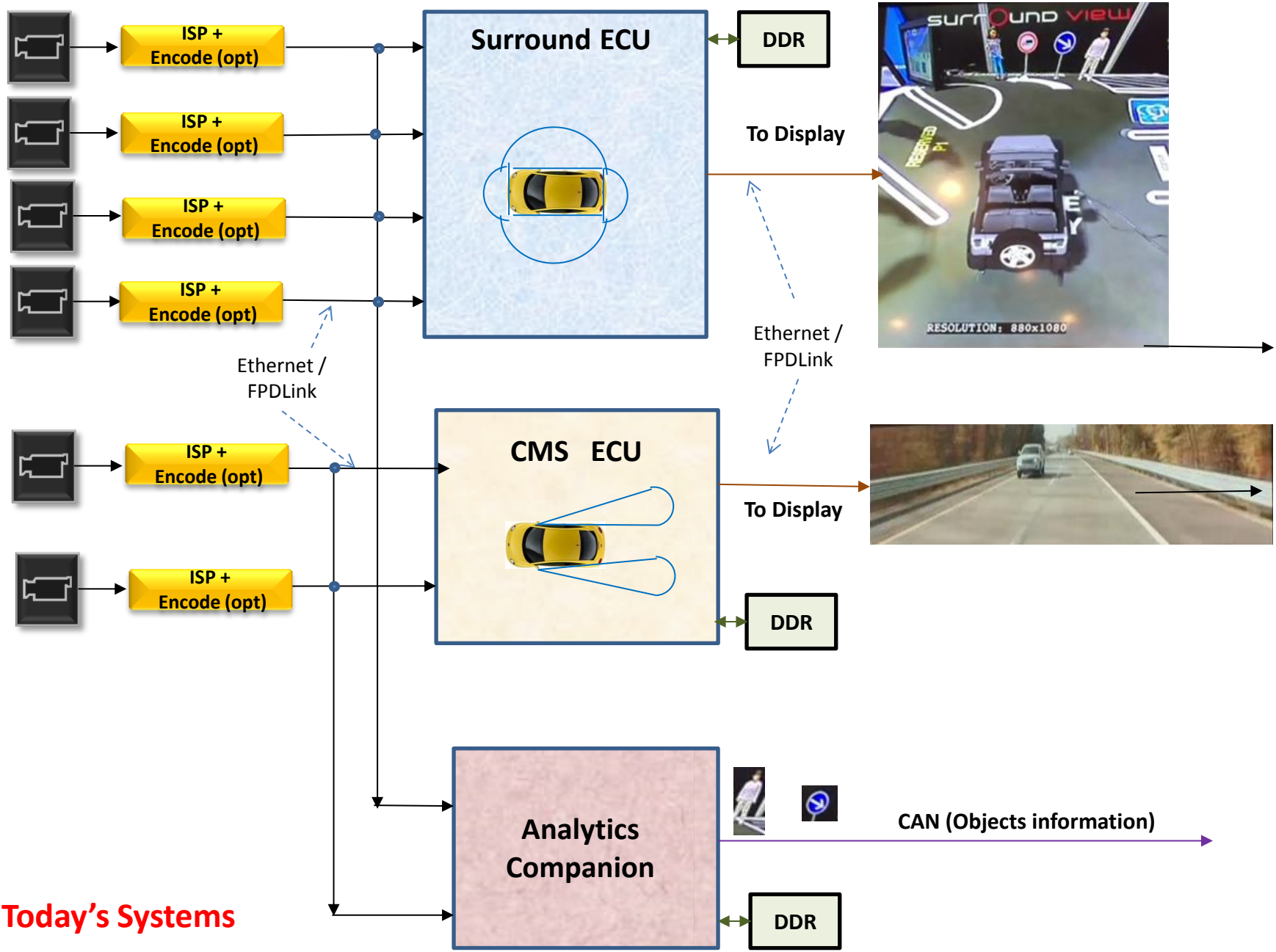


# Fully-Integrated Surround Vision and Mirror Replacement SoC for ADAS/ Automated Driving

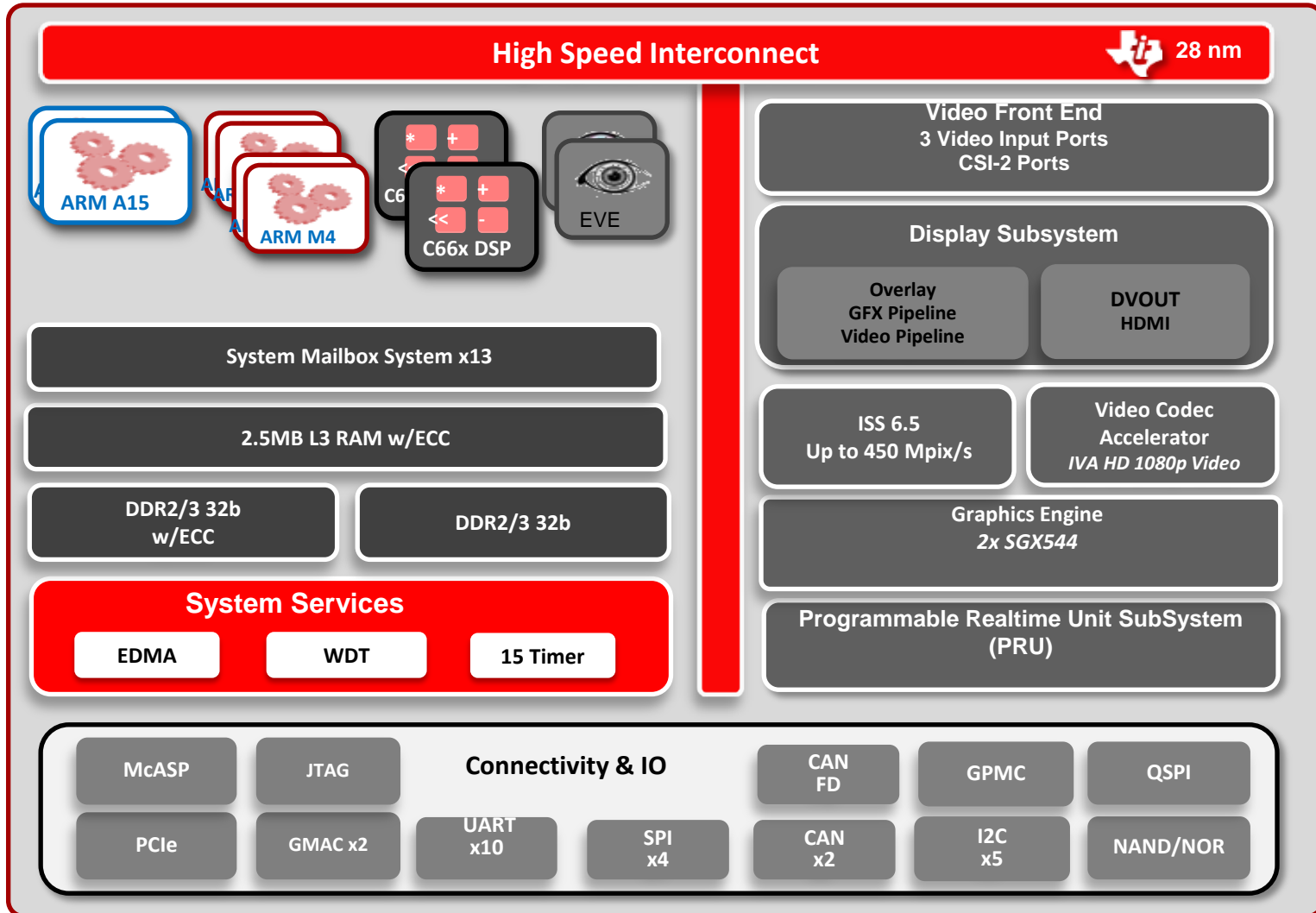
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Texas Instruments Inc.  
Automotive Processor,  
Embedded Processing Division

