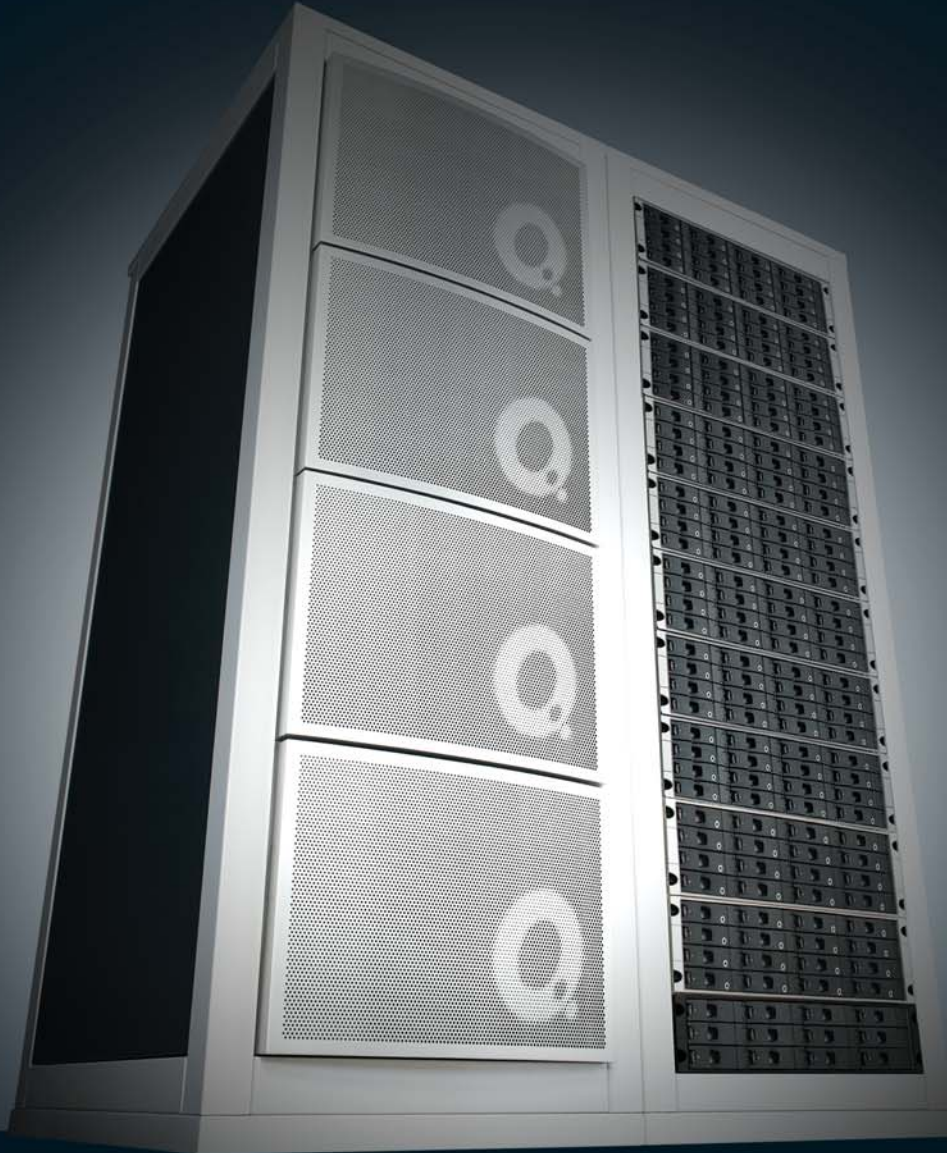


# Genetic Engineering

a new teamworking infrastructure for post and DI

share our passion



# Genetic Engineering: a new teamworking infrastructure for post and DI

## Maximizing your workflow

Post and DI houses work on a range of projects at the same time, and these projects typically involve groups of people working on different systems. Managing this calls for careful scheduling of rooms, people and storage. As a result, workflow is the number one issue facing post and DI houses today. How can you get more profitable work through your facility more quickly, while maximizing the use of every resource – equipment and people?

“Our GenePool has 48 terabytes. I’m currently working with only 1 percent of the space free, and the machine is flawless. There is no SAN that can do that.”

Walter Volpato, FotoKem

## The teamworking solution

That’s why Quantel went right back to the fundamentals of high resolution workflow and developed a new teamworking infrastructure that really delivers on the promise of shared storage – Genetic Engineering. And it can work wonders for the productivity and profitability of every facility engaged in DI and high end post.

Genetic Engineering allows a number of Quantel Pablo and iQ or eQ workstations to share storage – the GenePool – and, via the Sam data server, also provides open access to the shared media for other applications. The Max assist station completes the picture, allowing non-creative tasks such as i/o, conforms and archiving to be handled outside the creative suites.

