

Medical Video Recording SDK

Media Components for the Medical Industry

MAINCONCEPT MEDICAL VIDEO RECORDING SDK

The MainConcept Medical Video Recording SDK enables device manufacturers and software developers to build next-generation medical video recording systems that meet the highest clinical and regulatory standards. Designed specifically for surgical and diagnostic imaging applications, it delivers exceptional video quality, robust performance, and broad interoperability across both classical and IP-based environments.

The Medical Video Recording SDK provides all essential components for capturing, encoding, multiplexing, and streaming medical video—from HD to 4K and 3D—whether recorded locally or streamed over IP networks.

COMPLETE MEDIA PROCESSING WORKFLOW

The SDK includes a comprehensive suite of MainConcept components:

- Video codecs: MPEG-2, AVC/H.264, and HEVC/H.265 encoders and decoders with professional-grade 4:2:2 10-bit quality.
- Audio codecs: AAC, MPEG Audio, and PCM for high-fidelity surgical sound capture.
- Multiplexers/Demultiplexers: MPEG-TS, MP4, and MXF containers for recording, archiving, and compliant playback.
- Processing tools: Image scaling, frame rate conversion, and audio resampling ensure consistent quality across different input sources.
- Network streaming: Built-in RTMP client/server modules with adaptive bitrate (ABR), DASH, and HLS packaging for real-time or on-demand streaming to local servers or cloud workflows.
- NVIDIA, Intel, and AMD GPU-accelerated video encoding, decoding and processing.

BUILT FOR QUALITY, PERFORMANCE & COMPLIANCE

Every MainConcept component adheres to international codec and container standards, ensuring compatibility with medical imaging systems, post-processing tools, and cloud infrastructures. With unified APIs for CPU and GPU, developers can deliver consistent results across platforms while maintaining the high fidelity required in clinical video documentation.

SYSTEM REQUIREMENTS

Microsoft Windows 10, Windows 11 (64-bit, x86 & ARM)

- Apple macOS 10.15 and newer (64-bit x86); macOS 11.x and newer (Apple Silicon)
- Linux Ubuntu 20.04 LTS – 22.04 LTS, Rocky Linux 8.9 (64-bit, x86); Ubuntu 20.04 LTS – 22.04 LTS (64-bit, ARM)

SPEC-COMPLIANT WORKFLOWS FOR MEDICAL VIDEO CAPTURE & STORAGE

BENEFITS

- Supports both on-premises and cloud deployments, enabling hybrid surgical video workflows
- Suitable for live, near-real-time, and offline recording modes
- Easily integrates with MainConcept and third-party codec libraries for flexible product design
- Enables manufacturers to build regulatory-compliant devices meeting CE-MDR 2017/745 Class I and similar regional standards

KEY FEATURES

- Professional-grade 4:2:2 10-bit recording and playback for high-fidelity surgical video
- Support for MPEG-2, AVC/H.264, and HEVC/H.265 video streams with AAC, MPEG Audio, and PCM audio
- Comprehensive set of multiplexers and demultiplexers for MPEG-TS, MP4, and MXF container formats
- Network client and server modules with UDP, RTP, RTMP, DASH, and HLS for local or remote streaming
- Multi-view HEVC for simultaneous recording of multiple camera angles or stereoscopic 3D input
- Optimized scaler, framerate, and audio converters for standardized output regardless of input source
- Compatible with Arm and x86 architectures, with NVENC and Hybrid GPU acceleration for higher performance

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USE CASES

Use Case	Description
Endoscopic & Laparoscopic Recording	Capture HD/4K video from surgical cameras for patient records, documentation, and case review.
Operating Room Integration	Simultaneous multi-camera capture, metadata sync via DICOM Worklist, and secure storage to PACS or cloud archive.
Microscopy & Pathology Imaging	High-resolution recording with accurate color and low latency for diagnostic and educational use.
Robotic & Minimally Invasive Surgery	Multi-view/3D HEVC recording for stereoscopic or robotic streams with efficient bitrate.
Telemedicine & Remote Collaboration	Real-time streaming via RTMP/DASH/HLS to remote specialists; optional on-demand playback.
Training & Simulation	Reliable, broadcast-grade recording/playback for simulators and medical education platforms.
Cloud Archival & Analytics	Local capture with automated upload to healthcare-compliant cloud for long-term storage and AI analysis.
Compliance-Ready Capture	Workflows aligned with DICOM/HL7 and security best practices for regulated environments.

TECHNICAL HIGHLIGHTS

Category	Technical Highlights
Video Codecs	MPEG-2, AVC/H.264, and HEVC/H.265 encoders and decoders with broadcast-grade 4:2:2 10-bit precision.
Audio Codecs	AAC, MPEG Audio, and PCM encoders/decoders for high-fidelity surgical sound capture.
Container Formats	MPEG Transport Stream, Program Stream, ISO BMFF (MP4), and MXF multiplexers and demultiplexers.
Hardware Acceleration	NVIDIA, AMD, Intel and Qualcomm Adreno encoder and decoder acceleration for higher performance on GPUs; unified API for CPU/GPU processing.
Architectures Supported	x86 and ARM platforms, with identical API and feature set across both.
Video Processing Tools	Image scaler (UCC), frame rate converter, and audio converter for consistent, standardized outputs.
Network & Streaming	RTMP, UDP and RTP client/server, MPEG-DASH, and HLS modules with Adaptive Bitrate (ABR) packaging for live and on-demand delivery.
Multi-View Support	Multi-view HEVC for simultaneous recording of multiple angles or stereoscopic 3D sources.
Cloud & Hybrid Deployment	Fully compatible with on-prem, private, and public cloud environments (AWS, Azure); secure encrypted data transfer.

ABOUT MAINCONCEPT

Since 1993, MainConcept has provided best-of-breed video/audio codec solutions that fuel creativity and business globally for professional video production, multimedia, broadcast, digital signage, gaming, medical and security industries. Our software development kits, transcoding applications and plugins are used across industry verticals to meet an ever-expanding list of use cases. With world-class engineering, exquisite attention to detail, and best-in-class support and professional services, we are constantly innovating to deliver you the simplicity you need with the customer experience you deserve. MainConcept codecs are engineered to surpass the challenges of even the most demanding use cases and are used by organizations such as Adobe, Nikon, Intel, MAGIX, Playbox, Soliton, TourGigs, Cinnafilm and Endeavor Streaming.

More Information

mainconcept.com/medical-video-recording

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