

VisualWorks

A Digital Video Recording, Editing
and Storage System for Subsea Inspection Surveys

Benefits

Play video direct from
your Desktop PC
Lower Operational Costs
Faster Access to Video
Operates Automatically
Faster Eventing and
Report Generation
Very Simple to Operate
Hardware Independent

Efficiency Savings

Save Money/Vessel Time:
No Video Tape Changes
Reduction in data storage
volume by ratio of > 70

Reliability

Proven Track Record
Very Reliable Storage
Media: up to 30 years
Shelf-Life

VisualWorks is the worldwide market leader for digital video capture of subsea inspection survey data. It has been designed specifically for the offshore industry to replace the current S-VHS video recording methods.

A comprehensive set of system tools enables simultaneous real-time encoding of multiple analogue or digital ROV video cameras. The encoded video data can be viewed and edited digitally significantly reducing the time and effort required to edit and review pipeline events.

The digital video archive of the complete pipeline inspection survey allows 'Smart' reports and event databases to be produced directly linking feature listings and descriptions with video clips of each event. Playback of video no longer requires a dedicated VCR video review suite but can be done from a desktop PC and shared on CD/DVD/DLT or across a local network.

On-Line Video Data Capture

The **VisualWorks** system typically comprises 3 networked PC's which capture live video direct from the ROV mounted cameras. The video images are digitally encoded, compressed and stored locally on the PChard drive.

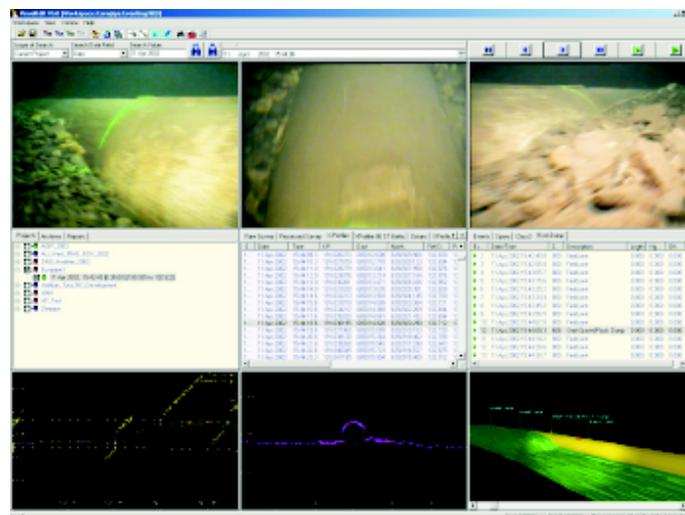
VisualEncoder provides a continuous real-time display of the video images and on-line survey navigation data as well as providing comprehensive system status information. All video data can be streamed live to other PC's on the survey vessel via the LAN. All data inputs are time synchronised enabling simultaneous playback of all events on all/any cameras using the **VisualEdit** video review module.



Real-time Display of Visual Encoder Video Data Capture Module

Off-Line Archiving/VideoReview

In addition to the data archiving function **VisualEdit** allows fast reviewing of the stored video, survey and event data. The digital archive of pipeline video data synchronises all cameras automatically and directly links the video stream to the on-line audio commentary, navigation data and coded events file. **VisualEdit** can access and playback synchronised multiple camera video streams with instantaneous access to any feature using date/time stamp, pipeline KP or event code. Reviewing tools make use of standard VCR functions: playback, fast forward/rewind, shuttle etc.



Display of VisualEdit Video Review and Archiving Module

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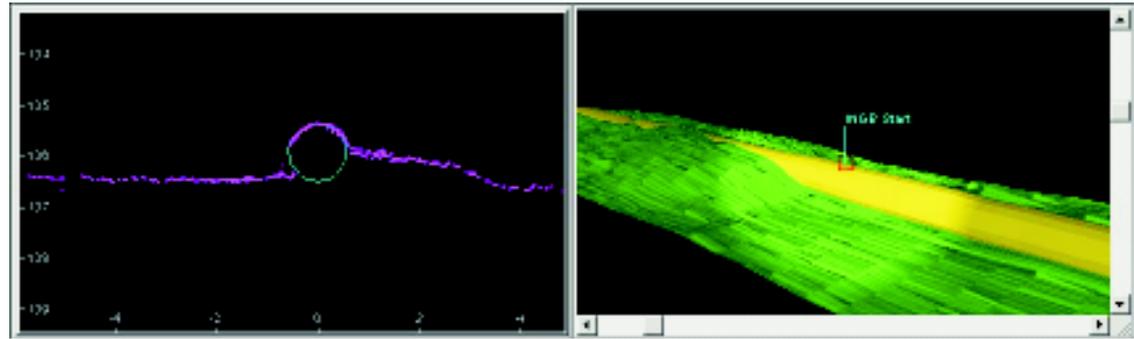
Features

- 8 Accepts Analogue/Digital Camera Input
- 8 Simple Integration with Client Database
- 8 Simple Integration with Client On-line Navigation System
- 8 Allows Input From Client On-line Eventing Suite
- 8 Enables Distribution of Data Via CD/DVD/DLT

Video Encoding

- Uses MPEG4 /WMV codec
- MPEG2 Compatible
- Encodes to Full D1
- Typical Data rate = 1.3Gb/hr per Camera

Video sequences/clips or stills can be simply extracted, trimmed and exported for submission to the client or inclusion in the final report. Using purpose built drivers the client's eventing suite can directly access the **VisualEdit** software to inject on-line event tags or to extract video image data off-line. The design of the **VisualWorks** package allows client flexibility to tailor the system to match their existing pipeline inspection survey procedures.



