KHRONOS™ GROUP

OpenVX™

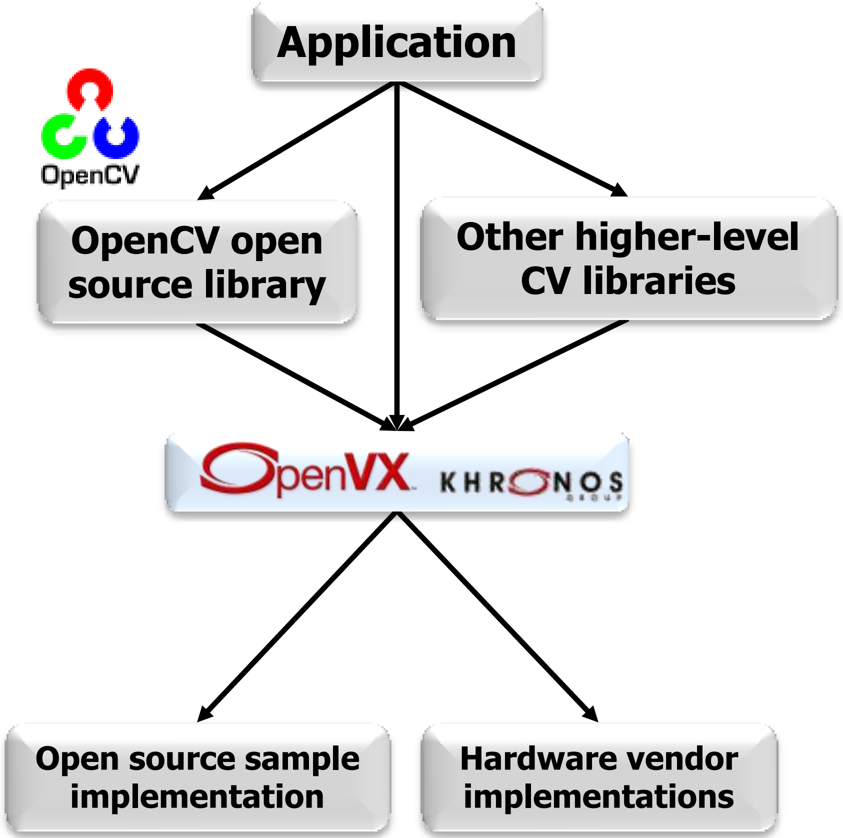
Vision Acceleration

April 2013

OpenVX

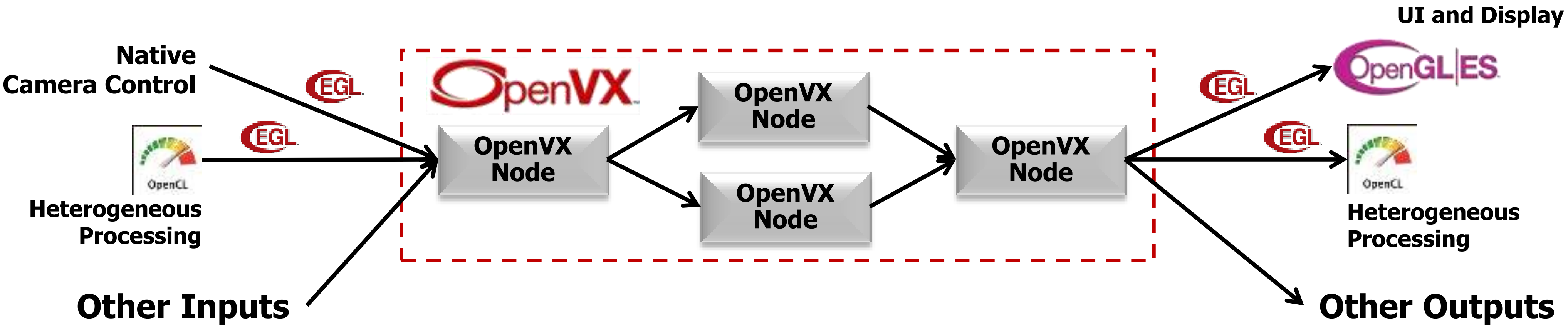
- **Vision Hardware Acceleration Layer**
  - Enables hardware vendors to implement accelerated imaging and vision algorithms
  - For use by high-level libraries or apps
- **Focus on enabling real-time vision**
  - On mobile and embedded systems
- **Diversity of *efficient* implementations**
  - From programmable processors, through GPUS to dedicated hardware pipelines

Dedicated hardware can help make vision processing performant and low-power enough for pervasive 'always-on' use


Application
OpenCV
OpenCV open source library
Other higher-level CV libraries
OpenVX
KHRONOS
Open source sample implementation
Hardware vendor implementations

OpenVX Execution Flow

- **OpenVX Graph for efficient execution**
  - Each Node can be implemented in software or accelerated hardware
  - Data transfer between nodes may be optimized
- **EGL can provide data and event interop with other APIs – with streaming**
  - BUT use of other Khronos APIs are not mandated
- **VXU Utility Library provides efficient access to single nodes**
  - Open source implementation – easy way to start using OpenVX



OpenVX and OpenCV are Complementary

	OpenCV	OpenVX
Governance	Open Source Community Driven No formal specification	Formal specification and full conformance tests Implemented by hardware vendors
Scope	Very wide 1000s of functions of imaging and vision Multiple camera APIs/interfaces	Tight focus on hardware accelerated functions for mobile vision Use external camera API
Efficiency	Memory-based architecture Each operation reads and writes memory Sub-optimal power / performance	Graph-based execution Optimized nodes and data transfer Highly efficient
Conformance	No Conformance testing Every vendor implements different subset	Full conformance test suite / process Reliable acceleration platform
Use Case	Rapid prototyping	Production deployment

OpenVX Participants and Timeline

- **Aiming for specification before end of 2013**
- **Itseez is working group chair**
- **QC/TI are specification editors**

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