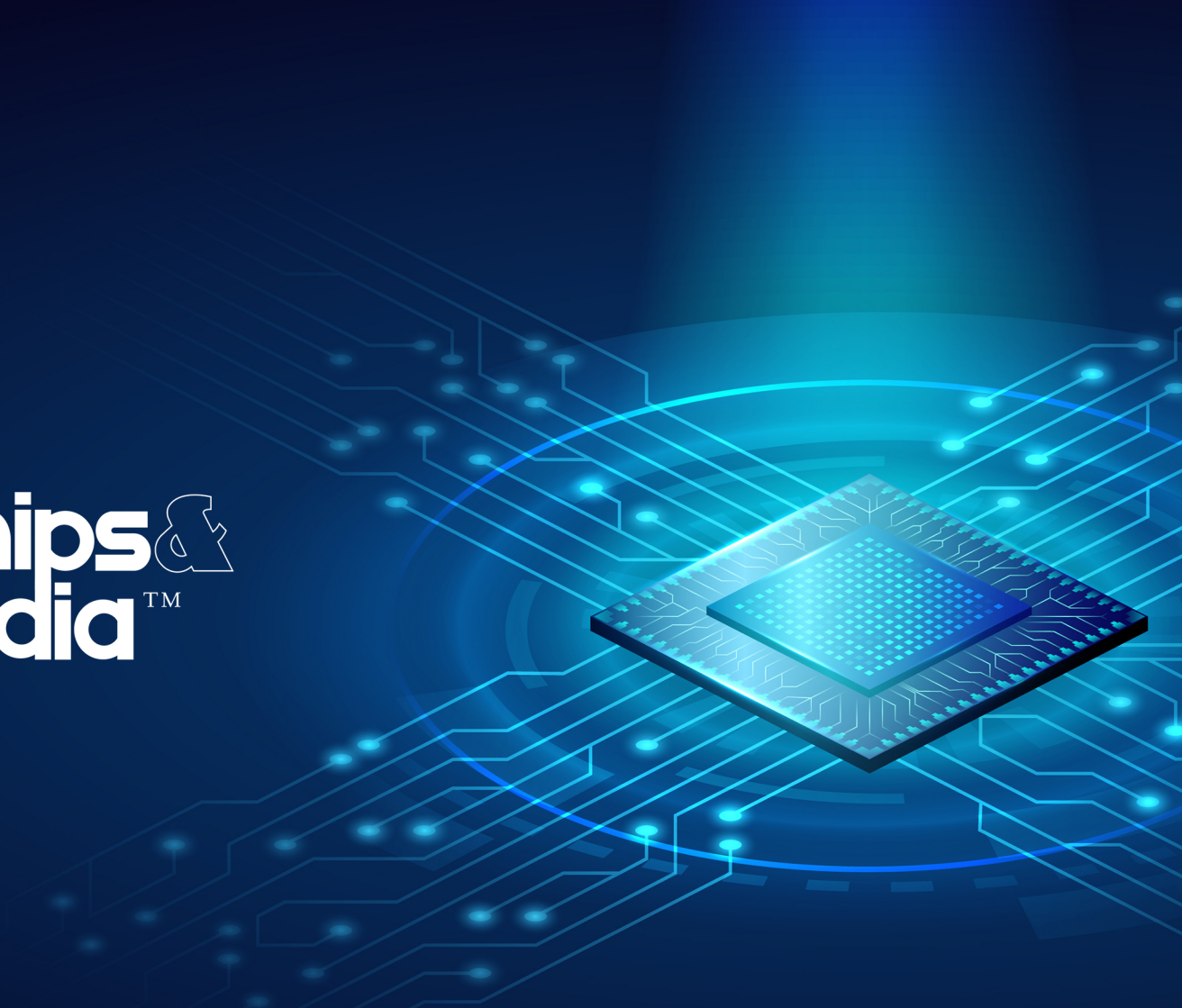
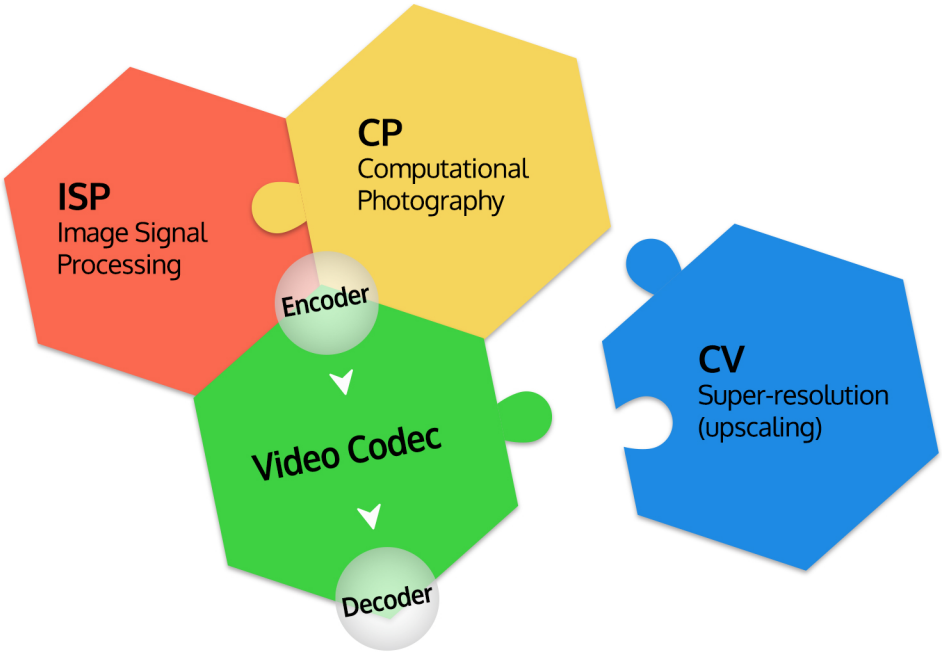
Chips & Media™



