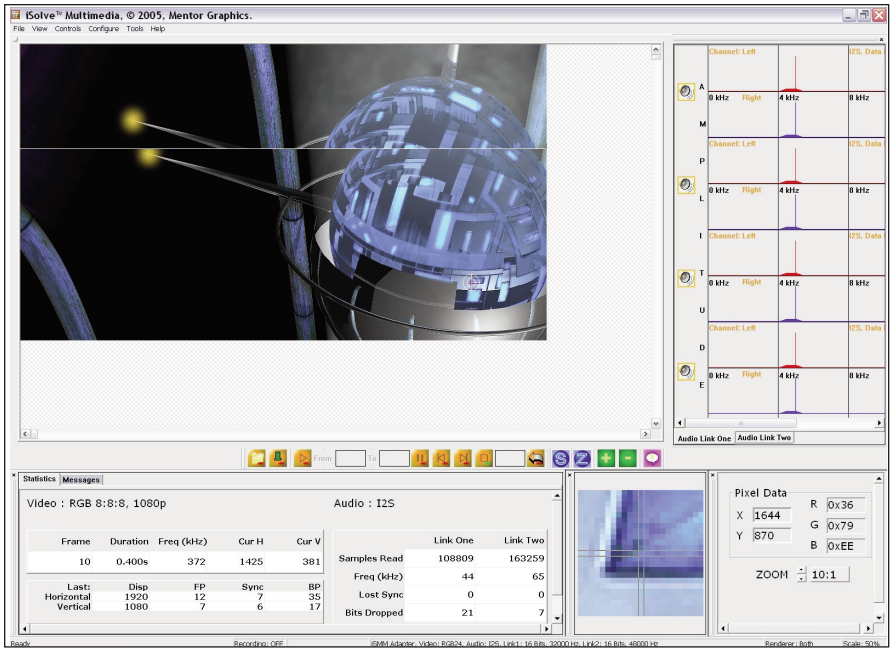
iSolve Multimedia-Analyzer

Hardware-Based Functional Verification

D A T A S H E E T



iSolve Multimedia-Analyzer on the host PC.

Solutions for Hardware-Based Functional Verification

The Mentor Graphics® iSolve™ Multimedia-Analyzer solution addresses one of the main challenges in developing SoC-based products, such as consumer electronic devices and portables that incorporate complex audio and video interfaces — namely early verification of multimedia processing capabilities.

iSolve Multimedia-Analyzer collects, analyzes, and visualizes video and audio streams from design RTL running in Mentor Graphics Veloce™ emulators. Through these capabilities, it serves as a "hardware testbench" for the audio and video interfaces boosting system level verification productivity. This product is designed to handle data streams at full emulation speeds for maximum performance.

System verification using the iSolve Multimedia-Analyzer solution, together with Mentor's Veloce emulators, delivers a 1,000 to 10,000X speed improvement over software simulation, saving weeks or even months of regression testing. iSolve Multimedia-Analyzer gives design teams the confidence that comes from running billions of real-world cycles on their SoC before tapeout, meeting customer delivery schedules and rigorous project goals.

Incorporating iSolve Multimedia-Analyzer into the design process allows teams to identify and fix system bugs in both hardware and software. Design teams can now perform true system-level verification and address important interoperability and performance issues.

Major product features:

- **Video formats supported** – RGB, CCIR 601 and 656 standards, SMIA 1.0 Raw Bayer, HDMI 1.3a YUV and RGB, DVI 1.0 RGB, and DisplayPort 1.1a up to 5600 x 4300 frame resolutions
- **Audio formats** – I^2S, S/PDIF, 32-bit linear PCM, and HDMI audio packets
- **File formats** – BMP, WAV, and AVI
- **Trace tool** – All received video and audio data processed for analysis
- **Zoom window** – Ability to zoom-in up to 15:1
- **Statistics window** – Pixel values, frame size, sync and porch widths, etc.
- **Support for HDMI interface version 1.3** – HDMI 3D extensions supported for the analysis of 3D video data. Additionally, supports audio/video content protection using HDCP standard
- **Supports DVI 1.0 and DisplayPort 1.1a HDTV formats**
- **API to support pixel data extraction from saved multimedia databases**

Product benefits:

- **Fast, easy set-up** – A simple connection to any Mentor Graphics Veloce emulator
- **Supports major industry standards** – Improves potential for design reuse and helps ensure product interoperability for audio & video
- **Investigate SoC video output** – Visualization of design output to analyze video artifacts
- **Investigate SoC audio output** – Listen to audio output from the design
- **Regression testing** – Recorded video and audio data can be compared to reference data

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Variety of Video Formats

iSolve Multimedia-Analyzer supports video formats: RGB, YUV 4:2:2 and 4:4:4, and Raw Bayer 8/10-bits for mobile applications (SMIA 1.0). Both progressive and interlaced formats are supported with frame sizes up to and including 5600 x 4300 pixels for HDTV. Video output data is rendered and analyzed at the pixel level within any area of an image.

RGB

- Pixel resolutions: 24- and 30-bit
- Hsync, Vsync, front and back porch

YUV 4:2:2

- Pixel resolutions: 8-/10-bit multiplexed, or 16-/20-bit multiplexed
- Embedded sync (SAV/EAV, horizontal/vertical blanking)

YUV 4:4:4

- Pixel resolutions: 24- and 30-bit
- Embedded sync (SAV/EAV, horizontal/vertical blanking)

Raw Bayer

- Pixel resolutions: 8-bit and 10-bit
- Supports mobile applications as defined in SMIA 1.0

(All formats can be any frame size, up to 5600 x 4300, interlaced or progressive)

Variety of Audio Formats

iSolve Multimedia-Analyzer supports audio outputs: I^2S (Inter-IC sound), S/PDIF (IEC 958), and 32-bit linear PCM. The captured audio data is stored on the PC for replay at any time, including an instantaneous "snapshot" replay from the GUI.

HDMI Interface

iSolve Multimedia-Analyzer supports the popular HDMI interface standard, version 1.3, for the capture and analysis of audio, video, and data packet content from the design under test.

Additionally, the Analyzer supports the HDCP 1.2 content protection standard for the verification of an HDCP source in the Veloce emulator, by mimicking an HDCP sink device.

HDMI®
HIGH-DEFINITION MULTIMEDIA INTERFACE

Additional HDTV Interfaces

Multimedia-Analyzer supports popular HDTV interfaces such as DVI 1.0 and DisplayPort 1.1a standards.

Trace Tools

In addition to the GUI analyzer capabilities, iSolve Multimedia-Analyzer has a trace tool that allows the user to extract video and audio data, including synchronization signals, for post-processing and analysis.

File Formats

iSolve Multimedia-Analyzer supports recording and replay of both WAV (audio) and AVI (audio and video) files in addition to its own native recorded file format.

Debug Multimedia Data

The Multimedia-Analyzer supports API interface functions to allow the user to extract data of interest from a previously created multimedia database, and manipulate it for additional detailed analysis.

Plug-and-Play Ready

Once connected to a Mentor Graphics Veloce emulator, the iSolve Multimedia-Analyzer solution offers a rapid route towards system verification of a design in RTL verification.

iSolve Multimedia-Analyzer Deliverables

- High-end, pre-configured multimedia PC with 1600 x 1200 monitor
- Adapter and small cable to connect multimedia PC to the Veloce emulator
- Pre-install PC software

The iSolve Multimedia-Analyzer collects, analyzes, and visualizes video and audio streams from designs running in Mentor Graphics accelerators.

Visit our website at www.mentor.com/emulation for more information

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