TOSHIBA

International Imaging Seminar 2019

Toshiba Teli's prospect of high resolution camera

Visual Component Development Div.
Toshiba Teli Corporation
December 5th 2019

4000-0328-1912

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Contents

01 Market trend

02 Task

03 Proposal by Toshiba Teli

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01

Market trend

~ What's the requirement for higher resolution in machine vision camera? ~

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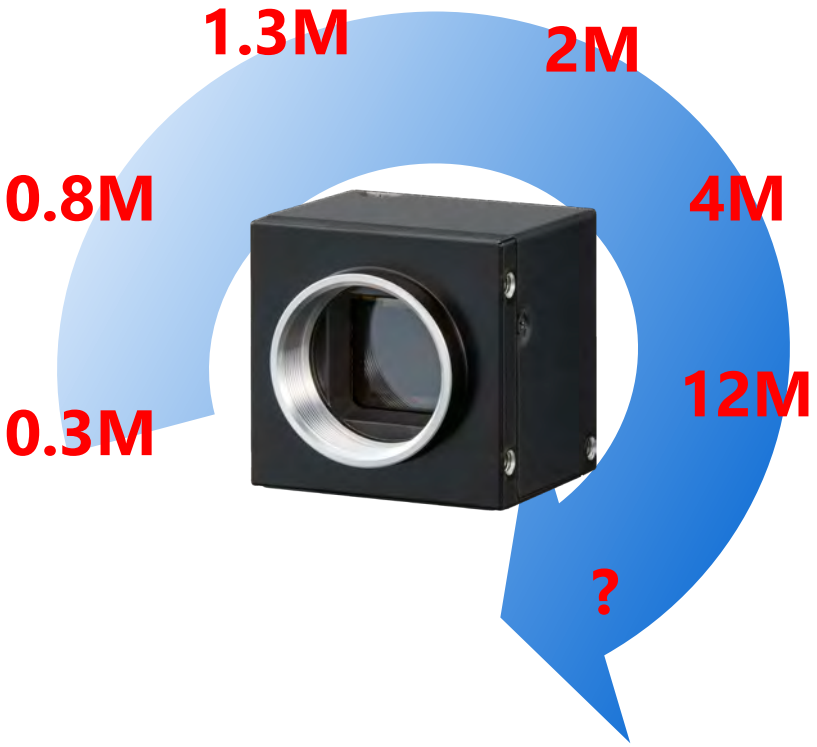
Advantage of higher resolution



What's advantage of higher resolution?

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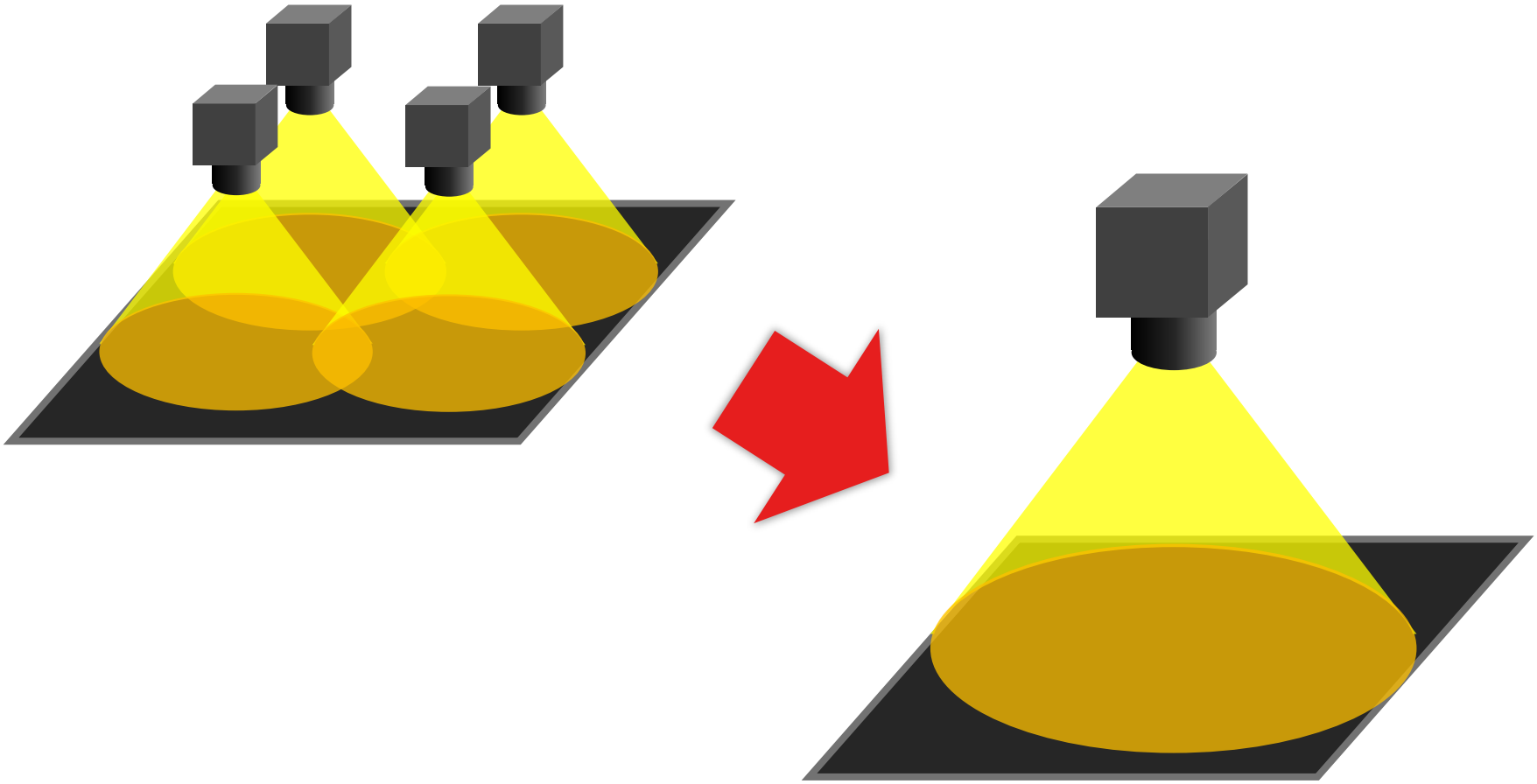
Advantage of higher resolution