Company Intro

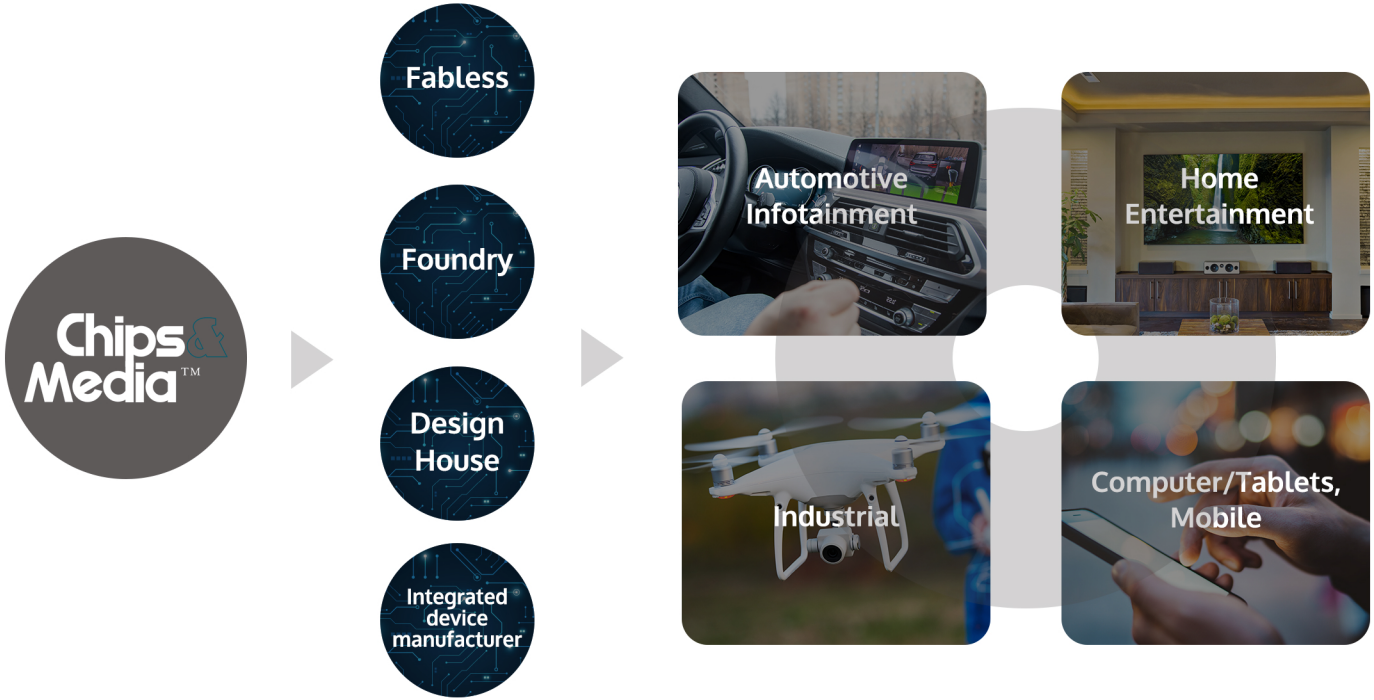
## Designing the Future of Video Technology

