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WHITE PAPER

Unified Quality Control from AmberFin

Automated Quality Control with a human touch – establishing a media QC mark the industry can trust



Unified Quality Control
by AmberFin™

Section 1 – Executive Introduction

Today's multi-screen, multi-platform media world offers content owners and content aggregators a host of opportunities to develop significant new revenue streams. In many cases, the industry is discovering entirely new business models, adding more value to original high quality content.

On a large or small screen, in standard or high-definition, 2D or 3D, at home or on the move: the choice of how, where and when to engage with content is the consumer's decision. The challenge facing content owners and aggregators is that of providing content in forms that are fit for purpose across a range of distribution platforms in whatever level of resolution the consumer requires.

With the evolution of file-based workflows this transformation or transcoding process has become more accessible. However, there remains the important issue of quality control – being certain that the quality of each media form is consistent and at a level that the content owner requires.

Quality Control (QC) is an important part of bringing content into broadcasters' workflows and archives. Broadcasters industry-wide spend a large proportion of their revenue on acquiring content, but this content cannot be monetized by a broadcaster until it has successfully made it into the business' workflow. Making QC a part of the ingest and transcoding process reduces the risk of poor quality content being included in the business' content archive and consequently decreasing the value of that archive.

The central purpose of any media facility is to capture and store content, re-purpose it according to market demand and then to distribute it across a range of platforms and channels to market. Underlying all these operations is a mission critical requirement – efficiency.

The panacea that media facilities strive for is to harness automation in ways that increase efficiency and profitability throughout the operation, and reducing pressure on staff to implement QC procedures whilst still enabling an appropriate human touch to ensure absolutely that the required quality is being achieved consistently across all forms of media output.

Automating QC lowers the cost of bringing content into the business. The trick is to get the right balance between QC automation and QC reliability so that whether ingesting content from tape or transcoding a file, the QC process gives the opportunity to identify problems in timely manner, thereby saving money.

QC has been available across media ingest operations for some time: the big challenge today is to offer Unified Quality Control across all ingest and transcoding operations and to include that into a single operating timeline.

Section 2 – Traditional Quality Control to current day scenarios

Quality has always been a cornerstone of broadcast operations worldwide – no broadcasters ever knowingly transmits sub-standard content or allows bad file to cause black screens. QC has been, and remains, a central process with broadcast operations, the challenge has been to develop QC systems that are most appropriate to the environment in which they operate.

For four decades – from 1940 until 1980 – the norm was an environment where VTR-type devices were connected more-or-less directly to large high-powered TV transmitters. The over-riding need was to protect the transmitters from media faults that could knock a transmitter off-air, cause an analogue TV set to lose the TV signal or even damage the transmitter itself.

In this period QC took the form of a range of measures performed on the PAL, NTSC or SECAM waveform signal, designed to protect and safeguard the transmitter and the transmitted signal. Much of today's test & measurement procedures are essentially the same as decades ago, but you have to ask whether they are as important in all stages of a digital file-based workflow? Do they incorporate the appropriate blend of automation with sufficient human intervention to maintain consistent quality – in most cases, no.

In today's multimedia landscape, different media facilities require varying forms of QC because the QC function is supporting different business models

- 1 – Content owners selling to broadcasters and content aggregators have a central need for high quality content with added interoperability with editing and playout platforms. In this situation, QC is focused on baseband metrics and file syntax.
- 2 – Playout facilities require absolute assurance of business continuity 24/7. Their nightmare scenario is breaks in transmission so assurance that the product within their schedules is fit for broadcast is central to their business model.
- 3 – Online portals are an increasingly popular source of media consumption today. Compared to other distribution channels they are faced with a far wider range of playback devices from PCs to smartphones and media players. Their ability to provide compatible services with the broadest range of these devices will be a key factor in deciding their success in a fiercely competitive market.
- 4 – Historical archives need to be certain that their operations today will not be visible in the future. If they do something to the media today – leaving a footprint from 2011 that has been pure until that point in time – it would undermine their entire raison d'être as a safe media repository.