Genetic Engineering means instant sharing and guaranteed playback of multiple high resolution media streams from several attached workstations – increasing efficiency, encouraging creativity and delivering a step-change in flexibility.

Genetic Engineering delivers unmatched workflow whether you’re working in HD, 2K, 4K or stereoscopic 3D.

“Quantel’s Genetic Engineering blew us out of our seats with an infrastructure that does indeed change the way we travel through the digital intermediate workflow. The HPA Engineering Excellence Awards were created to honor genre changing processes and products and Genetic Engineering does just that.”

Phil Mendelson, Chair, HPA Engineering Awards Committee



### Complete scheduling freedom

Genetic Engineering eliminates scheduling conflicts, guaranteeing that you can bring the maximum resources to bear on every aspect of a project at just the right time. That’s great for business. Here’s how Genetic Engineering can dramatically improve your bottom line:

- Different suites can work on the same clips at the same time – shortening timescales
- Jobs can be moved between suites in seconds – boosting scheduling flexibility
- Several creatives can be teamworked on the same project – maximizing creativity
- Different software toolsets can be integrated into the workflow – growing capability

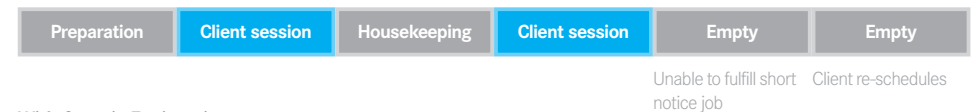
- Media transfer times are eliminated – saving time
- Management of multiple media copies is no longer required – saving resources
- Unnecessary quality control stages are removed – saving time and resources
- Late changes can be handled with ease – great for client satisfaction and the bottom line
- Control your workflow – instantly review the current state of a distributed project

### The Genetic Engineering workflow

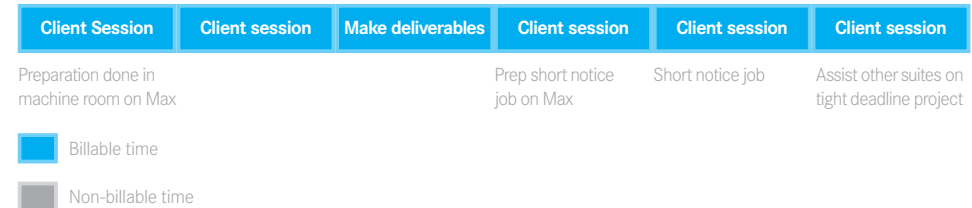
With Genetic Engineering, multiple projects can be worked on simultaneously by every workstation connected to the GenePool – all without copying media or waiting for transfers.

Typical suite utilization before and after Genetic Engineering:

#### Before Genetic Engineering



#### With Genetic Engineering



# Genetic Engineering for DI

The DI and film restoration pipelines routinely handle Terabytes of data. Every frame is critical and deadlines are tight. Building on the iQ and Pablo heritage, Genetic Engineering is designed for this demanding environment; to finish projects in the minimum time, at the best quality and with the maximum creativity. Every iQ or Pablo suite has access to the same media and can work completely independently even when using 4K media. The benefits of Genetic Engineering carry through into the new business of stereo3D post production; 100% reliable stereo playback and no disk management issues mean that stereo3D jobs fly through the Genetic Engineering equipped facility with the same ease as conventional 2D projects.

## Scheduling freedom

Genetic Engineering eliminates multiple copies of media and unnecessary transfers from the DI pipeline saving time, management effort and disk space. It also adds considerable scheduling freedom as jobs can be moved between suites at a moment's notice, allowing DI facilities to more easily handle their clients' late changes and creative demands. Resolution Co-existence allows anything from SD to 4K to be handled seamlessly without different copies of media for different formats.

Adding Max into the system allows for a real increase in throughput without a similar increase in costs. Max allows many non-creative tasks such as conforms, playouts and quality control to be performed in the background while work continues uninterrupted in the creative client environment. Refining the workflow yet further, remote i/o allows one connected system to tell another to perform jobs on its behalf – so for example Pablo can instruct Sam to carry out non-creative tasks such as conform or export/archive.