Example of CrossProfile and Virtual 3D Display of a Pipe entering a Rockdump

Data Security

The video image data is mirrored locally on each **VisualEncoder** PC to a RAID 1 hard disk array ensuring that hard drive failure will never result in video data loss.

The local image data is regularly transferred to the **VisualArchive** off-line server PC which performs off-line archiving to SDLT (Super Digital Linear Tape) and automatically generates a catalogue index of all video data which has been encoded and archived.

Duplication of each SDLT data archive ensures backup in the event of loss/failure of any individual data tape. Utilisation of a RAID array storage configuration not only ensures against data loss due to hardware failure but also prevents downtime due to single-point failure within the system.

The robust system design ensures that even in the event of partial system failure e.g. hard disk or network crash, that the **VisualWorks** system will still continue to be able to gather on-line data for up to 18 hours allowing time for preventative maintenance to repair the fault. It is also possible to design additional modular redundancy into the system so that even failure of a complete **VisualEncoder** platform can be tolerated without the loss of any on-line data.

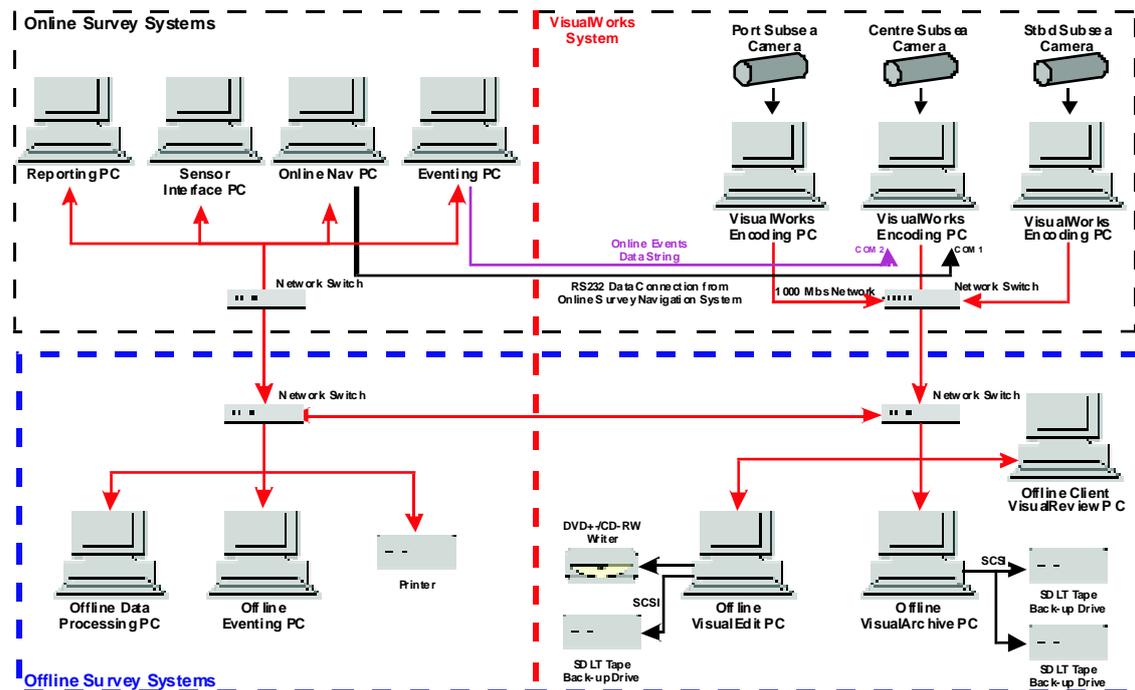
Video Storage Process

Video from the ROV cameras is streamed to the **VisualEncoder** PC which digitises and compresses the data at a rate of approximately 1.3Gb/hour/camera.

In a continuous automatic process **VisualArchive** backs up video data from the online system over the network and manages the video archives, typically providing instant access to 10 days of video and to any other section within minutes. SDLT tapes have the capacity to store 1.5 days of video with all associated audio commentary and survey information.

Video clips of all notable events can be automatically extracted from the complete video data pipeline inspection archive and stored on DVD media. A single DVD can hold an archive of up to 1.5 hours of video clips so that even a large pipeline inspection survey event database can be held on just a few discs for easy distribution to all clients. These can be viewed on a standard desktop PC without the need for a dedicated VCR review suite enabling simple review of all relevant information for critical pipeline events.

The complete video archive for even a large pipeline video inspection survey can be held on as few as 30 DLT tapes making the logistics of data storage simple, compact and very cost effective.



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