Integration of multiple cameras to one

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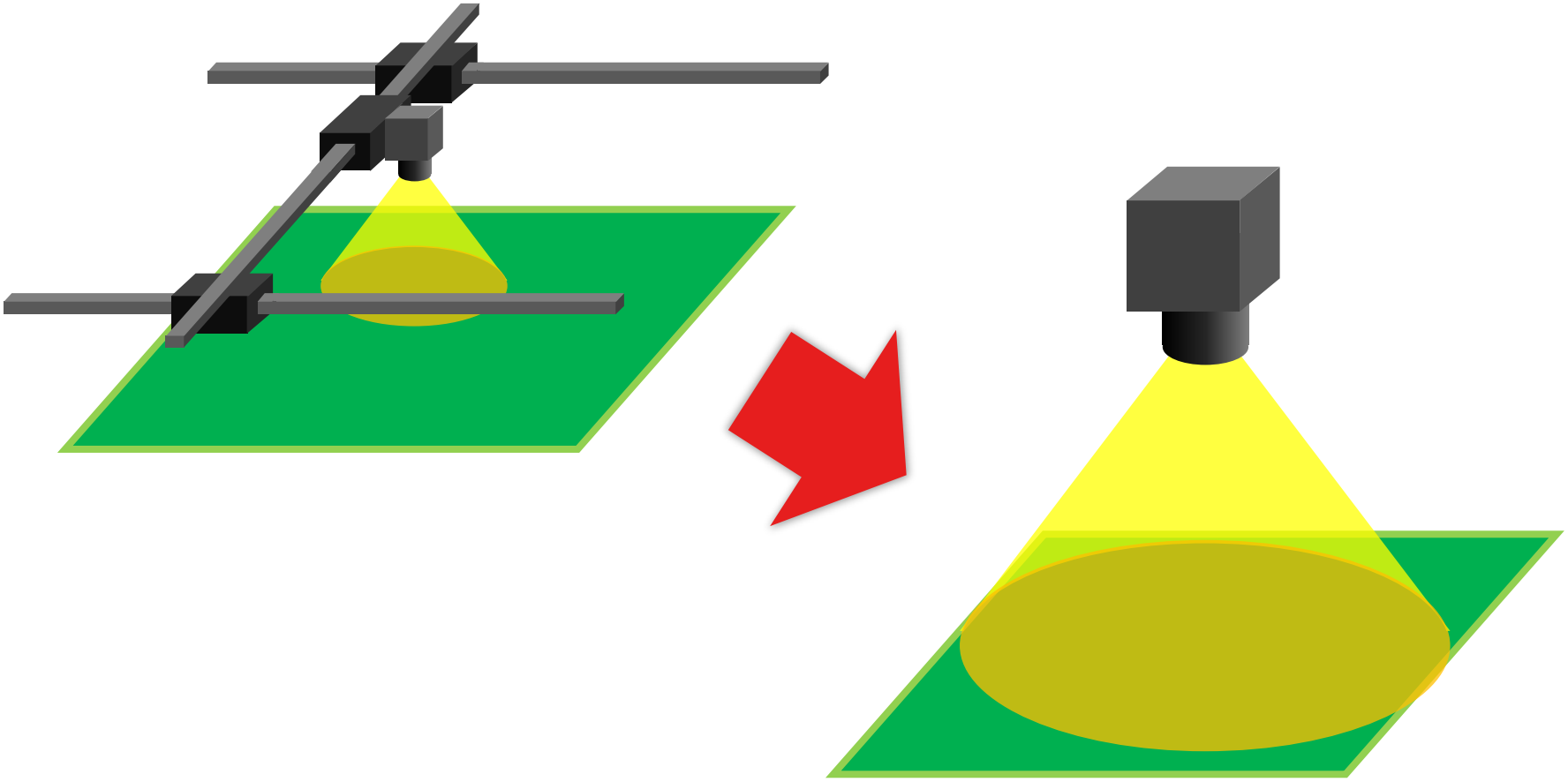
Advantage of higher resolution



Location of camera can be fixed

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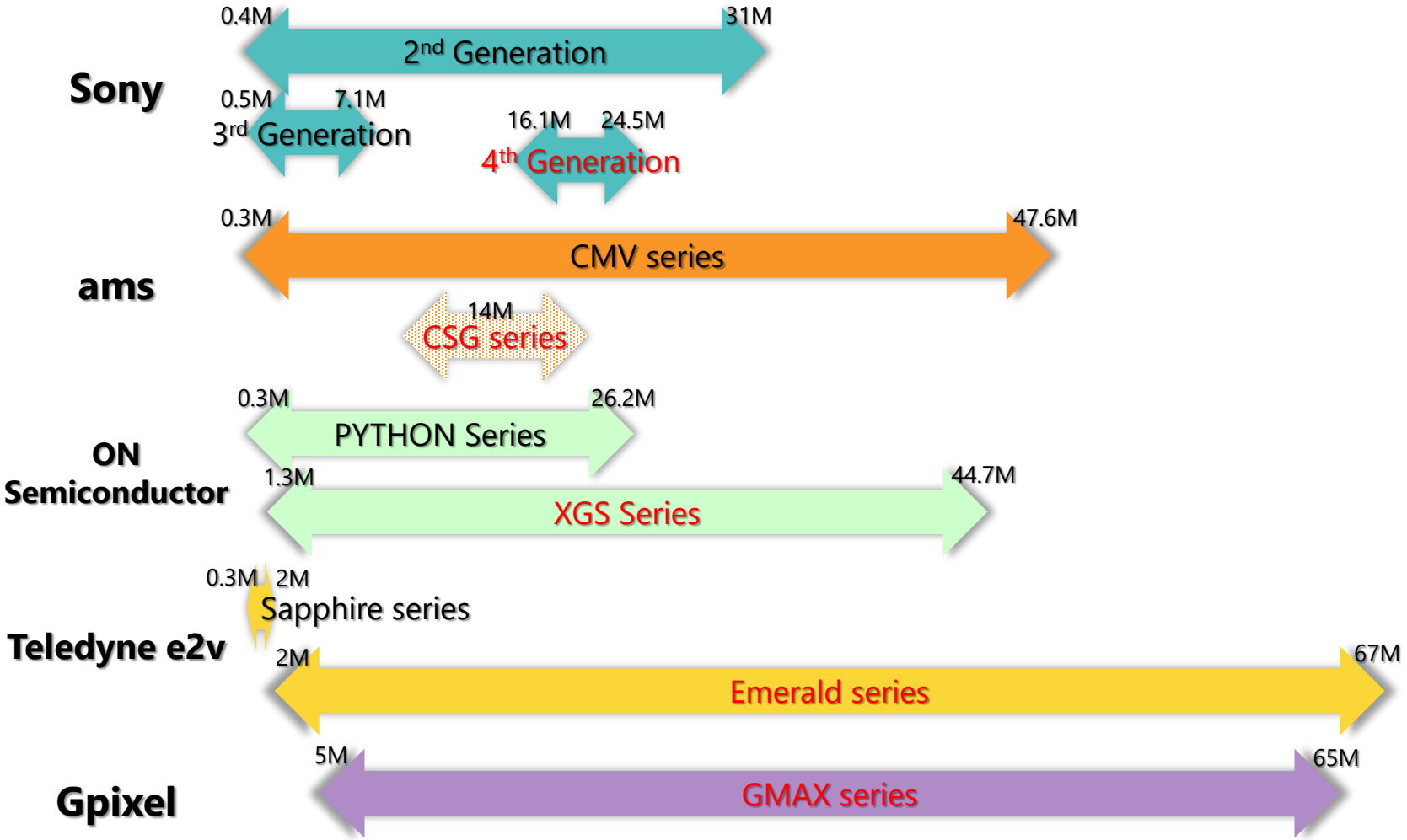
Sensor trend