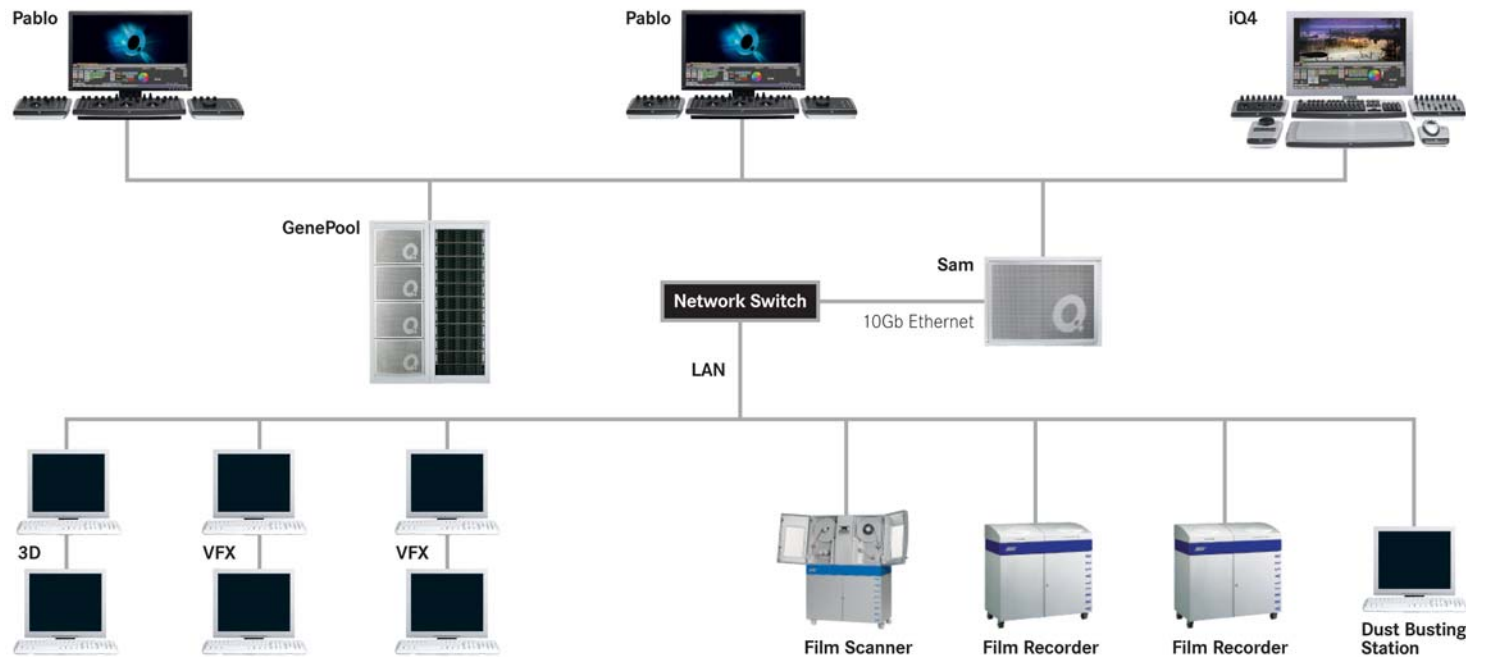
## Direct access for scan and record

Sam enables film scanners to scan direct to the non-compressed GenePool, saving an unnecessary transfer and disk space – driving costs down and efficiency up. Restoration and dustbusting applications can work on media in the GenePool and only modified frames are added to the storage. Genetic Engineering handles splicing the new frames into the original completely automatically, saving valuable storage space without overwriting the original scans.

And, when the job is complete, Max's realtime video capabilities kick-in and make producing SD and HD deliverables from 2K or 4K masters fast and profitable. Sam lets film recorders and DCI or DVD authoring systems access the finished project as virtualized DPX or TIFF files, all without interrupting the operation of the creative suites. Maximum productivity and minimum interruptions makes for a good bottom line.

**“With the new Genetic Engineering set up, we will effectively more than double our capacity because of the much improved workflow it gives us.”**

David Aspinall, Chairman, Digital Imagineers



### Film Previsualization

Complex film VFX often involves many compositing and 3D artists working on the same movie using multiple workstations. That means a lot of different shots at different levels of readiness, including low rez test comps and renders plus high rez finished versions. So, Film Directors and VFX supervisors need a way to see how the movie is taking shape. Genetic Engineering is a perfect ‘hub’ solution to pull together big VFX projects.

Any artist can drop any shot at any resolution up to 4K directly into the GenePool so that the Director or VFX supervisor can play back any part of the movie straightaway.

### Resolution Co-existence

Resolution Co-existence enables media to be stored in its native resolution, colorspace and bit depth and to be combined on the fly with different format media. There are three main benefits:

- Saves time as different formats do not have to be converted to a single format before they are used
- Saves disk space as different format versions of the same clip do not need to be created
- Maximizes quality as no unnecessary format conversions are performed

eQ, iQ and Pablo introduced the benefits of Resolution Co-existence to post and DI and Genetic Engineering also supports Resolution Co-existence. Max plays out multi-format edits in realtime without creating any new media. The GenePool stores assets of different resolution and colorspace. Sam presents assets in different formats as required by the client applications.



