

# JPEG XS, REDEFINING WHAT A CODEC CAN BE



## A new compression standard, but so different.

JPEG XS (ISO 21122) is the world's first international standard not developed with pure compression efficiency in mind. Instead, it was primarily developed for being energy efficient.



## Perfect Quality. Engineered to replace uncompressed.

Tested using the Standardized method for near-lossless quality assessment on both natural and synthetic images (ISO/IEC 29170-2) down to 3bpp. Visually lossless up to 1.5bpp. Constant bitrate and constant quality over multiple encoding generation.



## Microsecond latency. Can we say zero?

"The line-based coding algorithm enables an ultra-low latency that does not exceed 32 lines (encoder + decoder). Some implementations in FPGA or ASIC are doing even better.



## Efficient on any platform.

With multiple degrees of parallelism, JPEG XS scales perfectly on ASIC, FPGA, CPU, and GPU. This gives JPEG XS a low footprint in hardware and makes it blazing fast in software!



## Ultra-low complexity.

- Low logic & low memory in ASIC or FPGA.
- Highly parallelizable for CPU & GPU.



## Low power.

No external memory needed in FPGA or ASIC. Only a few internal SRAMs with JPEG XS MAIN, HIGH and RAW profiles. An internal frame buffer compression is embedded into the JPEG XS TDC profile.



## Better quality pixels.

More pixels (no limit in resolution, color sampling, etc), higher bit depth (up to 16 bit), high frame rates (no limit), all at the cost of baseband HD video, and HDR capability is natively supported.



## Multi-res handling. Proxy is part of the master!

Multiple layers of resolution in the compressed domain enable to manage Proxy streams. Proxies can be generated easily on top of master streams to have progressive decoding or lower resolution extractions which help reducing computing power.



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## ENHANCING MEDIA PRODUCTION EFFICIENCY



### Transition to bandwidth-efficient video workflows

without compromising latency and quality, freeing up bandwidth for seamless LAN, WAN, and Cloud connectivity.

### Cut costs, power consumption, and carbon footprint

utilizing the world's fastest, smartest, and smallest JPEG XS hardware cores and software libraries and applications developed by intoPIX.



### Experience a revolution in video workflows

enhancing efficiency, agility, and productivity with all the cutting-edge JPEG XS solutions available from 50+ vendors, 200+ products & services.



JPEG XS has been co-created by intoPIX.  
Contact our team of experts to learn more and to try it!

[www.intopix.com](http://www.intopix.com)  
[www.jpegxs.com](http://www.jpegxs.com)

Learn more stories from the user community:  
[www.intopix.com/jpegxs-in-action](http://www.intopix.com/jpegxs-in-action)

## SMALL JPEG XS IS BEAUTIFUL!



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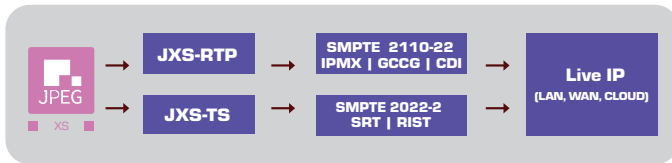
The world's first tiny codec created to replace uncompressed video with lossless quality, microsecond latency and ultra-low power consumption.

# ENHANCING MEDIA PRODUCTION EFFICIENCY

Connecting the LAN, the WAN and the Cloud

## INDUSTRY ADOPTION AND STANDARDS

JPEG XS is standardized to support our industry transition from SDI to IP-based workflows and its associated extension to remote and cloud production. The standard is now used throughout the entire production chain, as an efficient alternative to uncompressed video.



<b>JPEG XS</b>	ISO 21122 -1 -2 -3 - 4 -5
<b>RTP</b>	IETF RFC 9134 – RTP Payload for JPEG XS
<b>ST 2110-22 VSF TR08</b>	JPEG XS in SMPTE ST 2110 Professional Media IP Networking VSF recommendation for Intra Facilities, Inter-Facilities & IPMX (& GCCG for Cloud)
<b>MPEG2-TS VSF TR-07</b>	JPEG XS in MPEG-2 Transport Stream (TS) wrapper with VSF recommendation for WAN (& GCCG for Cloud)
<b>NMOS protocol</b>	AMWA BCP-006-01 v1.0.0 – NMOS with JPEG XS
<b>IPMX VSF TR10</b>	VSF TR-10 series, IP Media eXperience
<b>JXS</b>	JPEG XS File format, for storing of single images
<b>HEIF</b>	High Efficiency Image File Format, for storing of mixed image and video content
<b>MP4</b>	ISO Base Media File format (ISOBMFF) for storing video file
<b>MXF</b>	MXF video file encapsulation(SMPTE ST 2124)

### 1 THE LAN

- Cheaper cables (CAT5e<1Gbps, CAT6<10Gbps).
- Friendly for the ethernet port on any PC.
- No need to re-deploy new cables.
- COTS IP Switch.
- Scalable network capacity.

### 2 THE WAN

- Cost-effective bandwidth: 10x - 20x smaller than uncompressed video.
- Ease the remote production, VAR, inter-facilities.

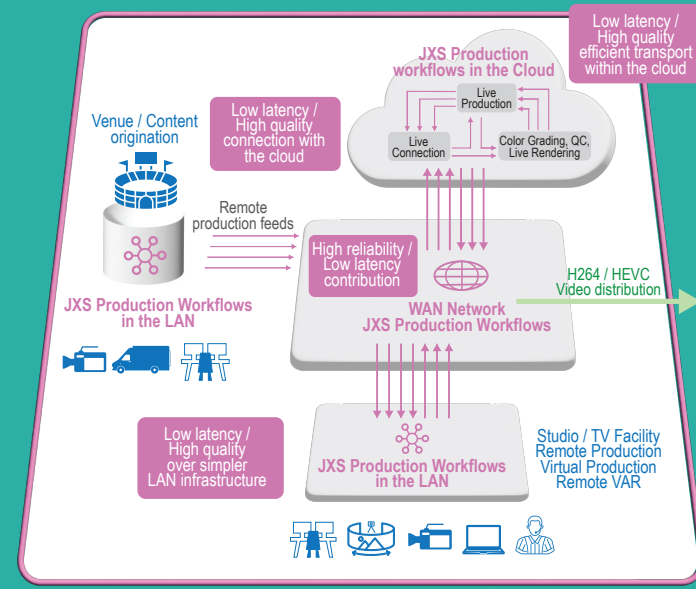
### 3 THE CLOUD

- Efficient in CPU, GPU, FPGA platforms.
- Low-latency access (AWS CDI,...).

	<b>JXS Bitrates</b> <i>HIGH or TDC Profile</i>	<b>Streams per Ethernet Port</b>
720p/1080i 1080p60	70 - 195Mbps 150 - 390Mbps	Up to 6 over 1/2.5 GbE
2160p60	500Mbps - 1,4Gbps	Up to 4 over 1/2.5 GbE Up to 16 over 10 GbE
4320p60	2 - 5,6Gbps	1 over 2.5 GbE Up to 5 over 10 GbE

On top, JPEG XS Proxies, derived from a master stream (HD/4K/8K), can be sent out without any latency at a bitrate range from 40 to 100Mbps.

# CONNECTING PEOPLE & PIXELS



**JPEG XS ... VERSUS OTHER CODECS**  
Combining the best speed, complexity and quality in one codec.