High resolution sensors of over 20MP are released

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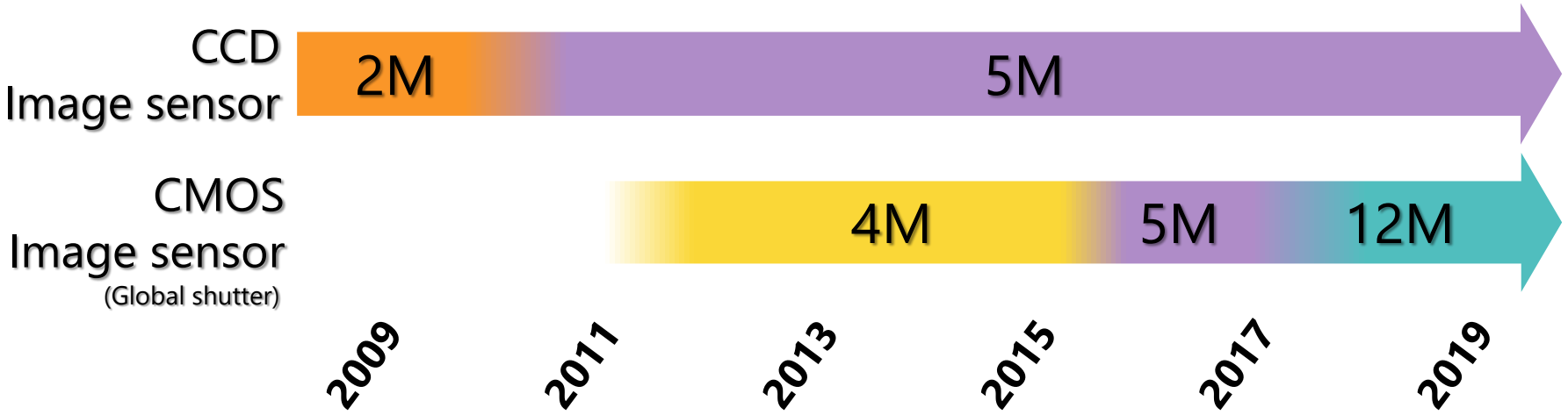
Trend of machine vision camera



Higher resolution is proceeding even in small size camera

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02

Task

~ What’s the task of higher resolution? ~

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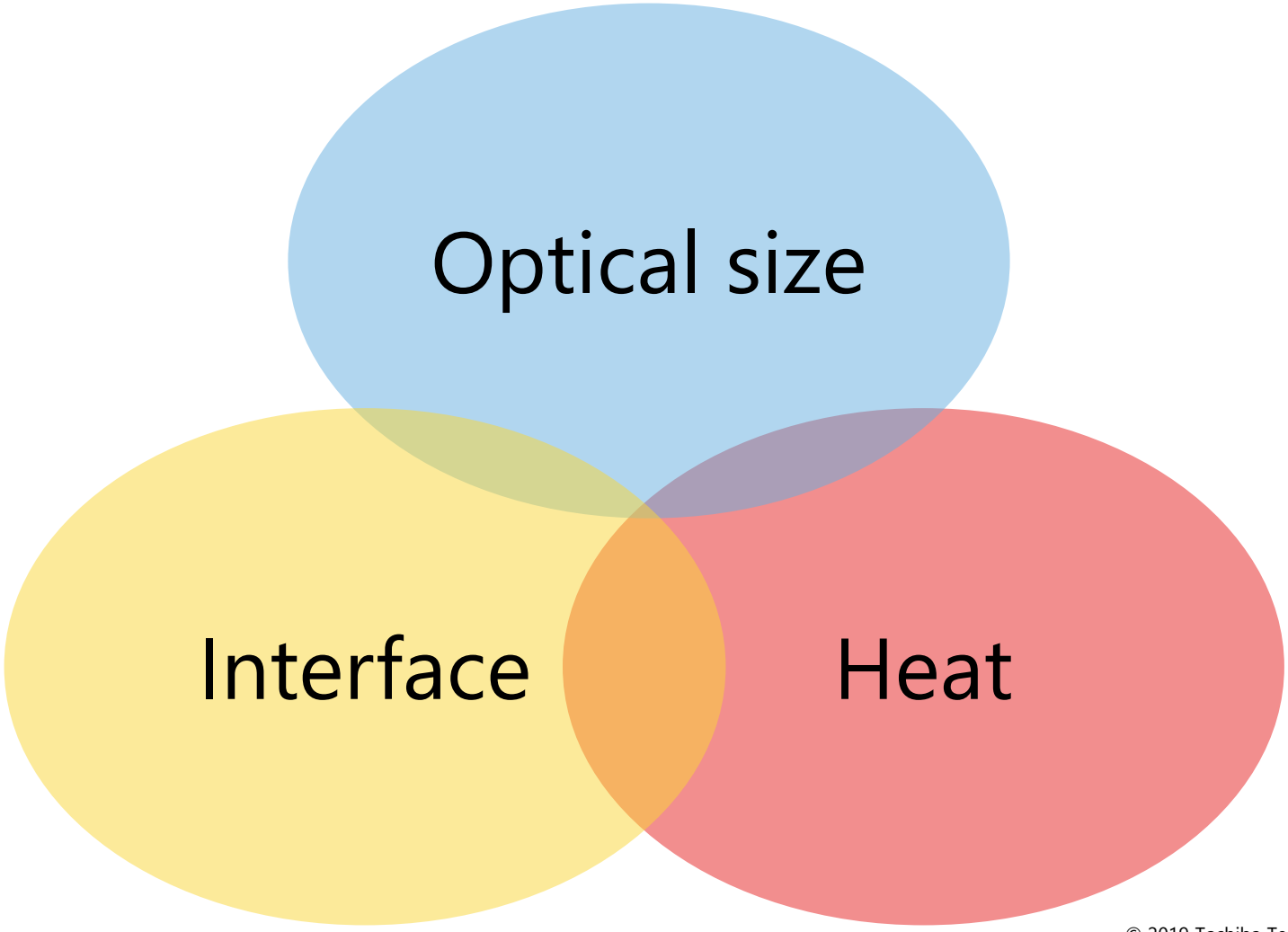
What's the task in higher resolution?