# Genetic Engineering for post

Post facilities sell creativity and flexibility to their clients. In today's competitive post business, facilities also need to add efficiency into the mix to prosper. Building on the eQ and Pablo pedigree, Genetic Engineering helps post facilities with all three.

## **Boost creativity, flexibility and efficiency**

Creativity is enhanced as different toolsets from different manufacturers can easily be teamworked in a managed media environment without introducing big media management overheads.

Flexibility is transformed as jobs can be placed in any suite on a moment's notice. The unexpected booking and the overrunning client are now a revenue opportunity rather than a scheduling headache.

Efficiency can be increased by handling routine non-creative tasks such as conforming or playout with the Max assist station away from the creative suites so increasing billable time.

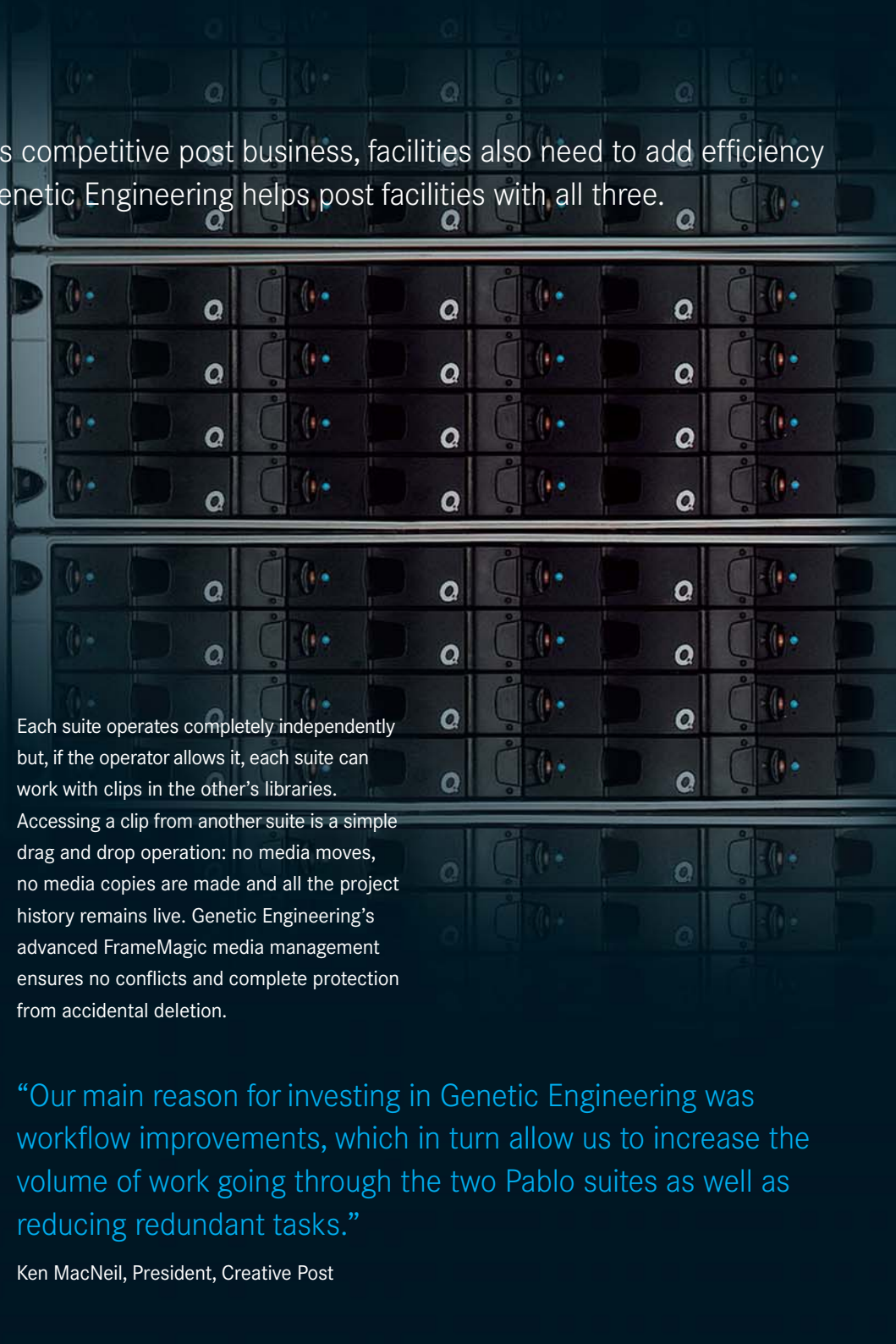
## **Massively enhanced workflow**

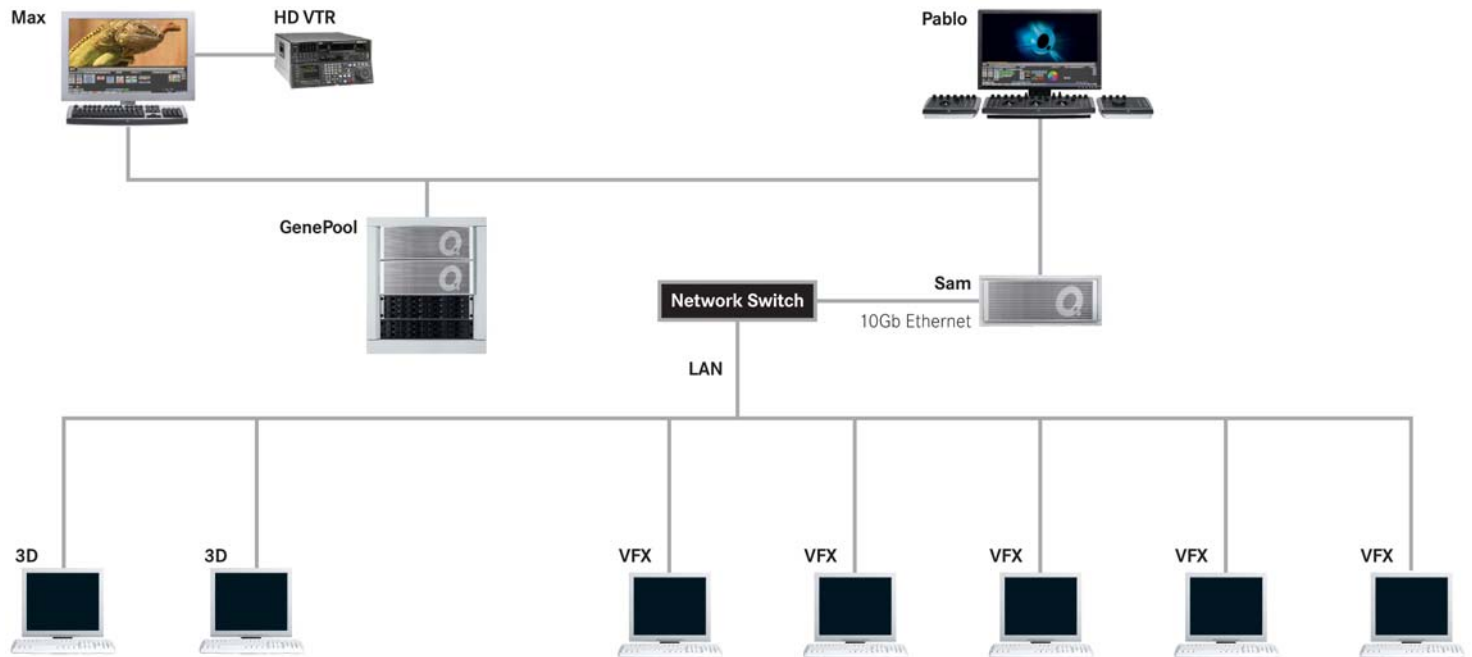
Genetic Engineering allows eQs and Pablos to share the same media at the same time across different suites. There are no limitations; the suites have the same capabilities as stand-alone eQs or Pablos and run the same software, with advanced features such as resolution co-existent, multilayer timeline and ability to fully conform complex offlines from Apple and Avid editors.

