The new disruptive visually lossless light video compression, Powerful in CPU

A technology serving the global AV industry

TICO compression is new patent-pending visually lossless light compression specifically designed for the industry. This revolutionary technology is fast and powerful in software (CPU) and extremely tiny in hardware (FPGA, ASIC), robust for real-time operation with no latency.

Up to now, image and video are sent or stored uncompressed into many displays and systems such as cameras, videos servers or recorders. TICO is a smart upgrade path to manage higher resolutions (4K, 8K ...) and frame rates while assuring visual quality, keeping power and bandwidth at a reasonable budget and reducing significantly the complexity and cost of the system.

Technology benefits

- Visually Lossless quality from 2:1 to 4:1
- Persistent and Robust: Indistinguishable image loss over multiple generations
- Fixed latency: down to microseconds Selectable from 1 to X pixel lines
- Small complexity and ultra-compact codec: easy to implement in low-cost ASIC / FPGA. Limited internal memory - no external memory required
- Powerful, Real-time or faster than real-time in CPU
- Compatible with different resolutions, from mobile, HD to 4K/8K UHDTV, via multiple usual transport schemes
- Designed to be a standard for industry-wide support: TICO compression technology is available on multiple software and hardware technologies. Code, hardware IP-cores and software libraries are licensable from intoPIX
**TICO is a smart solution to**

- Support higher Data stream (4K, 8K ...) in existing systems or networks using the available pipeline bandwidth
- Increase stream configuration
- Reduce significantly the internal video bandwidth (and power consumption) in systems such as mobile devices, cameras, video servers and displays
- Increase with cost-effectiveness the storage or video buffer capacity
- Solve display link limitation on TV, monitor and mobile panel to carry larger resolutions than could be support by a display link with uncompressed images and video in real time
- Reduce the number of lanes needed to transport a stream in a display interface in order to save power, cost, or both. Or even enable the use of a lower link rate for applications where high link rates may not be possible

**Image features**

- **Color modes**: 422 and 444, RGB, YCbCr, XYZ
- **Bit Depth**: 8, 10 or 12
- **Resolutions**: Any up to 8K (8192 x 8192)
- **Frame Rates**: Depending on CPU performance

**Compression**

- *(Sub) Intra-frame*
- Designed for real-time operation in CPU (no overflow or underflow)
- Allows high speed parallel processing in a multiprocessor environment
- Latency - About 1 frame
- Slice support: Support partial update of compressed frame buffers via compressed data, using slices

**Quality and Bit Rate Control**

- Adjustable compression rate for Lossy/Visually lossless/lossless
- CBR (constant bit rate) operation (optional VBR mode)

**SDK environment requirements**

- **OS**: Microsoft Windows 7/8 or newer & Linux
- **CPU**: Intel-compatible CPU (SSE4.1 or newer)

**SDK Releases**

<table>
<thead>
<tr>
<th>SDK Reference #</th>
<th>Visually Lossless with 444 8bit (in bpp***)</th>
<th>Visually Lossless with 422 10bit (in bpp)</th>
<th>Quality Profile Support ***</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPX-TC1-SDK-Dec</td>
<td>max 6bpp (4:1)</td>
<td>max 5bpp (4:1)</td>
<td>TC1</td>
<td>2014</td>
</tr>
<tr>
<td>IPX-TC2-SDK-Dec</td>
<td>max 6bpp (4:1)</td>
<td>max 5bpp (4:1)</td>
<td>TC1 &amp; TC2</td>
<td>2015</td>
</tr>
<tr>
<td>IPX-TC1-SDK-Enc</td>
<td>max 6bpp (4:1)</td>
<td>max 5bpp (4:1)</td>
<td>TC1</td>
<td>2015</td>
</tr>
<tr>
<td>IPX-TC2-SDK-Enc</td>
<td>max 6bpp (4:1)</td>
<td>max 5bpp (4:1)</td>
<td>TC1 &amp; TC2</td>
<td>2015</td>
</tr>
</tbody>
</table>

**4K UHD Decoding Performance of IPX-TC1-SDK**

(3840x2160 - 4:2:2 - 10bpp compression)

* **Ask for your flavor.**
** **bpp = bit per pixel. Example: a 444 8 bit picture equals to 24 bit per pixel (bpp).
Compressed at 12bpp, it is equivalent to 2:1 compression.
*** At 4:1, TC2 provides better quality than TC1 at short viewing distance (< 60 pixels per degree).

**Typical applications from HD to Ultra HD**

- Digital Video Recorders
- Video Servers, mixers, routers and switchers
- Cameras (high-res, real-time or high speed)
- Video monitor and displays
- Frame grabbers and video capture devices
- Video over IP systems (ST2022, AVB,...)
- Industrial and surveillance
- Cable extenders
- [...]