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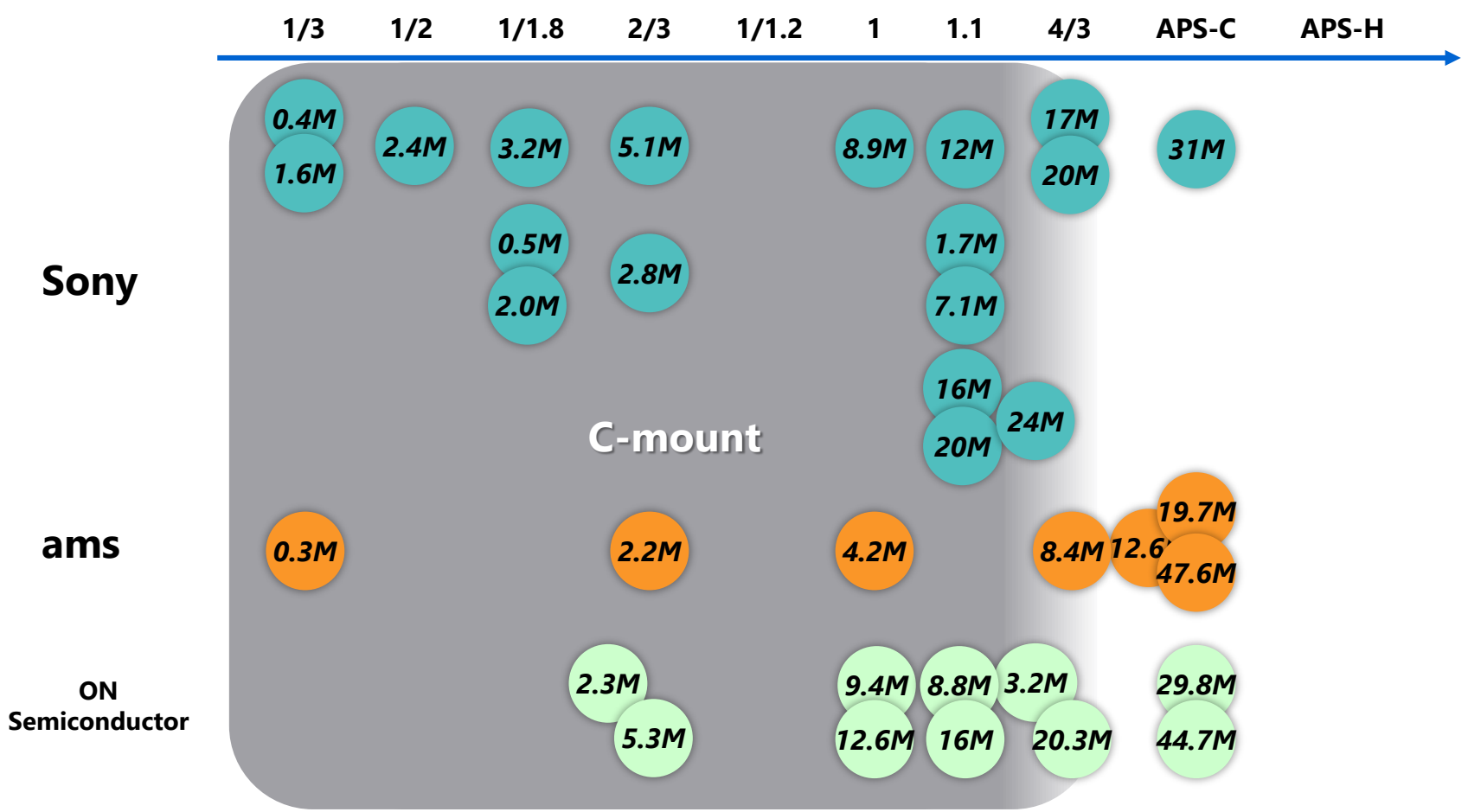
Task – Optical size



C mount cannot support most of high resolution sensors

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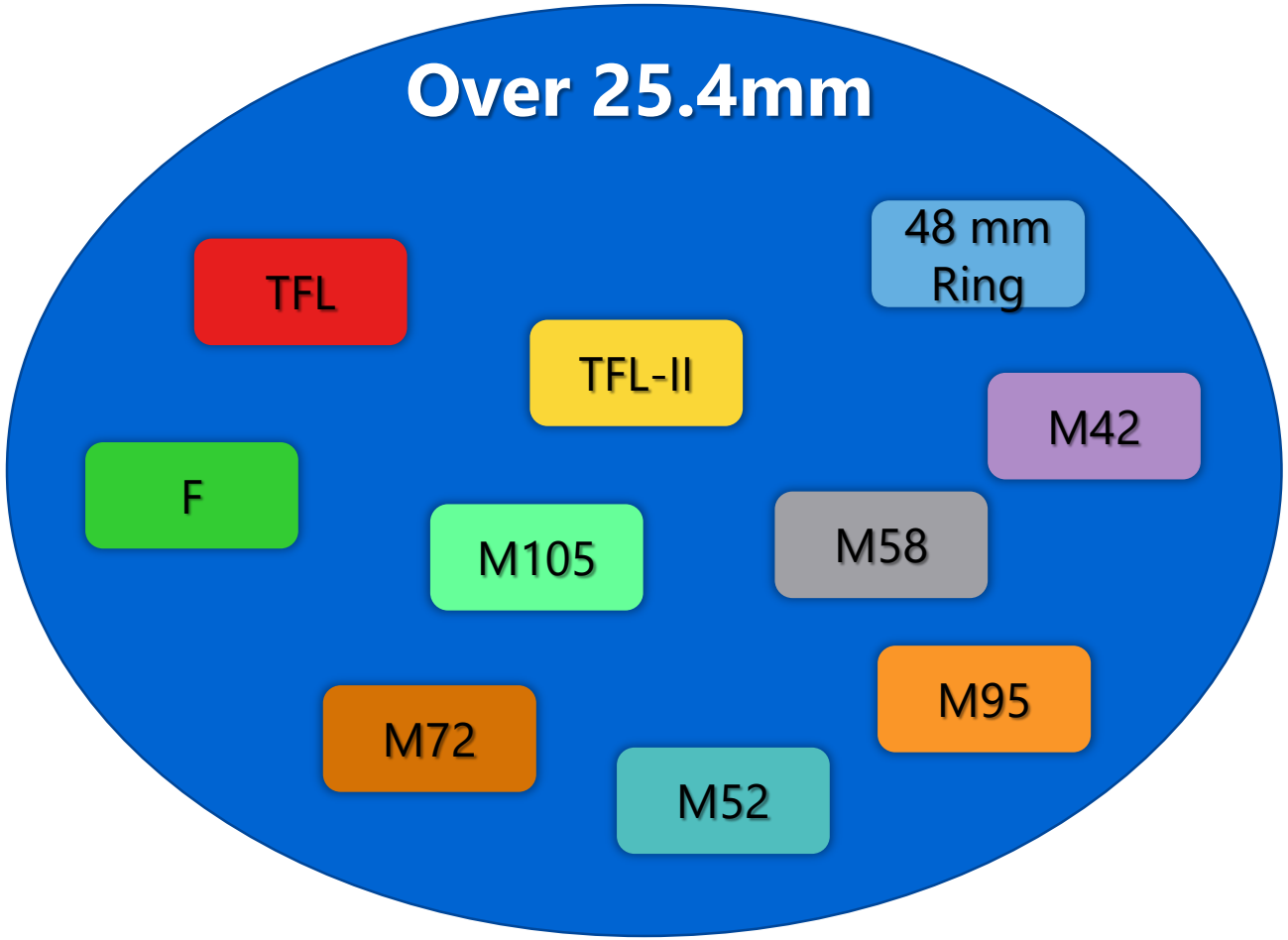
Task – Optical size