In today's media world, money talks like never before. The focus is on the financial aspects and the business process rather than the evolution of technology as in previous eras. Organisations are looking to make more money from their assets and to insure against possible financial losses because their media is not fit for purpose. Against this background, QC plays a critical role, however different file based measurements are needed in different applications, depending on their focus and workflow requirements.

Section 3 – **Automating media QC – what can we learn from the automotive industry?**

Historically, media facilities were built around people – there was little if any automation, operations were tape-based, people carried tapes around the facility and problem solving tasks were achieved within peoples' heads. Fundamentally, this is an inefficient means of operation.

Today, much of this media supply chain is not heavily automated, however when achieved, effective media process automation transforms the way your facility operates. Unlike our industry, car manufacturers have successfully employed process automation for many years. One of the most successful has been Toyota.

The essence of Toyota's car production workflow centres on three concepts:

1 - Waste reduction – never do anything that doesn't result in a better car.

2 - Jidoka - automation with a human touch. Toyota's production philosophy is simple – only do what is needed, when it is needed and to a level that is needed. Connected to this is their view on analysis – implement just enough analysis, just in time and highlight/visualize your needs.

Toyota's focus on quality is not so much on the quality of the end product but rather on the quality of the production processes that contribute to the production of the car. They believe that if you put perfect materials into a perfect process, you make perfect cars, perfectly.

When Toyota identifies a problem in the production process it will stop the production line and fix the fault so that all the vehicles coming off the production line are top quality. Compare this with the traditional US or European maxim of "Keep the production line going at any cost" and then retro-fix the sub standard vehicles at the end. A look at how these two philosophies have prospered in recent decades, since their divergent QC approaches have been employed, demonstrates which approach is more successful.

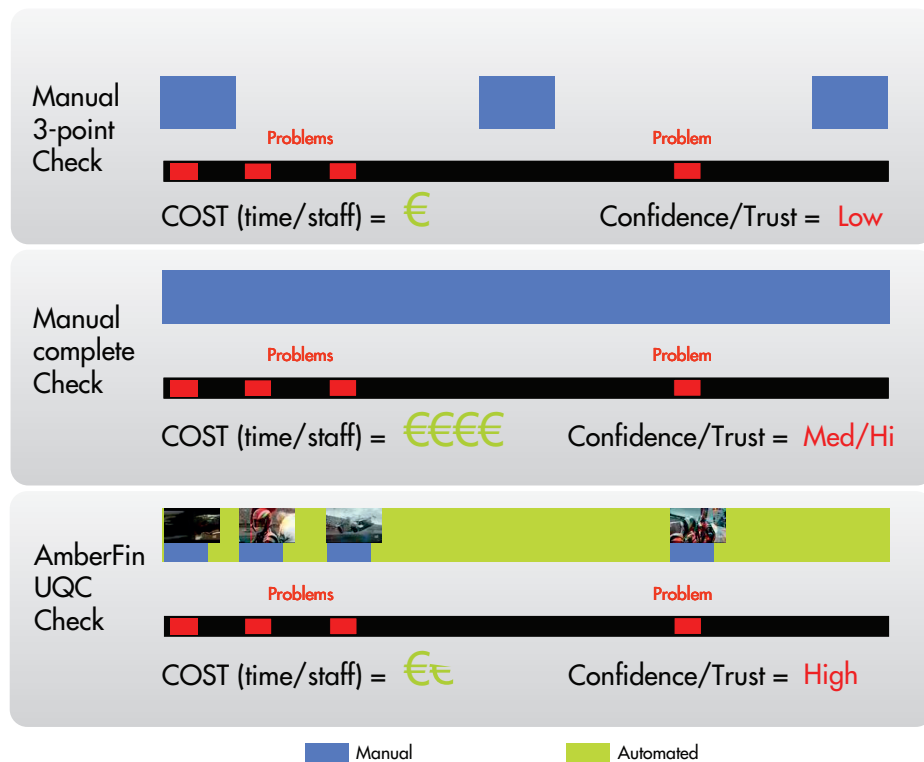
3 - Andon – this is a concept where it takes just one glance to see how the entire production system is operating. This typifies the change in methodology from performing full QC on the completed product to a situation where you perform QC on each process within the production line.

