Embedded Camera API
Exploratory Group
Industry Call for Participation
February 2021
Growing Need for Camera API Standards

**Increasing Sensor Diversity**
Including camera arrays and depth sensors such as Lidar

**Multiple Sensors Per System**
Synchronization and coordination become essential

Cost and time to integrate and utilize sensors in embedded systems has become a major constraint on innovation and efficiency in the embedded vision market

**Increasing Sensor Processing Demands**
Including inferencing. Sensor outputs need to be flexibly and efficiently generated and streamed into acceleration processors

**Proprietary APIs Hinder Innovation**
Vendor-specific APIs to control cameras, sensors and close-to-sensor ISPs prevent rapid integration of new technologies
Benefits of Embedded Camera API Standard

An effective open, cross-vendor open standard for camera, sensor and ISP control could provide multiple benefits

- Cross-vendor portability of camera/sensor code for easier system integration of new sensors
- Preservation of application code across multiple generations of cameras and sensors
- Sophisticated control over sensor stream generation increases effectiveness of downstream accelerated processing

Development of Camera and sensor APIs may also generate new requirements for downstream vision and inferencing acceleration APIs
Genesis of Embedded Camera API Initiative

Industry Need

Repeated industry requests to help solve camera and sensor interoperability issues

Complementary activities but increasing shared recognition that camera sensors are being tightly integrated with image, vision and inferencing accelerators in self-contained embedded systems

Significant industry interest indicates the time may be right for a standardization initiative

EMVA and Khronos working together to bring together a strong and diverse industry quorum to explore meaningful industry cooperation

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Exploratory Group Process

Exploring real-world industry requirements for open and royalty-free embedded camera and sensor API standards

Embedded Camera API Exploratory Group

Hosted by EMVA and Khronos

Online discussion forum and weekly Zoom calls, probably for a few months

No detailed design activity to protect participants IP

Explore if consensus can be built around an agreed Scope of Work document

Discuss what standardization activities can best execute actions in the Scope of Work

Any company is welcome to join

No cost or IP Licensing obligations

Project NDA to cover Exploratory Group Discussions

NO PREDETERMINED OUTCOME
Next steps to be driven by requirements and use cases - maybe at Khronos, EMVA, both or somewhere else entirely e.g., open-source projects

Initiation of standards or open-source projects at existing organizations with proven processes and IP Frameworks

Proven Khronos Process to ensuring industry requirements are fully understood before starting standardization initiatives

Agreed SOW document released from NDA and made public
Industry Call For Participation

Embedded Camera API Exploratory Group Goals
Enable industry dialog to seek consensus on:
*IS* industry cooperation over camera/sensor/ISP interoperability API(s) beneficial?
And *IF* so, *what* API(s) are needed...
...and *how* and *where* should the industry organize to create those API(s)?

All companies, universities, consortia, open-source participants welcome!
Explore the creation of open royalty-free API standards for embedded cameras and sensors!
Open to all at no cost!

The right open standard at the right time can be a win-win for all in the industry

https://www.khronos.org/embedded-camera/#getinvolved