No standard size for over C mount

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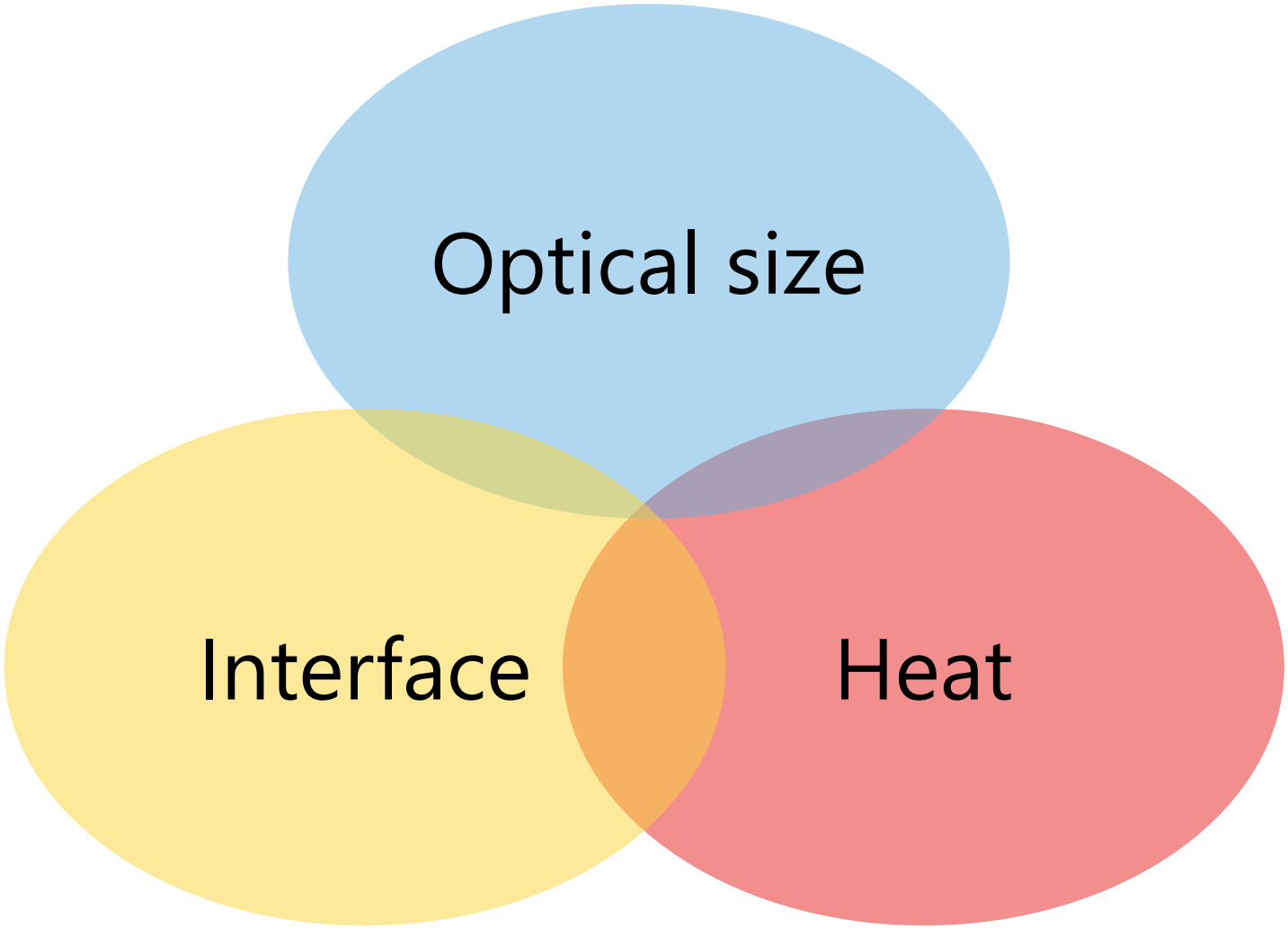
Task



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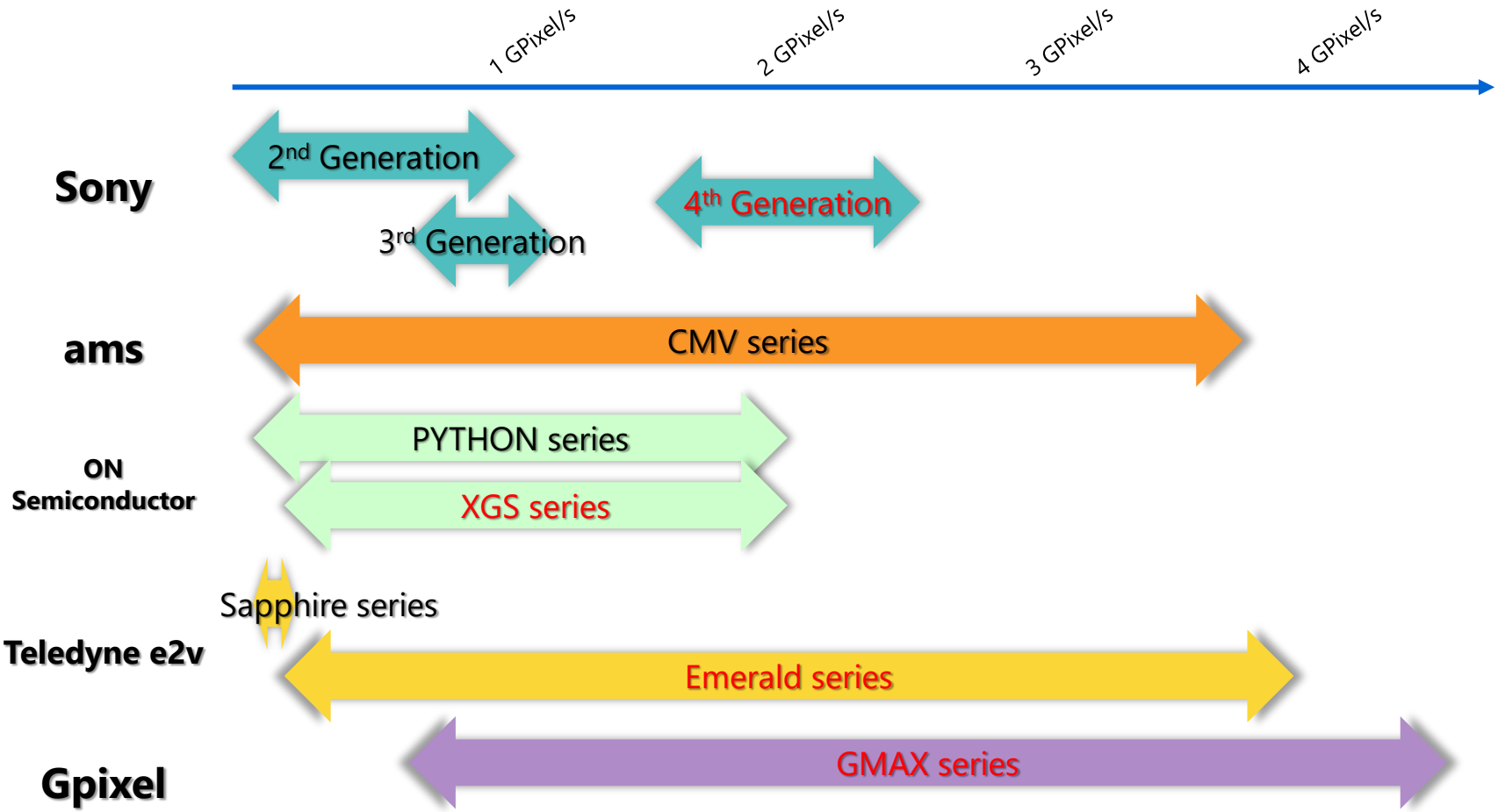
Task – Interface



