Generations of Innovation

First Generation
Film to Video – for revolutionized news gathering
From the dawn of audio-visual innovation, Sony has been with you. Years ago, content creation began with capturing images on film – a method still acceptable for some applications, but one that creates problems for electronic news gathering (ENG) applications, in particular the time and labor needed to develop film and convert it to suit the electronic broadcast medium. In response to this need, Sony brought you the revolutionary idea of a video camera and VTR that could record signals electronically on videotape – and so marked the first generation of innovation.

Second Generation
Camera / VTR to Camcorder – for single-person operation
Next, Sony brought you the Camcorder, a combined camera and VTR married with videotape, providing the opportunity to “Catch the World on Your Shoulders”. For news capture, this meant that camera and VTR operation – previously requiring a minimum of two individuals – could be achieved with a single camcorder operator. The idea became a reality when Sony introduced the BETACAM™ Camcorder, a product that marked the second generation of innovation.

Third Generation
AV only to AV / IT – from Discrete Production to Workflow Innovation
Today, Sony is again working with you to introduce the next generation of innovation – true Workflow Innovation, which has become possible with the introduction of Sony professional optical disc products. This generation goes well beyond innovation in the field, combining the AV and IT worlds to transform discrete production into seamlessly integrated, fast and cost-effective high-quality production. It breaks the traditional barriers between tasks in the field and tasks in the studio. And with the technological leaps made in recent years, Sony is armed to bring you a total solution, for true Workflow Innovation.

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What Is Workflow Innovation?

In the truest sense of the expression, Workflow Innovation is a dramatic change in the way work is performed. Processes become seamless, work styles more efficient, and the completion times of jobs significantly shorter. Workflow Innovation has now been made possible with the introduction of state-of-the-art Sony professional optical disc camcorders and decks – the world’s first professional audiovisual systems to utilize a blue-violet laser as a means to read from and write to an optical disc. Based on an open architecture, these devices can be easily integrated with existing systems and include advanced electro-mechanics and robust tracking and error-correction techniques that provide the stability and audiovisual quality expected of Sony.

Transforming the Process

For ENG, where the acquisition-to-transmission process traditionally involves a series of discrete steps such as script writing, shooting, ingesting, editing, and transmission, the introduction of professional optical disc products means you can optimize the process, and can even remove the ingestion sub-process altogether. With a professional optical disc product at the acquisition point, only the required footage need be selected for transfer (via FTP) to the in-house edit suite. This not only removes a process step, it also enables other sub-processes to be accomplished concurrently, increasing overall production efficiency.

As processes transform, so must work style. This calls for a change in the mindset of individuals in the production process, and this can be achieved through full utilization of Sony professional optical disc product features such as random access, metadata, and proxy data. Tasks that were once impossible in some locations are now not just possible, they’re often easier and more logical to perform too.

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As a result of these advances, communication between journalists, camera operators, and editors throughout the reporting, shooting, and editing process becomes seamless, and the process of locating and re-purposing archived material becomes shorter. Studio editing is changed forever, meaning time spent in the studio can be used for other important tasks instead. What’s more, the decision-making process – affecting planning, collecting data, analysis, and concept creation – can be done in a fraction of the time as compared to traditional methods. And the cost savings associated with this new way of doing business can be significant and measurable.

Optimizing Every Step

The natural next step is to shorten the time required to accomplish each stage of the process and, as a result, cut the length of the process as a whole. Sony professional optical disc products help you do this by providing Workflow Innovation that reduces the time needed to incorporate scripts, edit, transfer information and locate archived material. Examples of these Sony innovations include the seamless integration of scripts and metadata during acquisition via PC or PDA, the quick cut editing of proxy data, or the transfer of footage from the field to the edit suite in required clips rather than complete sections. Users can also directly upload proxy data to a web site, or quickly search for archived material at the touch of a button.
In order to bring you the complete Workflow Innovation picture, several pieces of a ‘puzzle’ had to be created and assembled. But a key piece of this puzzle has been missing until now – the Sony professional optical disc.