In the media world, we currently re-try and re-work failed media files. If this was the case in car manufacture, the industry would fail within a very short period of time. What we need to do is to take the QC central elements of car manufacture automation and integrate them within file-based media workflows to create Unified Quality Control. And this is exactly what we did with iCR UQC.

Section 4 – Unified Quality Control from AmberFin

iCR Unified QC (UQC) is the world's first Unified Quality Control solution for content ingest and transcoding operations. This unique approach to quality control combines multiple tools for baseband checks during tape ingest, file-based QC after ingest, and overall operator-controlled QC, including annotation and mark-up in one single unified timeline.

This unified timeline gives an accurate and easy to use display of potential issues of any kind such as simple video and audio problems, file wrapper abnormalities, artefact detection, PSE (Photo sensitive Epilepsy) Flash detection, loudness violations and potential content-related editorial issues. QC processes can be implemented at any point in the lifecycle of an asset, using the most appropriate technique. Easy to read reports and a range of graphic displays aid operators easily identify the source, nature and position of an error with a thumbnail of the frame where it occurred.



The addition of UQC to AmberFin's iCR file-based content ingest and transcoding system means that users have the potential to create a high quality file-based HD/SD master, provide unique file conversion to multiple formats and implement appropriate levels of automated and manual quality control, all within a single unified software environment.

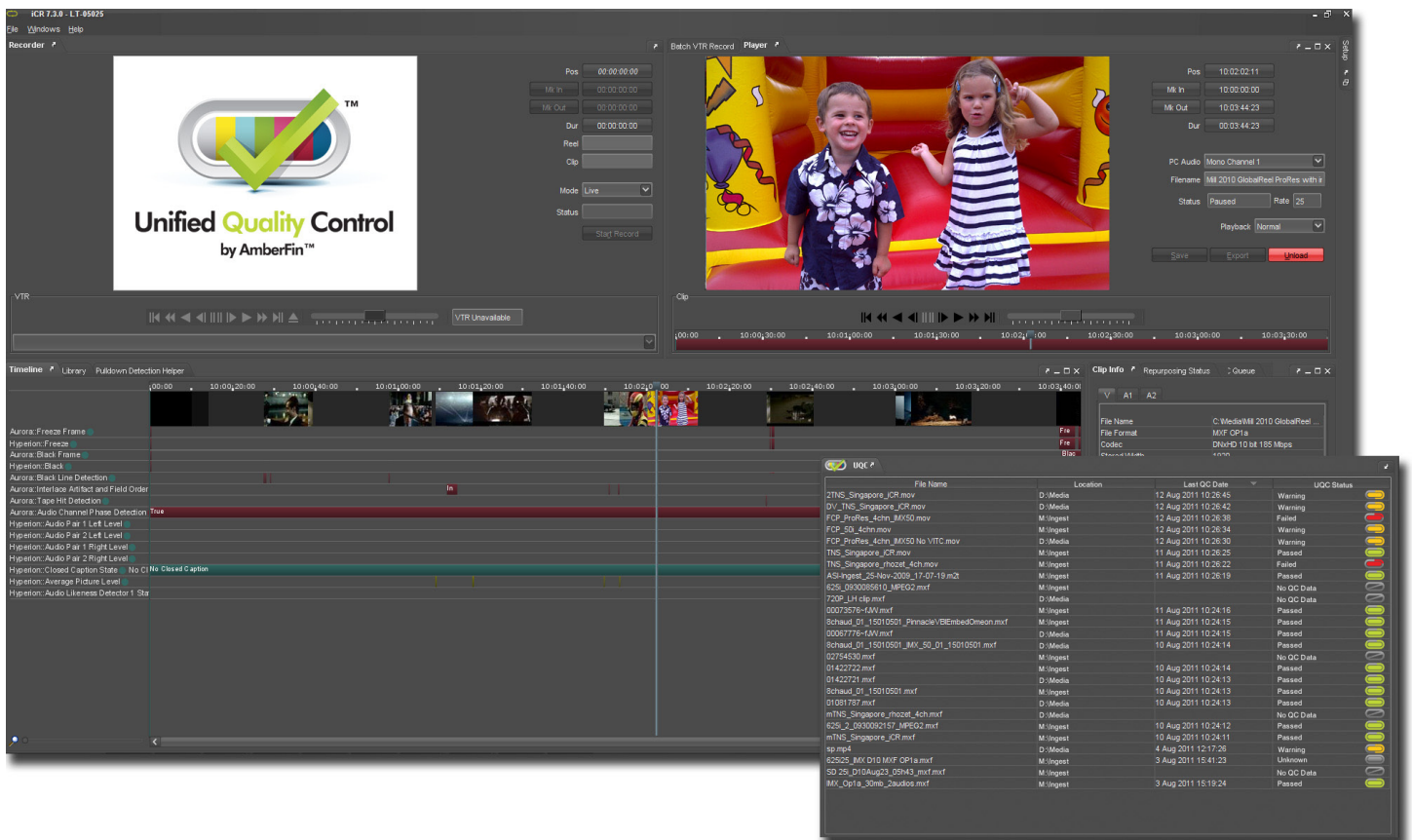
New levels of trust and confidence in the file/media quality are introduced, freeing up staff to focus on other revenue-generating tasks. AmberFin's intention is that UQC will become regarded as an industry benchmark in media quality control.