Higher resolution and speeding up are progressing simultaneously

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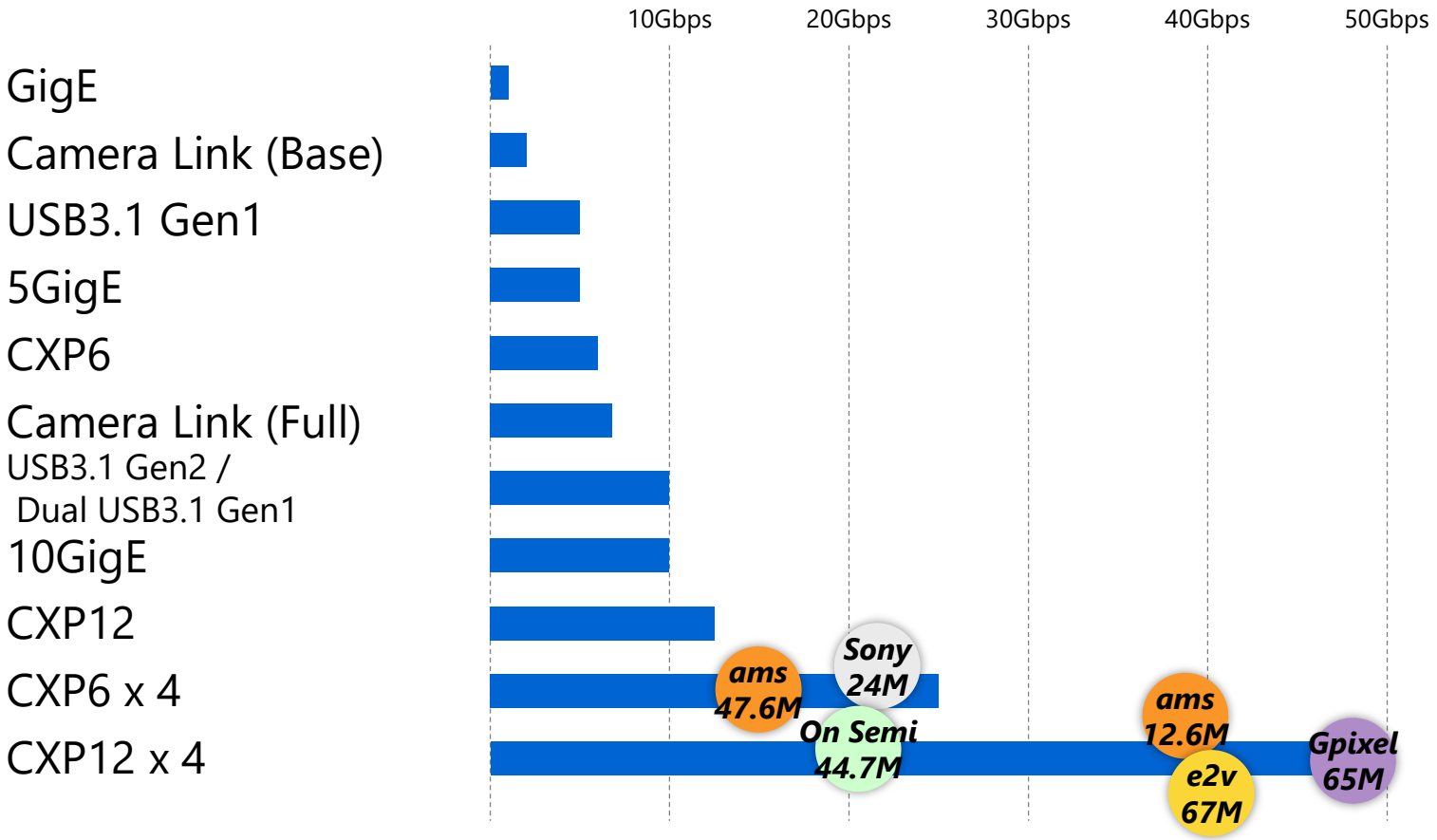
Task – Interface



* Above is not a transfer bandwidth of image data but that of interface.