Each suite operates completely independently but, if the operator allows it, each suite can work with clips in the other's libraries. Accessing a clip from another suite is a simple drag and drop operation: no media moves, no media copies are made and all the project history remains live. Genetic Engineering's advanced FrameMagic media management ensures no conflicts and complete protection from accidental deletion.

**“Our main reason for investing in Genetic Engineering was workflow improvements, which in turn allow us to increase the volume of work going through the two Pablo suites as well as reducing redundant tasks.”**

Ken MacNeil, President, Creative Post





### Open access to managed media

Sam enables 3rd party software such as VFX and 3D applications to teamwork with the Quantel systems. VFX systems can access shots in their editorial context with a common naming convention across finishing and effects. Even individual layers in a composite can be accessed in context without any external media tracking. VFX systems can read and write simultaneously to the non-compressed GenePool helping eliminate multiple copies and their management issues.

### Broadcast promotions

Modern broadcast channel branding means producing high impact promos, trailers and stings quickly and economically. This often involves intensive graphics, 3D and editing. eQ is a great finishing system for this kind of intense, multi-version work and adding Genetic Engineering to eQ and Pablo gives a perfect finishing solution for broadcast promotions, allowing jobs to be allocated in the most efficient way possible.

### FrameMagic

FrameMagic is the name for Quantel’s unique frame level media management technology. Genetic Engineering extends FrameMagic to work across multiple systems without changing the essentials.