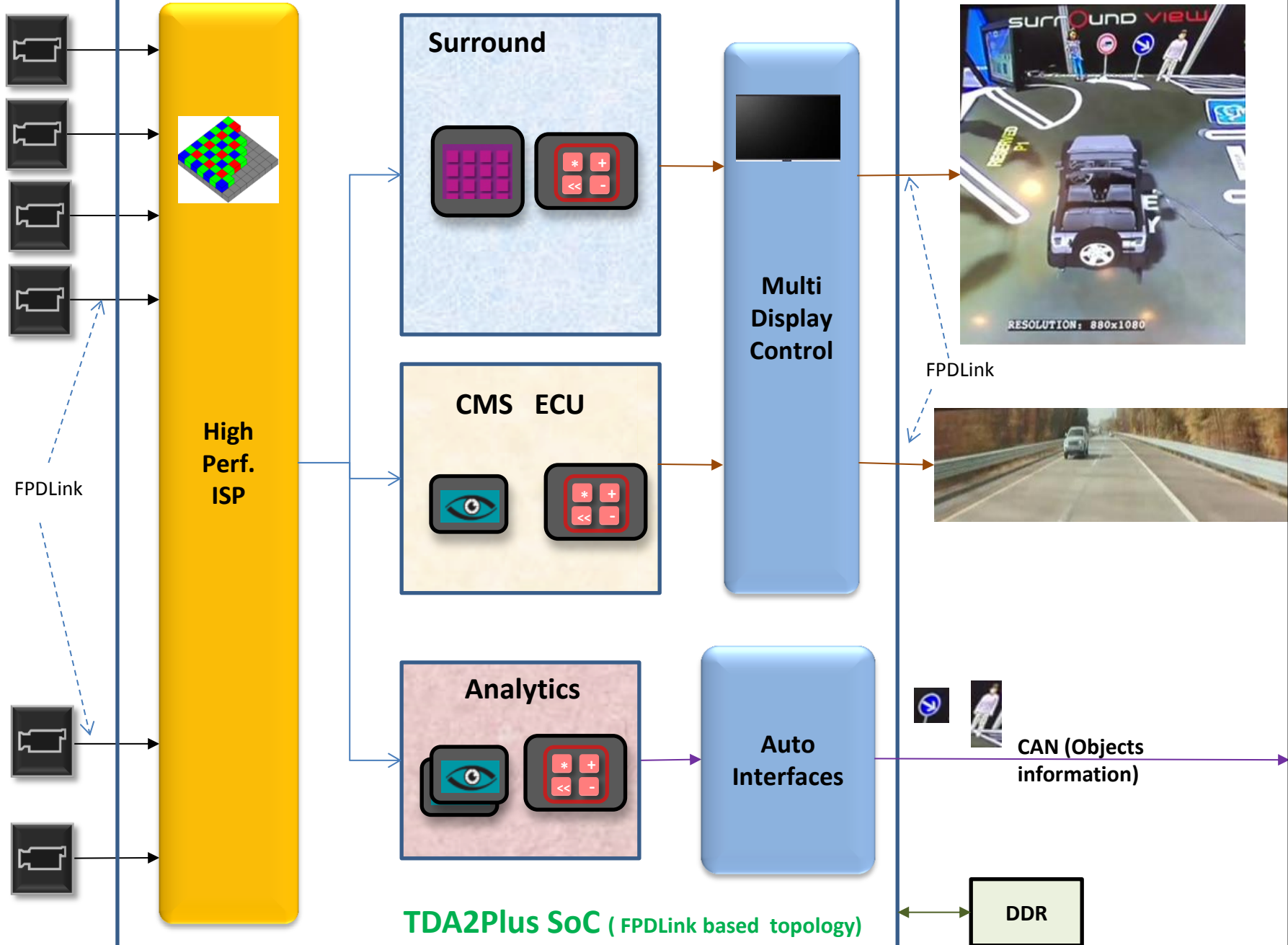


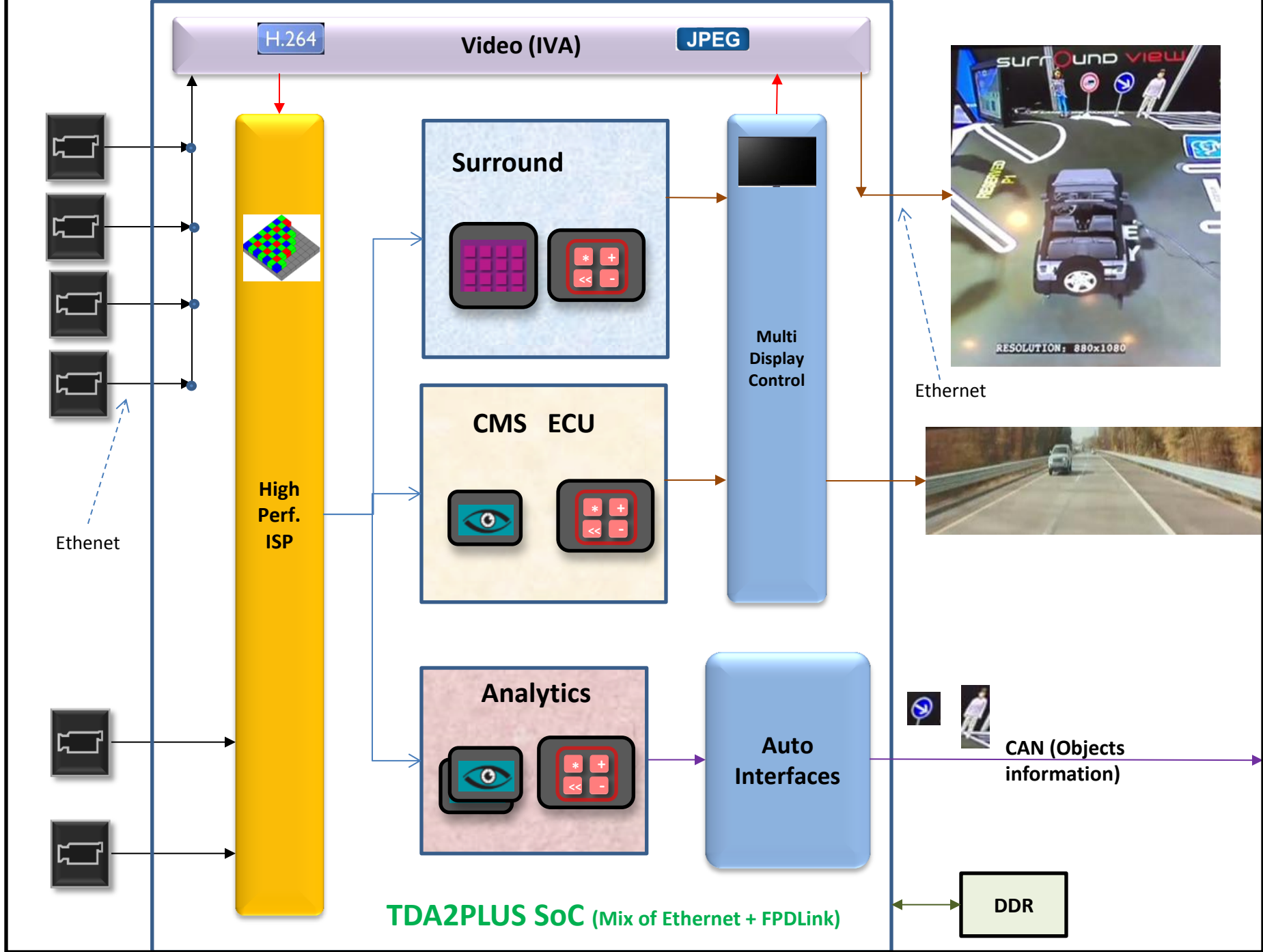
**Today's Systems**

# TDA2PLUS Vision SoC : Block Diagram









# External Memory Usage

## Surround View

### Configuration

- Input: 4 Ch x 2MP @24-30fps
- Display: 1920x1080@30fps (2MP)