Chips&Media is a leading global semiconductor HW IP provider specializing in multimedia IPs, video codecs, deep learning-based upscaling super-resolution, and image signal processing.



## Video IP Applications & Value Chain

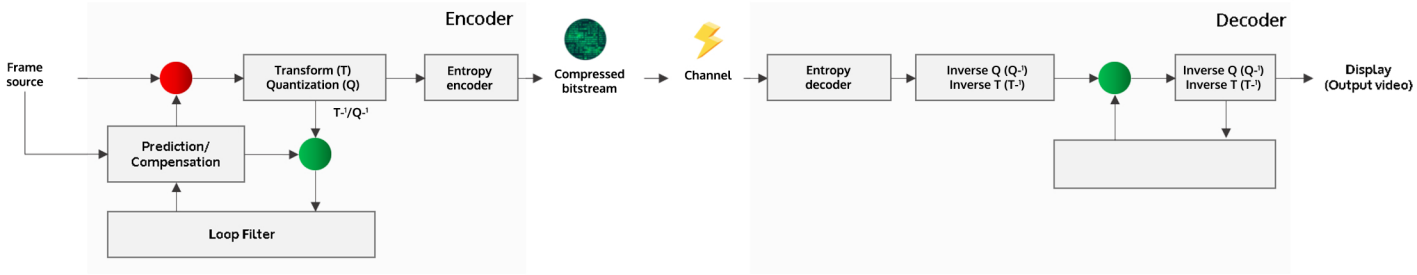
Provides enhanced multimedia IP solutions to expedite the SoC design cycle with high performance and quality, low power consumption, cost-efficient with minimum risks.



Video Codec

## Effective and Efficient Video Codec HW IPs

Offers accelerated video codec HW IP cores with an optimized competitive PPA (power, performance, area) that supports the multi-standard video codec up to 8K@60fps.



