Embedded Camera API Exploratory Group

Industry Call for Participation

March 2021

Growing Need for Camera API Standards

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

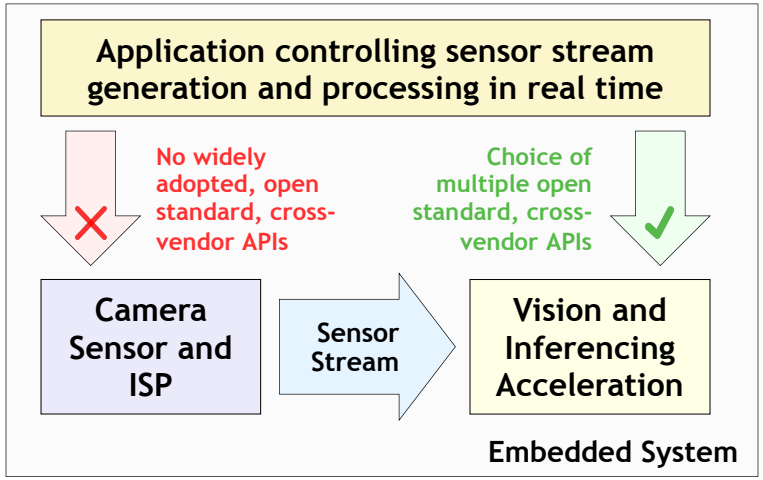
Multiple Sensors Per System
Synchronization and coordination become essential

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

Acceleration APIs

KHRONOS GROUP

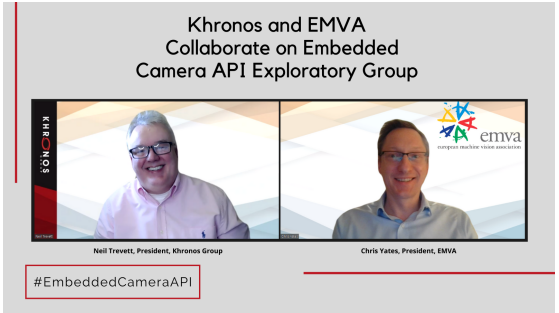
Repeated industry requests to help solve camera and sensor interoperability issues

Industry Need

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

emva european machine vision association

Machine Vision



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

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

Exploratory Group Process

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

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

Any company is welcome to join

No cost or IP Licensing obligations

Project NDA to cover Exploratory Group Discussions

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

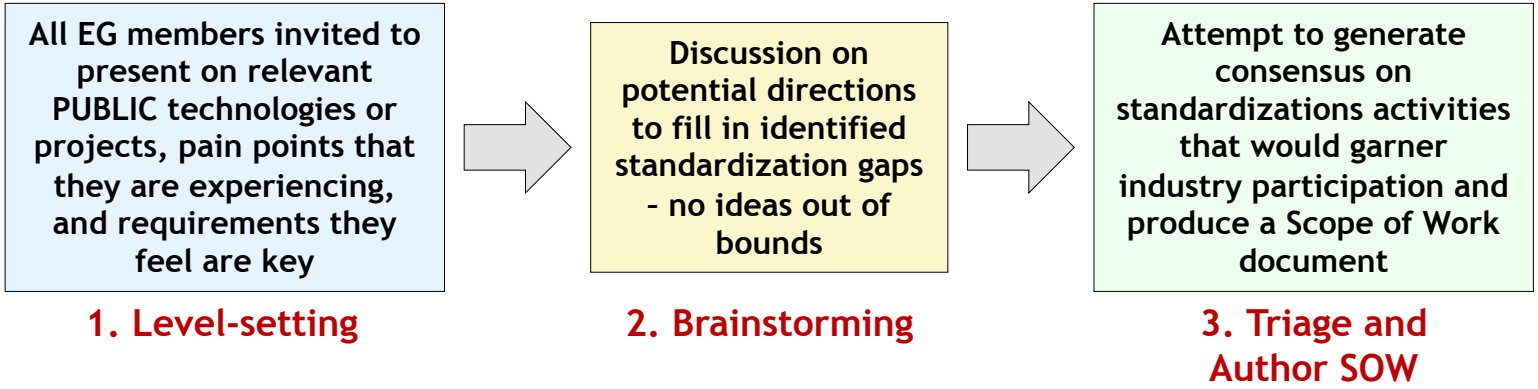
Scope of Work Document

Agreed SOW document released from NDA and made public

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

Exploratory Group Discussion Stages



Typically, each stage can take 1-2 months

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

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