The professional optical disc is a robust new medium that has many uses. In general, it holds high-resolution video, metadata (including low-resolution video), and audio in a randomly accessible format. For production applications adopting the optical medium, this format brings significant benefits.

**Why Optical?**

**Random Access: Quick and Easy Material Access**

The nonlinear nature of professional optical discs alone constitutes a tremendous benefit when handling audiovisual content. When information is recorded to disc, the physical location of that information is irrelevant, and should be transparent to the user. Once information is recorded to disc, it can be accessed in a fraction of the time taken to access information on tape, making it much easier and quicker to locate source material. What’s more, because material is handled as data files on disc, it is inherently compatible with PCs, allowing quicker access to material via IT networks – another Sony Workflow Innovation.

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**Metadata: Identification of Your Recorded Assets**

Random access is only useful when combined with an efficient way of locating the information you’re looking for – and this is where metadata comes in. The simplest explanation of metadata is that it is “data about data,” allowing users to locate source footage by searching for easy-to-understand information such as key words, captions, thumbnails, dates/time/location stamps or essence marks. Data is created at the acquisition phase of production, either automatically through the acquisition equipment or manually by the acquisition team, with the idea that data should be entered once only. As soon as this metadata resides on the optical media, it can be accessed as needed at any stage of the production process, and any time during the entire life cycle of the disc itself. Thus, when archiving discs, metadata becomes an invaluable tool for locating source footage intended for repurposing.

In addition, metadata can be changed or added to at any time during production. Discs provide great flexibility in the location, format, and amount of metadata that can be stored. The beauty of this is that metadata can be allocated in many ways – whatever suits your needs and applications. This type of flexibility is essential to achieving true Workflow Innovation.
Why Optical?

Proxy Editing: Easy Editing of Low-Resolution Data

Random access and metadata form the foundation of proxy editing: an offline editing technique executed on low-resolution data, sometimes called proxy data. Proxy data is smaller in size than high-resolution data, making it easier to work with and transfer over standard TCP/IP networks, with transfer rates on the order of 30x real-time. Because both proxy and high-resolution data are recorded to disc and time-code synchronized, it is much quicker and more efficient to edit the proxy data first and automatically edit the high-resolution data based on the proxy. And in keeping with the work-style innovation concept, proxy editing can be done in the field with a laptop-based PC and nonlinear editing software. The idea is simple yet effective. Immediately after footage is acquired, field editing can take place by marking In and Out points, and storyboarding such that required clips are arranged in the order you wish to present the material. This is simple cut editing. In addition, scripting can also be done in the field. This information, along with the corresponding high-resolution data, can then be transferred at high speed via an ordinary TCP/IP network to a nonlinear editing suite at the studio, where your team can apply the finishing touches so that you’re first on the air.

Proxy Editing can also be performed in the studio. Simply receive the required unedited footage from the field, edit the proxy data, then start auto-editing the corresponding high-resolution data. The benefit of using disc media in both of these cases is that only the required data is transferred and proxy data can be transferred much faster than real-time, thereby reducing the total time taken to create a finished product. Now that’s Workflow Innovation.

Gateway for Networks

The concept of nonlinear has made multitracking possible, and the introduction of network solutions has enabled more effective collaboration. But with traditional media formats such as tapes, it is technically very difficult to integrate seamlessly with networks. The introduction of the professional optical disc and its inherently “network friendly” format, has turned the idea of Workflow Innovation into a reality.

Open Architecture and Common Standards

Sony professional optical disc products and related software offer an open architecture based on globally defined common standards such as SMPTE-330M for UMID and MXF, and standards governed by IEEE and ITU. This provides seamless compatibility and easy integration with third-party hardware and software products that also adhere to these standards.