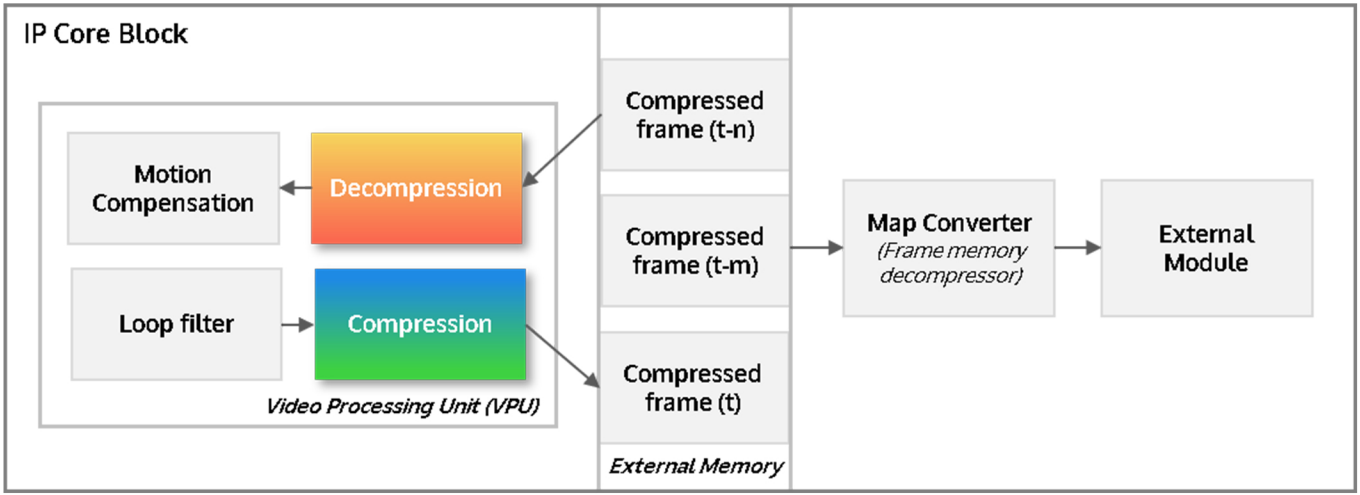

### Supported Video Codec Standards

AV1 H.265 HEVC High Efficiency Video Coding H.264 MPEG-4/AVC VP9 AVS2

## Proprietary Cutting-Edge Technology

Adds exclusively developed innovative proprietary compression technology, CFrame, a hardware block consisting of compressor and decompressor embedded in the IP core.

*» Saves 50% on average bandwidth reduction of memory access «*



Video Codec

## Video Codec IP Portfolio

Delivers the best-in-class video codec IP cores with a compelling and differentiated full IP package.

| IP Name | No. of Cores | | Video Standards | | | | | | Bit Depth | | Pic Type | | Resolution/Frame rates |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single | Dual | HEVC/H.265 | AVC/H.264 | VP9 | AVS2 | AV1 | VVC | 8-bit | 8-/10-bit | I/P | I/P/B | |
| WAVE520C | ● | | ● | | | | | | | ● | | ● | 4K60fps @500MHz |
| WAVE521C | ● | | ● | ● | | | | | | ● | | ● | 4K60fps @500MHz |
| WAVE521CL | ● | | ● | ● | | | | | ● | | ● | | 4K60fps @500MHz |
| WAVE541C | | ● | ●* | ●* | | | | | | ● | | ● | 8K60fps* @1GHz |
| **WAVE637** | ● | | ● | ● | | | ● | | | ● | | ● | 4K60fps @500MHz |

## Video Encoder IP Portfolio

| IP Name | No. of Cores | | Video Standards | | | | | | Bit Depth | | Pic Type | | Resolution/Frame rates |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single | Dual | HEVC/H.265 | AVC/H.264 | VP9 | AVS2 | AV1 | VVC | 8-bit | 8-/10-bit | I/P | I/P/B | |
| WAVE520 | ● | | ● | | | | | | | ● | | ● | 4K60fps @500MHz |
| WAVE521 | ● | | ● | ● | | | | | | ● | | ● | 4K60fps @500MHz |
| WAVE521L | ● | | ● | ● | | | | | ● | | ● | | 4K60fps @500MHz |
| WAVE541 | | ● | ●* | ●* | | | | | | ● | | ● | 8K60fps* @1GHz |
| **WAVE627** | ● | | ● | ● | | | ● | | | ● | | ● | 4K60fps @500MHz |