Only CoaXPress allows maximum performance of sensor

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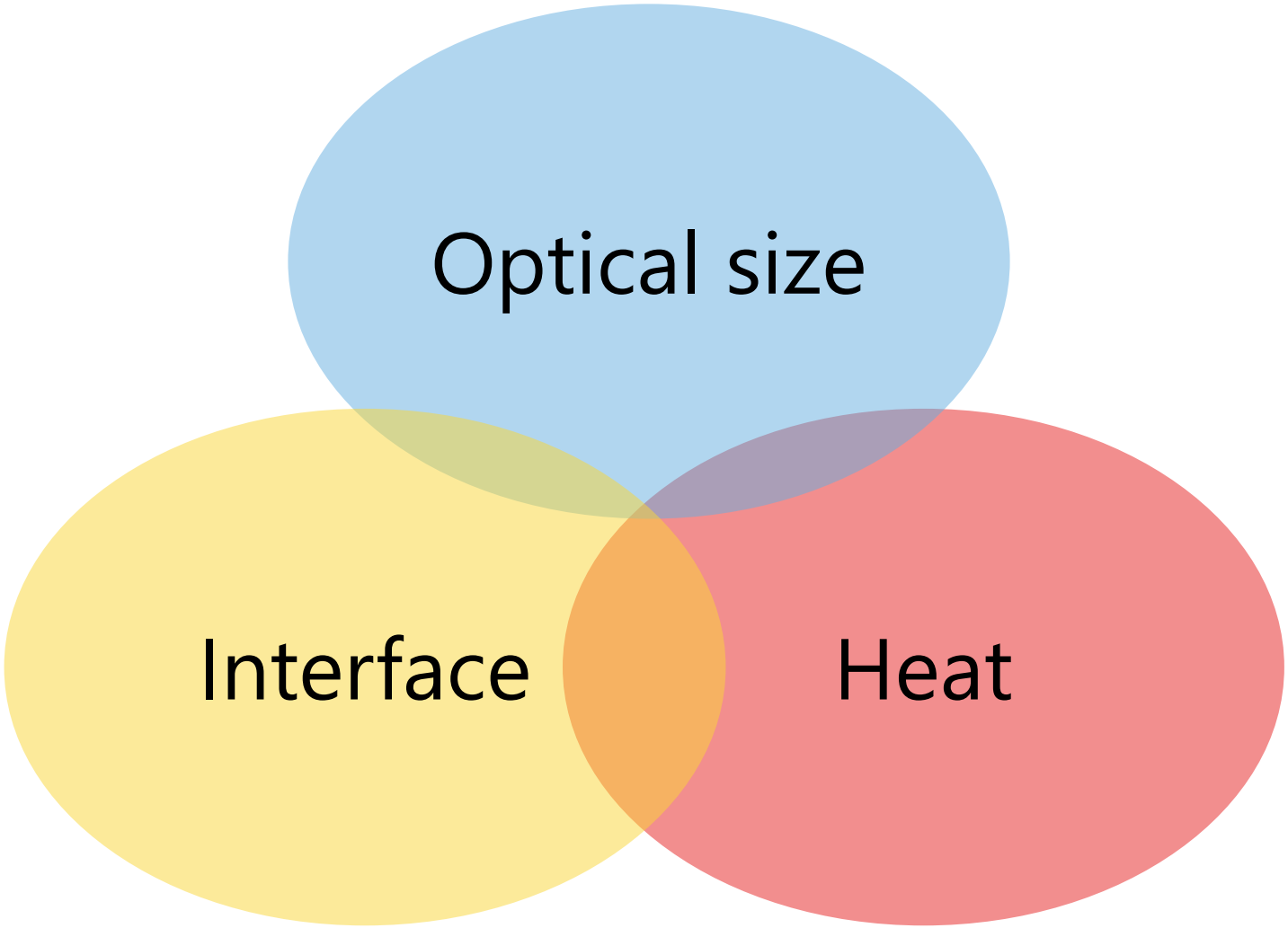
Task



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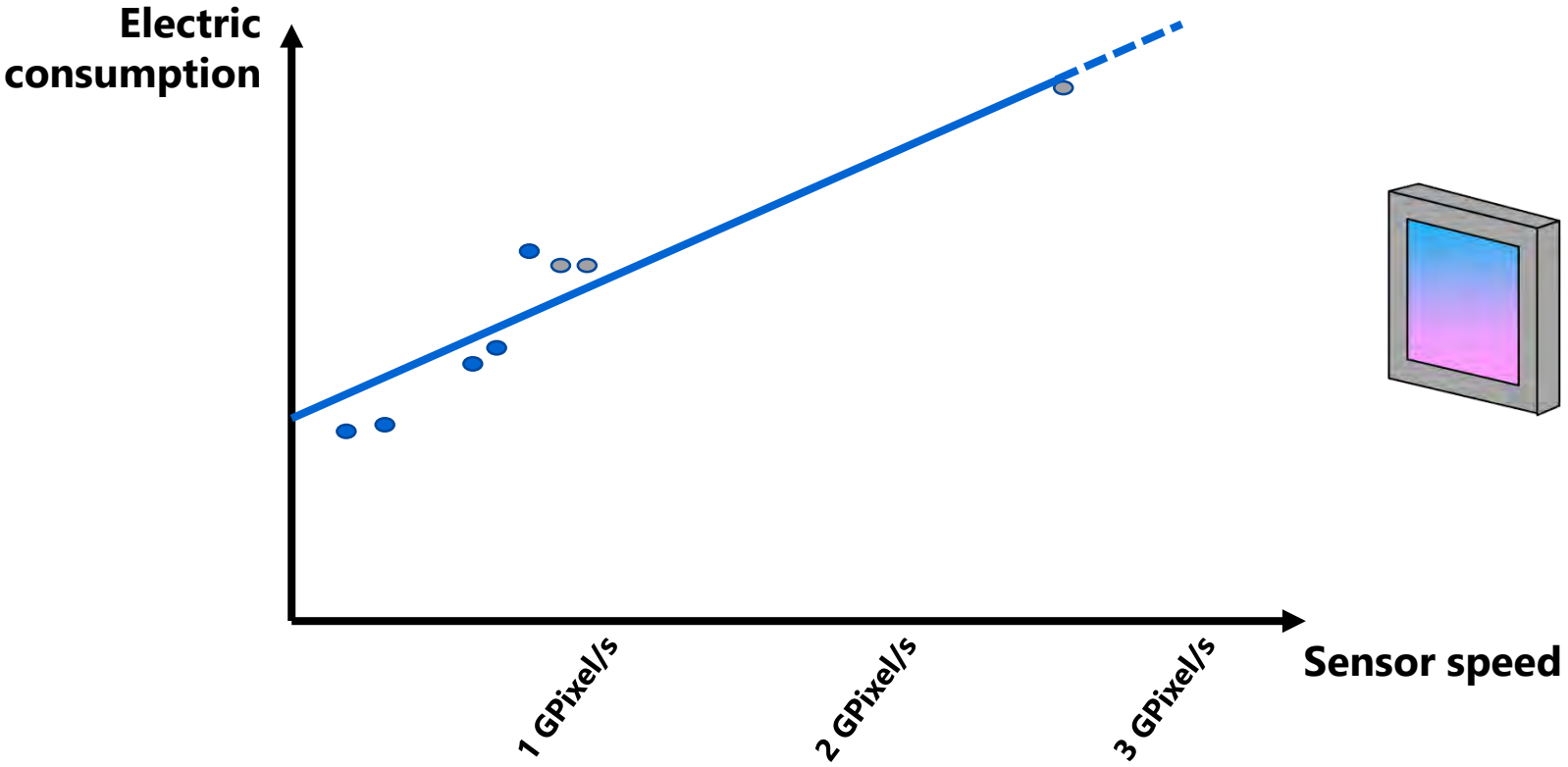
Task - Heat

