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Video Preservation
Assignment 1

<center>Sony Interactive Status Reporting (ISR)</center>

Sony Interactive Status Reporting (ISR) is a centralized system management software package that allows for the remote monitoring and management of equipment found in broadcast stations. The system was developed in the early 1990s in response to the affected equipment downtime had on revenue,[1] as well as to the growing complexity of broadcast installations with the move toward digital technologies.[2] Digital tools were more reliable than their analog counterparts and as such were widely adopted to manage the "expansion in systems devoted to the switching and routing of video signals." As machines were becoming more complicated, the diagnosis of errors within them became contingent on the manufacturers building in the ability to self-check.

Conventional broadcasting systems included a range of devices, including multiple video tape recorders (VTRs), vectorscopes, and waveform monitors. These devices were running parallel jobs to accumulate information from different sources for different programs. Multiple devices within the system allows a high likelihood of error, and the number of jobs running in parallel created an environment where discerning the point of failure was time-consuming guesswork. In addition, the early days of analog broadcasting often had video engineers assigned to monitor separate devices housed in separate rooms, which led to a system inefficient in its execution of reporting errors.[3] In these cases, if someone in Studio 1 experienced an error on their device, they would have to follow the affected signal flow and leave their room to report the error to the engineer in Studio 2, who may then have to relay that information to the master of the control room. In addition, there was no systematic methodology for logging errors: engineers described errors in their own words on "error notes," which did not follow a standardized format and prevented the leveraging of that error information to troubleshoot further future errors in the system.[4]

The Sony ISR system includes two software packages, BZI-500 and BZI-501, that run on industry-standard PC platforms and provides "status reporting, error logging, and remote control and remote diagnostics on VTRs, camera systems, routers, servers, switchers, and edit

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[1] Manuals Directory. "The ISR System: Sony MK7807V1 User Manual." accessed 02 October, 2019. http://www.manualsdir.com/manuals/137667/sony-mk7807v1.html?page=160 (henceforth *User Manual)*.

[2] I Collis, K Miyazaki, and H Takeuchi, "ISR (Interactive Status Reporting" (paper presented at the annual International Broadcasting Convention, Amsterdam, Netherlands, September 16–20, 1994) (henceforth *IBC)*.

[3] Sony Corporation. Error monitoring of video/audio devices. European Patent 0767591A2 filed October 4, 1996 and issued April 09, 1997 (henceforth *Patent)*.

[4] *Patent*.

controllers."[5] BZI-500 was designed for a configuration of up to 8 devices, all connected directly to the PC using RS-232 expansion boards. BZI-501 was an item of expansion software that allowed the ISR system to work over a LAN system and include up to 64 devices. At its core, ISR was an error detection and handling (EDH) system. In concept, an EDH system runs a checksum against the data bits making up each frame of a serial video signal, and then contains that checksum in the frame's blanking interval.[6] At a later point in the video signal, the checksums are checked again, and if there is an inconsistency, the error is logged.

In cases where the ISR is monitoring information from a configuration of more than 100 devices, the ISR is able to manage databases of error logs. In these cases, error logs also record product details including model name, serial number, and software versions.[7]

Notifications arrive for the ISR user by way of a GUI on the processing unit (PC). If an error occurs, an icon representing the device where the error occurred changes color, and then an error message is provided that diagnoses the issue.[8] The error is logged with the date and time alongside the diagnosed error, providing a useful bank of information for an engineer to return to to monitor the status of a piece of equipment or potential flaw in the signal path.

Sony ISR is significant in tape digitization for the same reason it was significant in broadcasting installations: the centralization of error notifications and diagnostics along with the compiling of error logs was useful in correcting errors in real time, and in taking preventive measures for identifying equipment needing servicing based on the logged error information. Some video digitization systems today are based on protocol established by ISR that provide valuable information about digitization or transfer quality in real time.[9] In addition, a number of today's open source audiovisual digitization tools including QCTools[10] and MediaConch[11] provide error monitoring and reporting services, although these are not usually in real time as they were with Sony ISR.

[5] *User Manual.*
[6] *User Manual.*
[7] *IBC.*
[8] *IBC.*
[9] Quadriga. "Signal Flow." accessed 02 October, 2019. https://www.cube-tec.com/en/solutions/video/quadriga-video/signal-flow.
[10] QCTools. "Getting Started with QCTools." accessed 02 October, 2019. http://bavc.github.io/qctools/getting_started.html
[11] American Archive of Public Broadcasting. "MediaConch for Quality Assurance." accessed 02 October, 2019. http://wiki.americanarchive.org/index.php/MediaConch_for_Quality_Assurance