*» The video standards with an asterisk (*) indicate the video standards are supported with the multi-core.*
*» The product name in **bold** indicates the products currently in development.*

Video Codec

## Video Decoder IP Portfolio

| IP Name | No. of Cores | | Video Standards | | | | | | Bit Depth | | Pic Type | | Resolution/Frame rates |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Single | Dual | HEVC/H.265 | AVC/H.264 | VP9 | AVS2 | AV1 | VVC | 8-bit | 8-/10-bit | I/P | I/P/B | |
| WAVE510A | ● | | | | | | ● | | | ● | | ● | 4K60fps @450MHz |
| WAVE510 | ● | | ● | | | | | | | ● | | ● | 4K60fps @450MHz |
| WAVE511 | ● | | ● | ● | | | | | | ● | | ● | 4K60fps @450MHz |
| WAVE512 | ● | | ● | | ● | | | | | ● | | ● | 4K60fps @450MHz |
| WAVE515 | ● | | ● | | ● | ● | | | | ● | | ● | 4K60fps @450MHz |
| WAVE517 | ● | | ● | ● | ● | ● | ● | | | ● | | ● | 4K60fps @450MHz |
| WAVE537 | | ● | ●* | ●* | ●* | ● | ●* | | | ● | | ● | 8K60fps* @900MHz |
| **WAVE617** | ● | | ● | ● | | | ● | | | ● | | ● | 4K60fps @450MHz |
| **WAVE618** | ● | | | | | | | ● | | ● | | ● | 4K60fps @450MHz |

## Other Video IP Portfolio

| IP Name | | Video Standards | | | | | | | | | Bit Depth | Pic Type | | Resolution/ Frame rates |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AVC/H.264 | MPEG-4 | H.263 | MPEG-2 | VC-1 | VP8 | AVS | AVS+ | JPEG | 8-bit | I/P | I/P/B | |
| CODA988 | Encoder | ● | ● | ● | | | | | | | ● | ● | | 2K60fps @266MHz |
| | Decoder | ● | ● | ● | ● | ● | ● | ● | ● | | ● | | ● | 2K60fps @266MHz |
| CODAJ12 | Codec | | | | | | | | | ● | | i only | | 4:2:2 210M pixel/sec @200MHz |
| BODA955 | Decoder | ● | ● | ● | ● | ● | ● | ● | ● | | ● | | ● | 2K60fps @266MHz |

*» The video standards with an asterisk (*) indicate the video standards are supported with the multi-core.*
*» The product name in **bold** indicates the products currently in development.*

Computer Vision

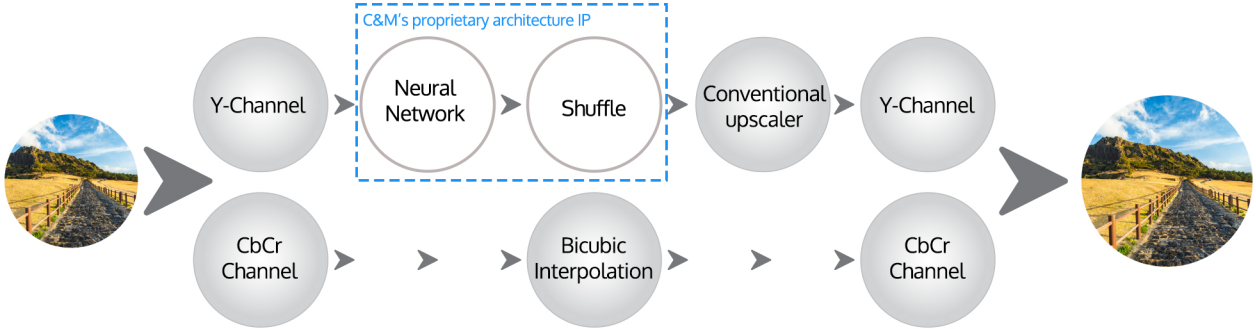
## Revolutionary Super Resolution Technology

Discover the latest innovative, fully hardwired deep learning-based inference super-resolution HW IP that reconstructs to a higher-resolution image or sequence from the observed low-resolution in real-time.

