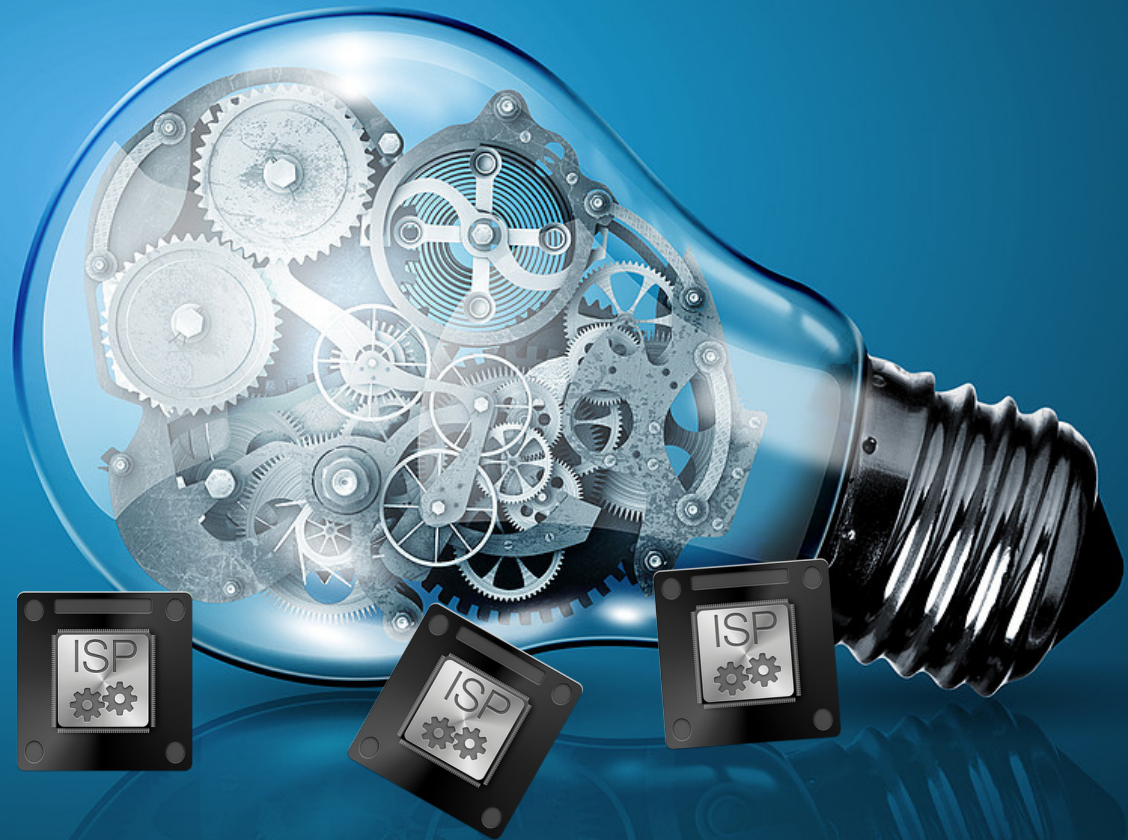


# Helion

IMAGING VISION

## ISP2018



# Helion Camera Design Approach



Sensor



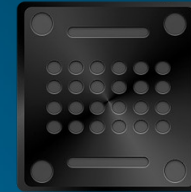
Sensorport



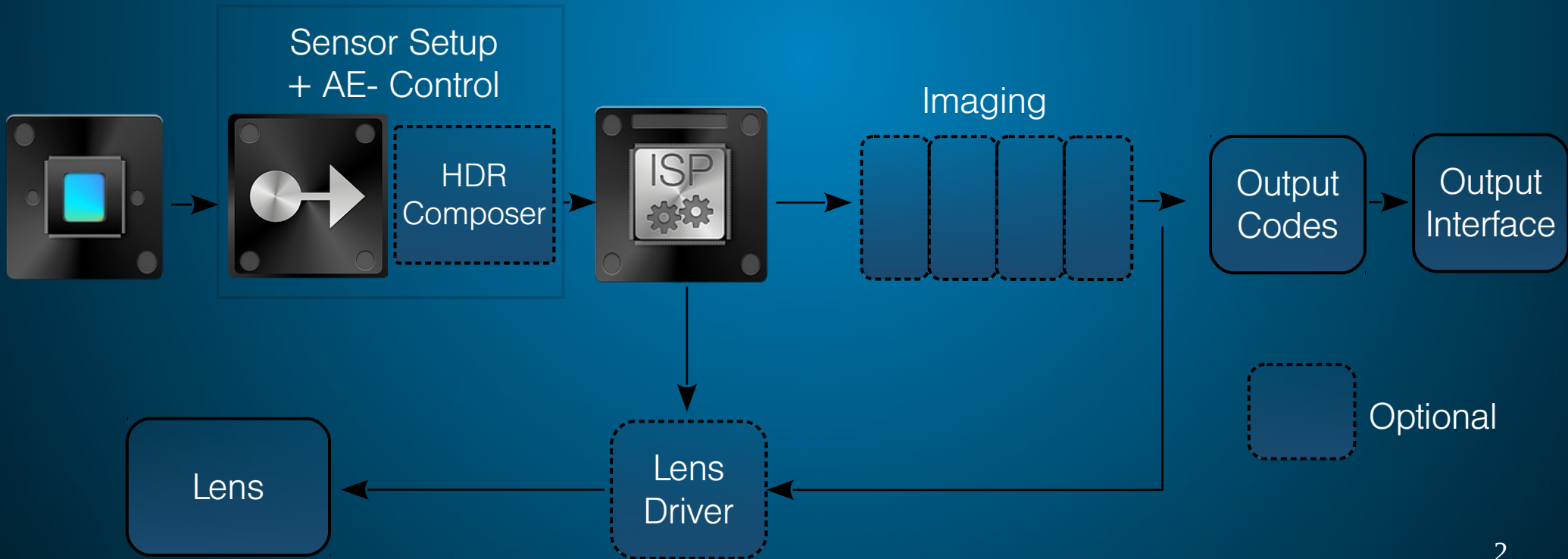
ISP



Output Interface



Sensor Independent



# Sensor Port and more

## Sensor Port

Sensor Configuration

Sensor specific Auto Exposure

Black Offset Correction

Raw Gain Adjustments

Output: Standard Raw Video

## HDR Composer

Generic Multiple Exposure (ext. memory)

Sony DoL (ext. memory)

BAE Dual Channel LG, HG

OVT multi line HDR

OnSemi / Aptina Decoder

# HD- ISP

## Standard HD-ISP

2k (Full HD) 60fps (e.g. 1080p60)

12 Bit per Color

Defectpixel Correction

5x5 HQ Debayer

CCM

Color Saturation Matrix

Internal AWB

Gamma

Test pattern Generator

Raw Data Bypass

Statistics

I2C Interface / config Interface

## Enhanced HD-ISP

All features Standard HD-ISP

16 Bit per Color

Lens Shading Correction

Green Channel Mismatch Correction

Aperture Correction

2D Noise Correction