- No copy editing means no multiple copies of media are made just because clips need to be played out in a different order than they were recorded, boosting storage efficiency.
- A frame usage count keeps track of how many clips are using each and every frame in the GenePool. Deleting a clip will never delete frames unless no other users are using those frames.
- Advanced disk management technology means no disk bandwidth or time is ever wasted on defragmenting the GenePool.
- Powerful media management is essential if teamworking is to realize its full potential. With FrameMagic, Genetic Engineering has the best in the business.



# Open network connectivity to the world

Post and DI today need the workflow boost of efficient teamworking, not only between their Quantel systems but also between Quantel and the multiplicity of software applications used on a project. Genetic Engineering provides open network connectivity for all – producing a complete teamworking environment.

The Sam data server makes media in the GenePool available to any software application via the industry standard CIFS protocol. No special or proprietary APIs are required; Sam gives out of the box read/write connectivity for 3rd party applications. Better yet, Sam provides access not only to the flattened files but also to all their ingredients and in whatever format the application needs to see them.

## Managed media

Sam allows third party software applications to benefit from Quantel's FrameMagic advanced media management technology. FrameMagic automatically keeps track of media relationships down to frame level. Sam presents editorial and compositional contexts in a logical and practical manner.

Media assets need only be stored once – saving disk space, dramatically simplifying management issues and making late changes easy to accomplish.

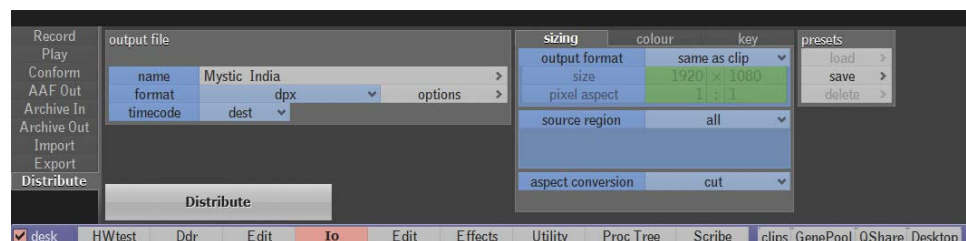
3rd party systems can access individual layers in shots in context without external media management because Sam presents the media in context automatically. This saves time and also reduces the cost of any external asset management system as its task is now much more straightforward.

## Distribute workflow

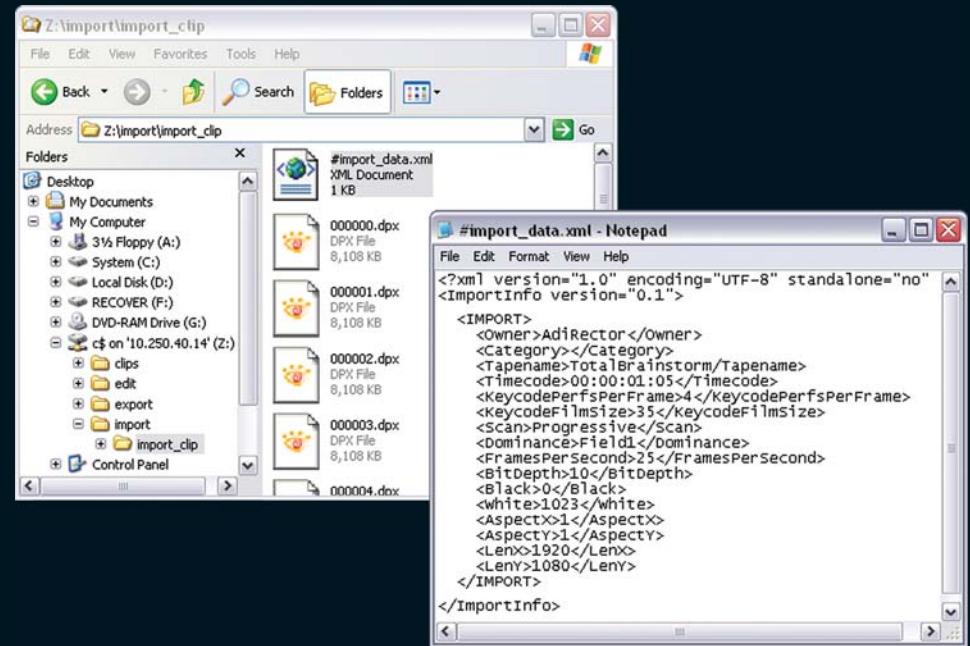
Genetic Engineering's Distribute Workflow facility enables Quantel operators to put clips at any resolution into a Distribute folder on Sam ready for access by connected 3rd party systems. Distribute creates no new media as the file sequence is created on-the-fly by Sam as it is read. Distribute speeds and simplifies workflow and puts the Quantel operator in control.