When first launched at IBC 2011, AmberFin's Unified QC approach featured the seamless integration of two industry-leading tools: Snell's Hyperion and Digimetric's Aurora so that all aspects of QC are now integrated within a single unified timeline to give users an instant and highly accurate visual display of potential quality issues throughout the ingest and transcoding process. Human readable reports with time code and thumbnail references can be created and exported, simplifying the decision-making process, while machine readable XML reports can be exported to DAM, MAM and automation systems.

Snell's Hyperion provides real-time baseband QC on ingest and automatically checks for VTR playback issues and common audio and time code faults. This ensures that users do not spend valuable time capturing hours of material only to find out later that it was faulty.

Digimetric's Aurora provides file-based QC after ingest and checks for common file wrapper anomalies to prevent expensive mistakes. Aurora tools also automatically check for a variety of compliance violations, including container metadata and delivery metrics, thereby reducing the burden on operators.

At NAB 2012, AmberFin showcased development work intended to increase the number of third-party QC systems including vendors such as VidCheck (VidChecker), Tektronix (Ceriphy) and Metaglu (MXFixer). The provision of wider choice enables users to integrate UQC seamlessly within their existing workflows more easily. Also, the option of integrating multiple third-party systems within UQC empowers the user to compare and contrast measurements from the different systems, increasing overall confidence in the quality of their media files.



In the media world, we still tend to QC the file and not the processes that made the file. AmberFin UQC is changing this. By measuring QC at two places and storing the results with the asset, UQC creates knowledge about the media. For example: The end of this file is black. All the third-party systems agree that it's black. The human operator using iCR's unique interface converts the status of these events to be "OK". We have now got enough knowledge so that the QC of a downstream transcode can automatically perform one of the following actions:

- a) if the downstream transcode detects black in the same location in the file, it can automatically propagate the "OK" decision to the downstream QC task via a MAM
- b) if the downstream transcode does not detect black in the same location, it can flag an error that something has gone wrong in the transcode. In case, we have the ability to use knowledge about the media so that the absence of a QC event is the error. This can only be done if the process is being Quality Controlled and not the file. This absence detection will initially be launched as a visual process via the iCR QC GUI.

Since QC requirements vary from facility to facility and from project to project, each application requires a different level of manual intervention. To that effect, AmberFin has developed new mark-up and annotation tools that allow operators to highlight potential issues, make recommendations and provide information that can be sent on to downstream applications for action.

Section 5 – Applying Toyota’s QC concepts to a file-based media workflow

AmberFin UQC solves the challenge of blending Toyota’s principles with modern day media tools to make the concept applicable to file-based media workflows. When ingesting media, UQC enables quality control of both the input and the output and to show the metrics graphically.

