the ability to remaster for future display technologies. The archive output includes both the EXR masters

and, for clients who require it, the camera originals, all on LTO 8 tape. The facility hasn't moved to greater capacity LTO 9, and Maltby's reasoning is pragmatic rather than Luddite: "You can't erase data from an LTO tape. You have

to rewrite the whole lot. So, if something happens and it messes up, the bigger the tape, the more of a pain it is to start all over again," he says. "The drive for bigger tapes hasn't begun in earnest."

Late changes are handled through reconform and patch. Maltby recalls a production where a violent scene had to

be cut from an episode already in delivery because a similar scene on another show had generated complaints. "We were literally in delivery, it was transmitting that week, and they wanted a scene cut," he says. The solution was to reconform from the camera file project in Resolve, apply grades, run through the colour team, export a patch, watch it in Transkoder, drop it into the glass master, and remaster. Sounds simple; "as long as there are no duration changes and you have to start shifting XMLs around," says Maltby.

Last look

"You can't be surprised that you come into work and deal with complexity and the unexpected," says Maltby. "Because that's all that's left to deal with. All the easy bits of post-production have been automated."

Maltby sees the potential for AI to provide further streamlining in post. "What would be great is if you could run an offline into a system, then run a conform into a system, and have it tell you exactly where and what all the discrepancies were without having to watch it yourself. That's one of the biggest things that consumes people's time and can easily get missed. I think we have the technology there to do it automatically for us."

"We're driven by the outcome," he adds. "We know the project needs to work. There are a lot of people who worked on these shows - from pre-production all the way through - who want to see them on television or on a big screen."

That, in the end, is what the whole complex pipeline is for.

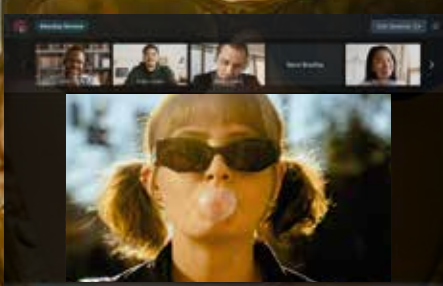
"All the easy bits of post-production have been automated."



CLEARVIEW FLEX

"OUR ONLY WAY OF WORKING NOW"

TOM COSTANTINO, ACE (TED, THE ORVILLE)



EMMY-WINNING REVIEW FOR POST TEAMS

