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| *Description of Registration No*  MRD-20191016-708 | | *Recording number:*  MRD-2019101621-708 | |
| *Form related to the*: PO014 | *Recording under*: [\\typhoon\proj\Gestion](https://secure.matrox.com/dana/home/launch.cgi?actor=browsebar&url=\\typhoon\proj\Gestion) de Projet{project number}\_ | | *Shelf life :* 5 years |

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# Introduction (Business Case Rationale)

The fourth generation smart camera (internal name Iris 4; commercial name T.B.C) is intended to replace the current Iris GTR. Given current market requirements, this new smart camera needs to be 50% faster in terms of CPU performance. It needs to support larger CMOS sensors, all the way up to 16Mpixels. The dimensions are not too much of an issue and therefore we should keep the same housing as the Iris GTR so that it will be easier for customers to upgrade to the new generation. This new smart camera needs to remain a fanless design. It needs to be able to run Matrox Design Assistant (DA) projects and Matrox Imaging Library (MIL) applications.

# New Product Overview (Product Concept)

The fourth generation Iris (Iris 4) has to be fanless, remain compact, provide at least a 50% improvement in computing power over the Iris GTR, and its parts costs need to allow for having a selling price lower than the current Iris GTR. It needs to offer a range of CMOS image sensors up to 16 Mpixel in both monochrome and color. The housing must be IP67 rate and provide industrial-grade connectors. It needs to directly connect to other industrial devices.

# Target Market

The Iris 4 will be a direct replacement for existing users of Iris GTR with DA. Larger OEM customers will be targeted on a case by case basis since they all need some level of customization. In combination with DA, new customers will find this new camera an appealing solution to replace other smart camera solutions they might currently use. With improved compute performance and larger resolution sensors, Iris 4 will become a solution for applications today reserved to PC vision.

# Competition

Cognex is still by far the biggest competitor in the smart camera business. They are well known in the industry and have a large sales force and marketing resources. Matrox has an advantage with the DA unified integrated development environment, which targets both PC and smart cameras. Cognex prices are also typically higher than the existing Iris GTR.

Teledyne Dalsa has their Boa smart camera offering. It is lower priced than the Iris GTR but their software algorithms don’t perform as well as MIL.

National Instruments competes with their software suite running on a customized version of our Iris GTR hardware. Their offering is typically a more expensive than an equivalent Iris GTR.

There are other smaller players making smart cameras or embedded vision systems (sensor + CPU boards). However most of them don’t provide any imaging software.

Our software environments, based on DA or MIL are of an open architecture, so that customers can add anything else they need on the smart camera

# Desired Characteristics

The Iris 4 has to be a fanless smart camera capable of running DA projects and MIL applications. It should have an x86 processor running an embedded operating system. It should support monochrome and color CMOS image sensors. It needs a range of I/Os through industrial-grade connectors. The housing has to be IP67.

## 5.1 Required Features

The Iris 4 must

* be fanless
* have the same dimensions and mounting points as the current Iris GTR
* use Intel Elkhart Lake SKU 5 CPU
* perform at least 50% faster than current Iris GTR
* have an IP67-rated enclosure
* be powered by a 24V DC source (±10% tolerance)
* support a family of CMOS sensor options
  + both monochrome and color
  + with a global shutter
  + 1.3 to 16 Mpixels resolution
* have hardware-assisted Bayer color interpolation (M\_ADAPTIVE, M\_ADAPTIVE\_FAST and/or M\_AVERAGE\_2x2) compatible with MIL and DA
* support at least 4GB of memory
* have at least 32 GB of persistent storage
* use the same M12 connectors as the current Iris GTR
* have one (1) Gigabit Ethernet port
* have one (1) VGA output
* have one (1) USB 2.0 port
* have real-time GPIOs
  + 3 inputs and 3 outputs
  + separate dedicated optocoupled trigger input
  + support for Strobe output
  + similar design/circuitry as Matrox 4Sight EV6
  + support for rotary/shaft incremental/relative encoder
  + separate dedicated 0-10V LED intensity control signal
* have an interface for controlling Corning Varioptic C-series electronically-focus-controllable lenses within the protective cap enclosure
* integrate support for hardware-assisted PROFINET communication
* have an operating temperature range from 0 to 50 degrees Celcius
* act as a MIL license fingerprint and be able to store a MIL license key
* run Linux
* support C-mount lenses
* reuse the same lens protective cap as the current Iris GTR

## 5.2 Desired Features

The Iris 4 should

* have an interface to control (but not power) illuminators within the protective cap enclosure
* run Windows 10 IoT Enterprise 2019
* be easily spun off into a miniature vision controller platform (i..e, “Nanosight” concept) with:
  + no sensor board
  + different enclosure(s):
    - IP67-rated with M12 connectors
    - Non IP67-rated connectors with standard IT connectors
  + a second Gigabit Ethernet port
  + additional USB 2.0 ports and a USB 3.x port
  + DisplayPort output
  + support for an Intel Elkhart Lake SKU 6 or 7 CPU

# Estimated Development Costs

List the estimated costs of this product in terms of development time, licensing components, or equipment required to build the product (useful for both hardware and software). This may or may not be required in your company to have a project approved.Will require input from engineering.

# Estimated Product Life

The Iris 4 has to be available for at least 5 years from its initial availability to customers excluding a LTB period.

# Distribution

Iris 4 will be distributed through Imaging’s traditional channel of distributors and authorized integrator channel.

# Configurations (Product Variations and SKU’s)

The Iris 4 is to be offered to end-users with DA. Moreover, there will be different SKU’s for the different sensor options (i.e., monochrome/color, resolution and frame rate). All SKU’s will be equipped with the same CPU, memory and persistent storage configuration. Custom SKUs with different Matrox software rights, operating systems, third-party software and private labeling may be required as needed.

# Licensing Requirements

The Iris 4 is to have a BIOS license. Iris 4 will be pre-licensed for DA just like the current Iris GTR.

# Quality Issues and Conformance Standards

This section requires input from the Conformity group.

# Manufacturing

Use this section to describe any special manufacturing considerations or requirements. Provide an estimated bill of materials (a list of everything that will be packaged with the product). This section may require input from Manufacturing if it is a hardware product.

# Packaging

The Iris 4 is to be packaged like the current Iris GTR.

# Maintenance

This section is used (primarily for a hardware product) to describe any special maintenance requirements. May require input from customer service.

# Product Cost Target

Competition in this marketspace is mainly from Cognex. We still need to compete on price. BoM cost should be less than $300 per unit including memory, storage, and BIOS.

# Estimated Sales Forecast

1000 or so units in 2021. Around 1,500-2000 units in 2022 to 2025.

# Impact on Other Products

Iris 4 is a replacement product for the Iris GTR which is becoming outdated.

# Preliminary Schedule (with time to market as the driver)

The Iris 4 should be ready for customers by fall 2020.

# Critical Success Factors

A timely introduction of the smart camera with all of its features implemented and working. Having all sensor options more or less at the same time.

# Documentation

As for the Iris GTR, the Iris 4 requires an Installation and Technical Reference manual in electronic form. A Quick Start guide video should be available from Vision Academy.