Image Enhancer

Histogram Statistics

Embedded Statistic Data

Global 16 Bit tonemapper for  
Enhanced DR

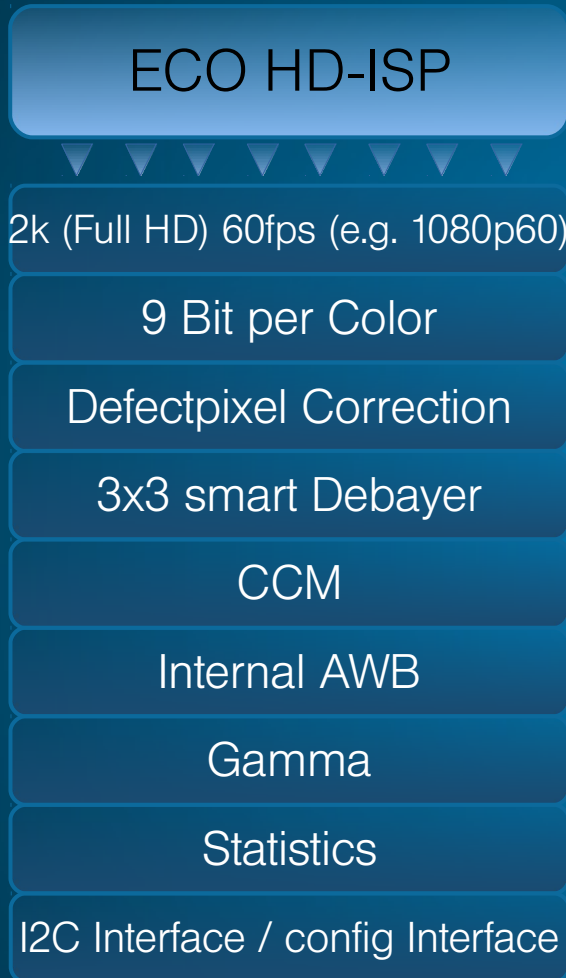
HLG Ready (hybrid Log Gamma)

## Enhanced DR HD-ISP

All features Enhanced HD-ISP

32 Bit per Color

# Special ISP, HDR, UHD TV



# Camera Functions and Control

## Sensor Interfaces

parallel

SSTL parallel (BAE)

LVDS parallel (Sony)

SubLVDS serial (OnSemi, Sony)

EC-SLVS serial (Sony)

HiSpi serial (OnSemi)

MIPI CSI-2

Sensor Setup + AE  
Control

Sony

OnSemi / Aptina

OVT

BAE, ST, Espros

## Output Interfaces

parallel

DVI, HDMI

Displayport

FX3 (USB3) Interfaces

HD-SDI

GigEVision

## Imaging

Overlay

Framebuffer

Color Space Converter

3D Noise Reduction

Digital Image Stabilization

## Output Codecs

BT656

BT1120

BT2020

RGB

YUV

YCbCr

YUV420p

Lens

Autofocus (AF)

Optical Image Stabilization (OIS)

# ISP Setup, HWK1910A Example

HWK1910A



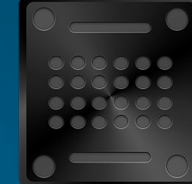
Sensorport  
(BAE)



Enhanced  
DR-HD-ISP



Output  
Interface



HDR

UDR

