

TI OpenVX™ (TIOVX): Framework comparisons

Links framework -> OpenVX™ migration

Features

Features	Links	OpenVX
Open spec	TI proprietary API	Khronos® API
Pipelining	Yes	Yes (extension), TI supports
Streaming	Yes	Yes (extension), TI supports
Graph model	Yes	Yes
Sensor fusion application control	Limited	Yes, native

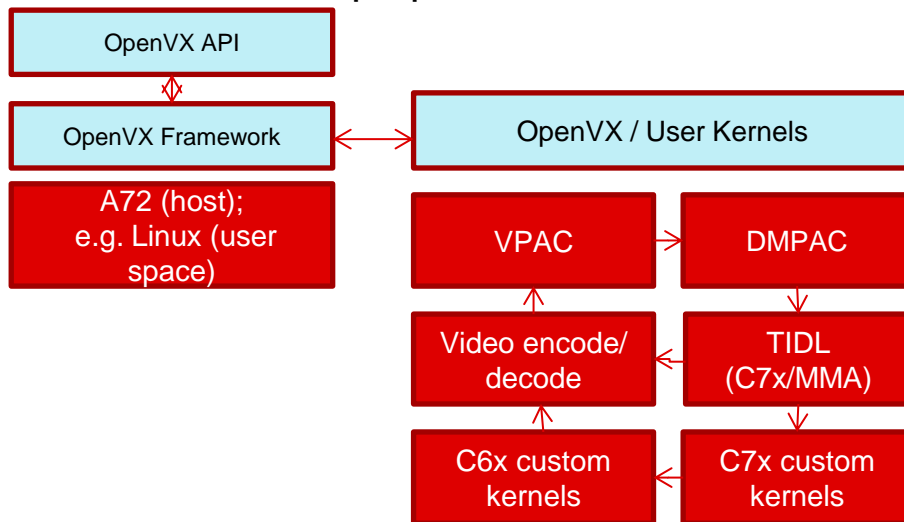
Links framework -> OpenVX™ migration

Terminology

Links (TI proprietary)	OpenVX (open standard)
Link	Node
AlgPlugin	Kernel wrapper (TI terminology)
Use case / chain	Graph
System buffer -> Buf type	Specific data objects (vx_image, vx_array, etc)

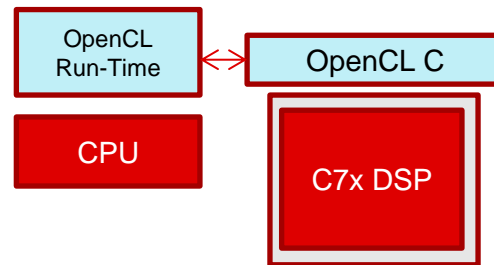
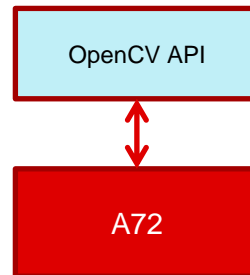
Jacinto 7 open compute recommendations

- OpenVX system configuration
 - Provides access to VPAC, DMPAC, codecs, DL engine, and optionally to camera and display
 - Fully optimized OpenVX 1.1 kernels on C6x
 - Optionally, expert users can develop optimized custom kernels on the C6x and C7x DSP



Jacinto 7 open compute recommendations

- OpenCV system configuration
 - Can be used as a ready to use library on A72
- OpenCL system configuration
 - Can be used to offload specific generic compute to C7x DSP
 - Requires DSP focused adaptation from developer for performance entitlement on DSPs



For more information

- Jacinto 7 Processor SDK Automotive download:
<http://www.ti.com/tool/PROCESSOR-SDK-JACINTO-DRA8X-TDA4X>
- Processor SDK Linux Automotive (PSDKLA) user guide:
[_\\${PSDKLA_INSTALL_PATH}/docs/linux/index.html](http://www.ti.com/tool/PROCESSOR-SDK-LINUX-AUTOMOTIVE-PSDKLA-USER-GUIDE)
- Processor SDK RTOS Automotive (PSDKRA) user guide:
[_\\${PSDKRA_INSTALL_PATH}/index.html](http://www.ti.com/tool/PROCESSOR-SDK-RTOS-AUTOMOTIVE-PSDKRA-USER-GUIDE)
- For additional questions, refer to the E2E community forums:
<https://e2e.ti.com/support/processors/f/791>



©2020 Texas Instruments Incorporated. All rights reserved.

The material is provided strictly "as-is" for informational purposes only and without any warranty.
Use of this material is subject to TI's **Terms of Use**, viewable at [TI.com](https://www.ti.com)

Open compute comparison: TI perspective

	OpenCL™	OpenCV	OpenVX™
HW flexibility	Primarily used with CPU-GPU TI primary vendor to run on DSP	Primarily used with x86, Arm® Some offload to GPU	Targeted for heterogeneous embedded platforms having Arm, DSP, HWAs
Performance on TI SoCs	OpenCL C on C66x ~ 0.7x vs C on C66x. Optimized C6x code 2x to 10x better vs OpenCL C	~ only 50 of 1000+ APIs supported on C66x. Rest 1000+ APIs “cross-compiled” on Arm	Fully optimized and native performance on TI SoCs
Usability	Well known in academia, industry for parallel programming	Easy to use and popular in academia, industry for “PC” based vision applications	Industry standard application API
			Allows to access C7x, HWAs on Arm hiding low level TI SoC specific details
			Need to program TI DSP, use TI specific kernels for best performance
Portability (from non-TI to TI)	NOT performance portable —for example, GPU OpenCL C code will run sub-optimally on TI DSP		NOT functional and performance portable for TI SoC specific kernels
	Functional portability		Functional portability for OpenVX kernels
Safety	Safety critical extension being worked on, i.e. potentially possible	No consideration for Safety	Safety critical extension being worked on, i.e. potentially possible
Industry support	Supported by all major GPU vendors Very few DSP vendors support OpenCL	Primary support on x86, Arm Very few (possibly none) DSP vendors support OpenCV	Supported by all major Si vendors However NOT well known in industry