## Remote i/o

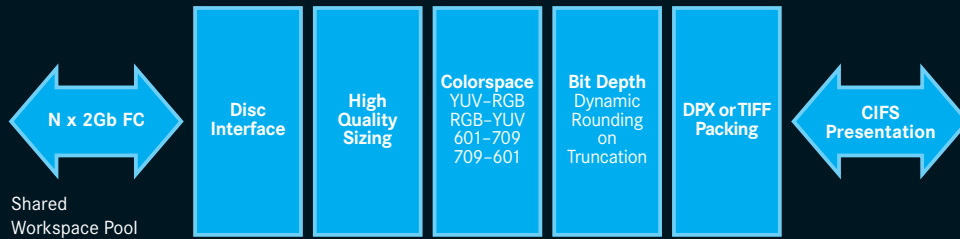
Remote i/o allows one connected system to tell another to perform jobs on its behalf – so for example Pablo can instruct Sam to carry out non-creative tasks such as conform or export/archive. Remote i/o also enables Sam to be connected to a SAN via fibre channel for super-fast, completely background file transfers, all controlled from the creative workstations.



Sam virtualizes file header metadata as XML files. The XML files are human readable and can be edited manually or with scripts. Handling metadata as virtual XML files is considerably more flexible and extensible than manipulating data hidden in file headers.



Sam hardware-assisted media virtualization



**Multiple formats, no copies**

Different assets may be in different formats – for example a 4:2:2 HD clip from Varicam and a 4:4:4 HD clip from HDCAM SR. Sam saves time and disk space by handling format conversions on the fly, providing assets in the format they are needed, rather than in the format they are stored.

Sam is a sophisticated blend of software and hardware. The hardware handles on-the-fly virtualization of assets, maintaining throughput and quality when assets are presented in different resolutions, colorspace and bit depths. The sophisticated software allows users to access the same media asset simultaneously in different formats and there is only ever one copy of the asset stored in the GenePool.

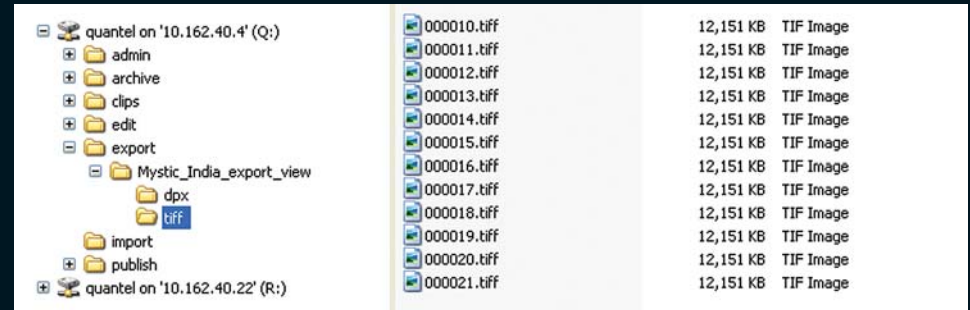
**Flexible export**

TIFF virtualization, combined with Sam’s ability to burn in 3D LUTs on export makes the production of files for DCI use quick and easy.

**Flexible archiving**

Sam allows you to archive projects without involving creative workstations. Simply drop the project into the archive folder and copy it into the chosen data storage archive – it’s as simple as that.

Sam presents clips as DPX or TIFF file sequences. Nested folders automatically present the individual layers used to make composite clips.



# Inside Genetic Engineering

## Max

- Increase efficiency by performing backroom tasks out of the creative suites
- Maximize billable time in creative suites
- Lower total system costs
- 100% project compatibility with eQ, iQ and Pablo

## Max Specification

- Resolution Co-existence saves time handling multi-format projects or deliverables
- SD/HD single/dual-link video input/output for frame-accurate record or playout to/from tape
- Reproduce live pan and scan on output
- Tape or network conform
- File input and output supporting many common formats including dpx, cin, tga, mov, WM9
- Desk editing – perform simple edits
- VTR emulation
- Processing utilities, cine compress, cine expand, to/from Cineon, LUT burn-in etc.
- Optional Scribe titling module for rolls, crawls and static captions
- Optional Edit module for full timeline editing and pan and scan management
- Optional QGrade module for connection to hardware color correctors (Max 4K only)
- Size: Max HD 4U, Max 2K 8U, Max 4K 8U

## Sam

- Open network access to managed media via cross-platform CIFS protocol
- No API required for out of the box application connectivity
- Inventory view automatically presents media relationships saving time spent tracking media
- On the fly format and colorspace conversions save time and disk space

