Westdeutscher Rundfunk's (WDR) investment into XDCAM

Back in 1999, Sony announced that BetaSP would-be discontinued. At this point, WDR started a research and investment project to replace existing tape-based production equipment. The main target behind this task was the intention to enhance workflow and production speed, introduce a data storage device with no incompatibility which can be used in pre-/post-production, archiving and material exchange. The European technology trend showed that analogue in general would become extinct. Dipl.-Photoingenieur Walter Demonte (Head of 'Kamera und Ton'-Department, WDR) and Dipl.-Ing. Wolfgang Kaiser (Head of 'Produktionswirtschaft und IT-Strategie', WDR TV-Production) explained the long way to an investment, which influences internal and external workflow at WDR.
"We figured out that we needed IT interfaces such as Ethernet, FireWire, USB, etc. to adopt existing broadcast equipment within an information technology based environment at WDR", said Kaiser. "This new *future-technology based machine* we called 'hybrid VTR' equipped with conventional A/V connectors (SDT, SDTI, audio, TC, etc.) but also equipped with IT interfaces."


"Compared with Panasonic P2 Solid State Memory the investment into and ROI of Professional Disk (PD) is more effective and progressive", says Kaiser (Head of IT strategy, WDR)

First consumer products — introduced in 2001 — provided almost all of the feature list capabilities that had been on the 'wish list' of WDR for the targeted future equipment. First talks with broadcast manufactures pointed out that they somehow misinterpreted the needs of broadcasters. They would not implement consumer technology features e.g. auto-white balance, WLAN/Bluetooth connectivity, etc. into professional equipment. During this solution-finding phase, WDR committed himself to 50 Mbps signal quality (feature film production, archiving and material exchange in mind) instead of 25 Mbps solutions from Panasonic, JVC and other manufacturers which were already available on the market and widely used within ARD and ZDF premises.

A team of WDR employees started a negotiation and discussion process with Sony Germany and Sony Japan during which they deeply explained workflow requirements and metadata requirements. "WDR developed an in-house archiving solution called "Archimedes" based on proprietary database and software. Within this archive solution, a huge amount of metadata (MXF format for container and XML format for descriptive information) and BetaSP tape material (over 400,000) is used", explained Demonte. He adds, "Playback of BetaSP or DigiBeta on a DV machine is impossible; therefore we committed ourselves to a backward-compatible tape machine format e.g. IMX, because the Sony IMX 'J3' office player convinced us in its price, performance and playback abilities. So, the discussion about the introduction of 25Mbps equipment was finalized." Quality restrictions within a feature film production at 50Mbps and 25Mbps material inserted were an editorial as well as technical issue and discussed within several departments. The final agreement between WDR production, IT, technical services and editorial departments was a commitment to a completely integrated 50Mbps environment with 'no compromises' within WDR. "We are convinced that even if HD succeeds within 2004 and we will have to upgrade to HD, we will not experience any problems by integrating HD studio players in an editing suite because of its backward compatibility to IMX, DigiBeta and even BetaSP", explains Kaiser.

"For acquisition (ENG, OB van camcorders, etc.) we decided not to choose IMX-camcorders like NDR and ORF did. In that particular field, we looked into a tapeless, IT implementable and useable format", says Demonte. "The NLE workflow process needs digitisation of material before it can be used. This workflow barrier we had to overcome." With its EditCam, Ikegami showed an early solution (HDD recording) followed by Sony with first research-laboratory models of disk-based recording solutions.

A WDR working group tried to find workflow enhancement solutions within the field production and post-production area without looking at technical specifications like technicians and engineers do. Tapeless and network based material transport and exchange should be possible as well as the data carrier should be an IT based item. Intensive talks with Sony Japan (Kaminaga, head of development) started in 2001 and lead to the implementation of consumer product features into broadcast equipment. Sony presented a first working model of a blue-laser disk camcorder to WDR in late 2002. "A main requirement for the investment into new IT based equipment for acquisition was a lower price range than IMX, DigiBeta or SX equipment had. We tried to reduce the total cost of ownership and make the best return of investment (ROI)", explains Demonte.

"A major problem during the evaluation phase was that Sony could not provide access performance to the Blue-Laser disk media as requested by the operators. They claimed that the 'Professional Disk' should act and behave like a tape. With the final working models delivered for the 'On-Air Pilot', all of those restrictions had been solved", explains Demonte (Head of Camera and Sound, WDR).

WDR received a first range of XDCAM Series equipment for testing in August 2003 and for production in December 2003 (field production and technical services) followed by several software and hardware updates to improve liability and signal quality. Two editorial departments escorted the introduction and tests of XDCAM, which concluded with an 'On-air Pilot' with new working XDCAM models successfully in April 2004. This success led to the purchase decision and signing of a delivery contract for XDCAM equipment of app. 120x PDW-530 camcorders with MPEG IMX (50/40/30Mbps), DVCAM (25Mbps), proxy video (MPEG4) and proxy audio capabilities, 120x PDW-1500 compact decks and 150x PDW-V1 mobile editing recorders in June 2004 (studio deck PDW-3000 will follow).

In spring 2004, WDR created a new working group named EIPRODI (Einführung Professional Disk), which is in charge for the final equipment rollout and training of personnel. Period one — the first rollout of the decks into editing, browsing/logging and preview seats in editorial departments — will start in Q4 of 2004. Followed by phase two — the rollout of camcorders — after post-production has been equipped. "A major problem during the evaluation phase was that Sony could not provide the performance in accessing the Blue-Laser disk media itself as requested by the operators. They claimed that the 'Professional Disk' should act and behave like a tape. With the final working models delivered for the On-Air Pilot, all of those restrictions had been solved (Demonte)."

"Today, we must admit, that the Professional Disk (PD) is much better in performance than tape has ever been. IT performance in accessing clips on HDD is no longer quicker than on XDCAM disk. NLE editing has reached a new level of experience and speed, we expected but never thought that it might be reachable", underlines Kaiser. "Pictures (proxies) of clips recorded on XDCAM supports production workflow enhancement. A disk inserted into a player shows immediately on a separate output proxies of the content. In the future, a reporter/journalist can create a rough-cut list or even EDL while the camera operator shoots the scene as soon as the WLAN functionality will be available. A new production dimension opens up."

"Editing with 'PD media' is inexpensive (roughly 26 EUR for a PD) and does not need specific edit controllers. We are able to use existing editing solutions, i.e. Quantel and Avid equipment can control XDCAM without restrictions. Currently Sony works at a way to transmit proxy thumbnails within the EDL information onto the editing screen", Kaiser and Demonte explain. "Compared with Solid State Memory the investment into and ROI of PD is much more effective and progressive", Kaiser concludes.

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