## CMS

### Configuration

- Input: 2 Ch x 1MP @ 60fps
- Display: 2x 1280x720@ 60fps (1MP)

## Detailed Memory Bandwidth Split-up

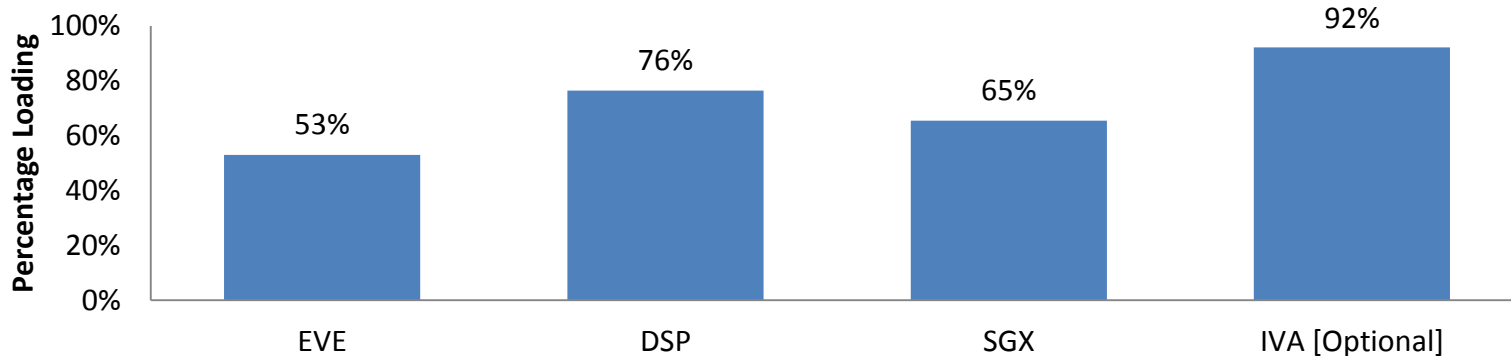
Operation	H	V	BPP	FPS	CH	BW (MB/S)
4x2 MP@30fps capture for SV (WR) RAW	1920	1080	2	24	4	398.13
ISP read of all SV Channels	1920	1080	2	24	4	398.13
4x 2MP 30fps capture for SV (WR)	1920	1080	1.5	24	4	298.60
2x1 MP@60fps capture for CMS (WR) RAW	1280	720	1.5	60	2	165.89
ISP read of all SV Channels	1280	720	1.5	60	2	165.89
4x 2MP 30fps capture for SV (WR)	1280	720	1.5	60	2	165.89
SGX 3D Synthesis (Output RGB24)	1920	1080	3	24	1	1740.00
Display RGB24	1920	1080	3	30	1	186.62
CMS O/P ( 2 displays)	1280	720	1.5	60	2	165.89
Deflicker for 2x1MP@60 CMS cameras						1000.00
Analytics for 2MP, 3 camera@10fps						1800.00
					<b>Total</b>	<b>6485.04</b>

# Processor Cores Loading

## Configuration

- CPU configurations:
  - Total Number of DSPs = 2
  - Total Number of EVEs = 2
  - Total Number of GPU cores = 2
  - ARM Cortex A15 is free for customers
- Processing details:
  - Surround View Stitching and Top view rendering
  - Analytics: Pedestrian Detection, Animal Detection, Line detection, Lane tracking, Structure From Motion, Free space detection, Kerb detection
  - [Optional] : 4 Channel decode, 1 Channel Encode (Ethernet Use-case)

## Core-wise Loading







Thanks