## Sam Specification

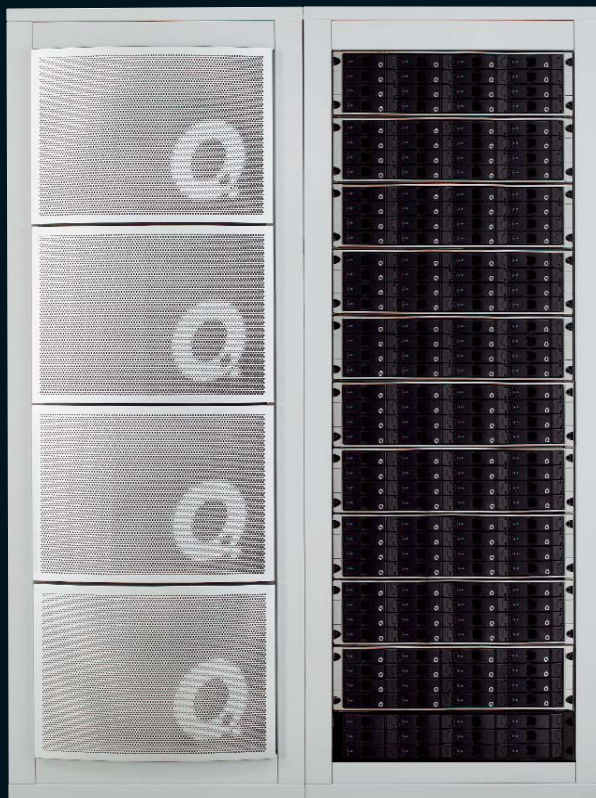
- CIFS protocol with support for Windows 2000/XP/Vista and Linux (2.6 kernel) clients; OS X (Tiger 10.4) support also planned
- Multiple simultaneous non-blocking client access
- Import folder enables writing to GenePool storage
- Export folder enables reading of media in any resolution and YCrCb or RGB colorspace
- DPX and TIFF virtualization with 3D LUT burn-in for DCI files
- Remote i/o, controlled from creative workstations
- Distribute for chosen format, multi-user file distribution
- Edit folder provides overwrite capabilities
- Archive folder for easy archiving of projects
- Clips folder provides inventory view of assets showing edit and compositional relationships
- Admin account for Sam library management
- 2 x 1 Gigabit Ethernet standard connectivity, 10 GigE option
- Size: Sam HD 4U, Sam 2K 8U, Sam 4K 8U



## GenePool Specifications

	GenePool HD	GenePool 2K	GenePool 4K
Reliability	RAID protected arrays with hot-swap disks and auto rebuild	RAID protected arrays with hot-swap disks and auto rebuild	RAID protected arrays with hot-swap disks and auto rebuild
	Dual PSU arrays	Dual PSU arrays	Dual PSU arrays
	Independent client libraries and workstation connections	Independent client libraries and workstation connections	Independent client libraries and workstation connections
	Mirrored client library disks (option)	Mirrored client library disks	Mirrored client library disks
Supported Quantel workstations	eQ, Pablo HD, Max HD, Sam HD	iQ2, Pablo 2K, Max 2K, Sam 2K	iQ4, Pablo 4K, Max 4K, Sam 4K
Maximum clients	3 plus Sam	3 plus Sam	3 plus Sam
Two client GenePool	Min 9 hours HD (1 Dylan FC)	Min 8 hours 2K (2 Dylan FC)	Min 4 hours 4K (4 Dylan FC)
Three/Four client GenePool	Min 18 hours HD (2 Dylan FC)	Min 16 hours 2K (4 Dylan FC)	Min 8 hours 4K (8 Dylan FC)
Shared audio workspace	300 hours Stereo	300 hours Stereo	300 hours Stereo
Realtime streams	HD 4:4:4	2K, 1080p 60, Stereo HD	4K, Stereo 2K

GenePool 4K



GenePool HD



### GenePool Connect

GenePool Connect is an option for eQ, iQ and Pablo that connects them into the GenePool. GenePool Connect adds the hardware and advanced distributed filing system software that enables eQ, iQ and Pablo to access all the GenePool workflow benefits.

### eQ

A GenePool-connected eQ becomes an even more efficient post machine. eQ's business-generating four revenue streams are further enhanced by the co-operative and connected GenePool world. For broadcast promos productivity or post facility flexibility, adding Genetic Engineering to eQ is a winning investment.

### iQ

The power and flexibility of iQ have made it the DI leader, and connecting iQ into GenePool makes for even faster and more productive workflow. The GenePool handles the Terabytes of data involved in DI with ease and completely eliminates workflow-stalling transfers and multiple copies from the DI pipeline. iQ and GenePool are the perfect combination for DI.

### Pablo

Pablo is all about creative color correction for post and DI. Connecting Pablo into GenePool means 100% creative time in the Pablo suite as non-creative tasks can be instantly off-loaded to other rooms. More creative time equals more billable time and that boosts the bottom line. Investing in Pablo is a great decision; add Genetic Engineering and it becomes a brilliant decision.

Quantel reserves the right to alter specifications without notice. Please contact your local Quantel office for details of current specifications.

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