Computer Vision

# Advaced AI based Super Resolution Upscaling

Meet enhanced deep learning-based super-resolution upscaling HW IP designed and architected for SoC (System-on-Chip), capable of processing 8K@60fps 550MHz operating frequency.

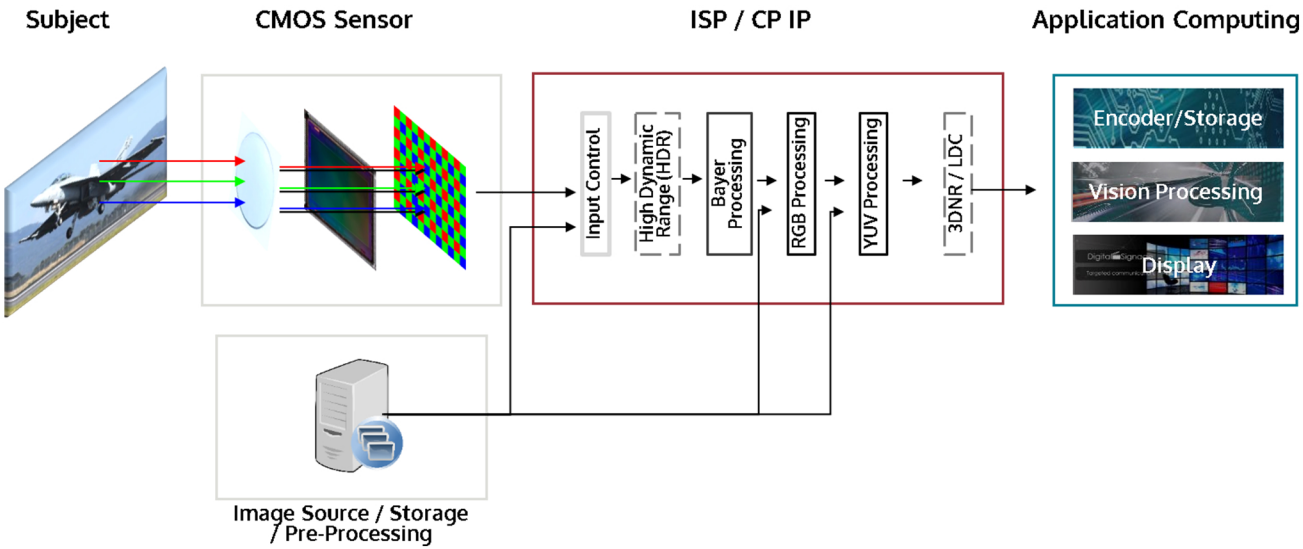



| Features |
| --- |
| 8K60fps @550MHz |
| Supported scaling ratio:<br>x2.0 ~ x8.0 with arbitrary scaling ratio |
| On-the-fly and mem-to-mem mode |
| Convolutional neural network layers for Y-channel<br>• Feature extraction<br>• Constructing HR image |

| Deliverables |
| --- |
| Fully verified synthesizable RTL source code |
| RTL verification environment |
| Datasheet |
| Integration, verification guide |
| Evaluation platform |

## A Wide Range of Image Signal Processing (ISP)

Introducing an end-to-end full-featured ISP IP that converts the sensor's signal into a better visible and processable format while providing user-centric customization for more flexible requirements and configuration capabilities.



**HQ** 7~8F, NC Tower I, 509, Teheran-ro, Gangnam-gu, Seoul, Korea
**Office** +82.2.568.3767
**Email** info@chipsnmedia.com
**www.chipsnmedia.com**