Employing the principle of Andon, AmberFin has developed a single unified user interface that provides the operator with a feeling of how good the media is. Automated devices continually make measurements but it requires a human touch (Jidoka) for a person to make the judgment. It is the sophistication of the AmberFin iCR’s Graphical User Interface (GUI) that empowers the operator to make these judgments based on the collected data.

Also new at NAB 2012 and incorporating extensive customer feedback from existing UQC users, the latest version of UQC comes with metadata workflows and possesses additional logic which increases the system’s overall efficiency and enhances the user experience.

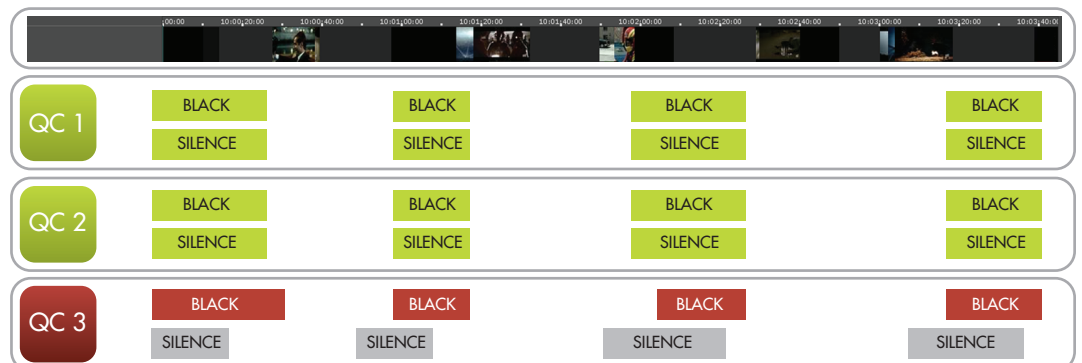
The QC and segmentation workflows are integrated so that both timelines run in parallel on the same screen, which enables very fast and efficient operation, especially sending QC’d and segmented content to a cut and splice engine within iCR.

With this new version of UQC, the operator can perform tasks with two mouse clicks with no need to import or export EDLs. This leads to very fast and efficient workflows where QC is not a means in itself but makes the whole workflow better. These refinements lead to an enhanced user experience with higher levels of trust in media assets for facilities and their customers.

Workflow



UQC



When transcoding files for delivery to a range of applications, AmberFin UQC implements QC before file ingest, after ingest and after transcoding. Once again, all this data is graphically represented on the GUI. UQC enables the operator to rapidly judge if there is a problem in the process of transcoding as well as in the file itself. The benefit of this process is that if the operator identifies a fault in the process of file transcoding, he/she knows what needs correcting in order to rectify the problem.

AmberFin iCR can also detect problems in system configuration, as well as file quality. In this respect, it can self correct, saving time and cost downstream.

AmberFin UQC represents a complete implementation of Toyota's process automation philosophy. It contributes to the process of waste reduction by never doing anything that's not needed or wasteful; and never knowingly doing anything that it knows is wrong.

The system's elegant GUI adheres to the concept of Andon by displaying every element of the ingest and transcoding process. By combining this with the concept of Jidoka, AmberFin iCR can make the man-machine interface more efficient, resulting in less work requirements on the operator, more efficient work throughout the media facility and the work performed having a greater financial output.

Section 6 – Conclusions

With media organizations worldwide seeking to exploit the opportunities presented by new distribution channels and new media consumption patterns, QC across all these media forms is becoming a mission critical issue. AmberFin's intention, by introducing unified quality assurance systems that integrate best in class third party technology alongside its own proprietary systems, is to create a QC standard that will rapidly become accepted as an industry benchmark.

By combining best-in-class automated processes with a human touch, UQC introduces new levels of trust and confidence to the file creation and distribution processes, leading to increased productivity and a significant reduction in the time and costs associated with re-works.

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Want to know more?

AmberFin iCR award winning technology, is widely used by Content Owners, Broadcasters, Sports Organizations and Post Production Facilities worldwide. To find out more, contact your local AmberFin channel partner, or contact AmberFin:

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