IT Interface: The Network Path

Sony professional optical disc products are also equipped with a network interface, allowing them to be seamlessly integrated with other network-capable equipment. This interface is not just a means to transfer video, audio, and metadata; it can simultaneously be used as an interface for Sony remote maintenance and monitoring software too.
Total Cost Of Ownership

Total Cost of Ownership is perhaps the single most important factor in making your purchase decisions, and working with Sony, you can be confident of a solution that meets your business needs and bottom line, while also providing the best return on investment.

Cost-Effective Operation

Implementing Workflow Innovation the Sony way – with Sony professional optical disc products – will allow seamless operation of your production applications. Processes and work styles change, and the time taken to complete tasks is significantly reduced. Studio editing becomes easier, and the time saved can be used for other tasks. The inherent reliability and maintainability of professional optical disc decks and camcorders lowers maintenance costs, as does the professional optical disc media, which can be reused much more than tape. Material storage space can be reduced and the re-purposing process, using metadata, makes production easier and quicker. The decision-making process is shortened too, and the savings you can expect in production costs can be significant.

Easy Maintenance

From the very beginning, Sony professional optical disc products have been designed using the best concurrent engineering practices, addressing maintenance issues before they become problems. Moving parts have been minimized, so have the number of parts that require periodic replacement – a significant reduction compared to typical VTR systems. With fewer parts to replace, your equipment operates more efficiently and requires far less labor – again, saving you costs.

Remote Maintenance and Monitoring

Sony professional optical disc decks and camcorders are also supported by Sony remote maintenance and monitoring software, an SNMP compliant application that can monitor the systems in real time and provide updated maintenance information, via a TCP/IP network. If a malfunction is detected, this system immediately identifies the problem, allowing you to take corrective action. And as well as being reactive, it proactively monitors your systems and identifies maintenance needs in a timely manner.

Seamless Integration With Existing Systems

With all of this push to make systems network and IT capable, you might expect your existing systems to become obsolete. Not so with Sony. Our professional optical disc products come equipped with standard audio, video, and control interfaces, allowing you to integrate these products with your existing systems, so you don’t have to invest in a completely new production system.

Reliable And Robust

Professional optical discs have a natural advantage in that they suffer no mechanical contact during recording or playback, making the format ideal for continuous use and reuse. Professional optical discs are also highly resistant to dust and scratches because they are packaged in an extremely durable, dust-proof cartridge, and they are highly resistant to heat and humidity too. These features alone make for a highly reliable system, but Sony takes this further still, providing maximum robustness during operation. With years of experience working with digital data, Sony has perfected methods of error detection, error correction, and error concealment so that equipment remains highly resistant to impact during operation, offering the highest-quality systems available with today’s technology.

Flexible Platform

The world is changing from linear to nonlinear, because it is much more efficient to work in the nonlinear domain. The professional optical disc is a very flexible platform on which an assortment of data in a variety of formats can reside. The use of optical disc technology eliminates the restrictions inherent in proprietary tape footprints, allowing flexibility in recording different video formats. In addition to video and audio streams, you can record a variety of metadata.

Format Independent

Today, Sony is offering DVCAM™ and MPEG-2™ compatible professional optical disc products. As user needs change and technological advances are made, however, Sony will continue to develop professional optical disc products to match. The nature of the professional optical medium makes it an ideal platform for expanding into future formats. In fact, you will not be restricted to proprietary footprints – giving you complete peace of mind when investing. Not only will new formats be introduced, but each professional optical disc will be able to hold multiple formats for additional flexibility.

Flexible Metadata Changing With the Times

Metadata as it is defined today will continue to change over the years. For this reason, the optical medium is a perfect match for this expansion and transformation of metadata. Because professional optical discs are nonlinear in nature, metadata can be written anywhere on the disc in any format, and in any amount that suits the user’s needs.

Flexible Metadata: Changing With the Times

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A Final Word

For all of these reasons, teaming up with Sony is investing in your future. Sony delivers Workflow Innovation solutions and products that you can’t obtain anywhere else, and will help meet the broadcast needs of today, as well as the evolving needs of tomorrow.