Electric consumption of image sensor alone



Electric consumption is proportional to Sensor speed

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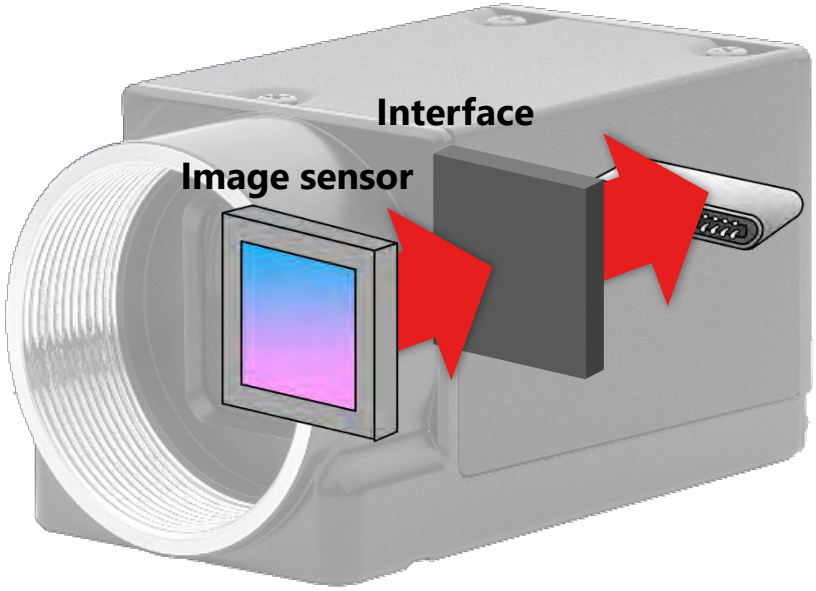
Task - Heat



Heat elimination is the task of image sensor and Interface

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03

Proposal by Toshiba Teli

~ Toshiba Teli's optimal solution ~

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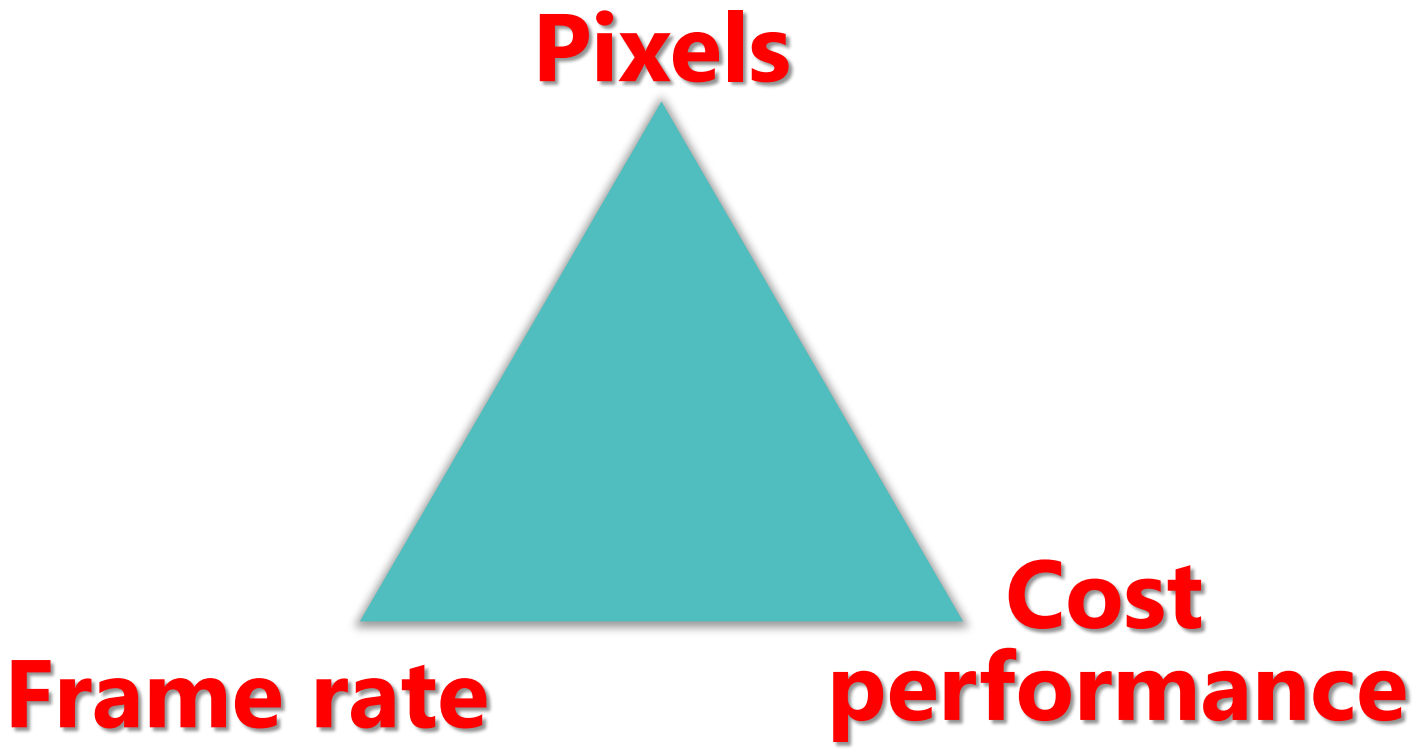
Proposal by Toshiba Teli



How to balance?

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Proposal by Toshiba Teli

Plan

4th generation Pregius S camera

Bandwidth 5G

Specifications

Imager	Sony IMX530
Resolution	24M (5,320x4,600)
Pixel Size	2.74μm x 2.74μm
Opt. Format	1.2 type
Frame Rate	TBD
Interface	USB3.1 Gen1

Cost performance is important

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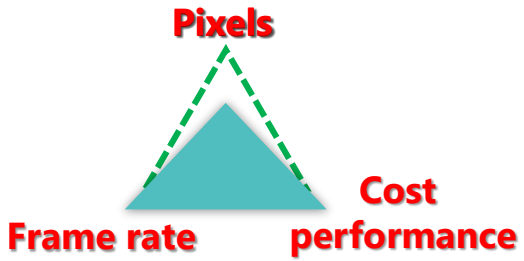
On sale

DDU1207MG/MCG/MCF



Dual Bandwidth 10G

Specifications

Imager	Sony IMX253
Resolution	12M (4,096x3,000)
Pixel Size	3.45μm x 3.45μm
Opt. Format	1.1 type
Frame Rate	60 fps
Interface	USB3.1 Gen1 2-Lane

Pioneer of Dual USB3 interface

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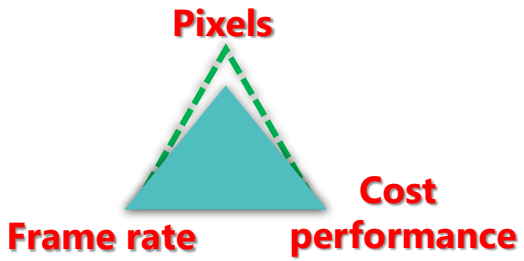
Plan

New Dual USB3



Dual Bandwidth 10G

Specifications

- Imager TBD
- Resolution 16M（TBD）
- Pixel Size TBD
- Opt. Format TBD
- Frame Rate TBD
- Interface USB3.1 Gen1 2-Lane

Both of Frame rate and Cost performance

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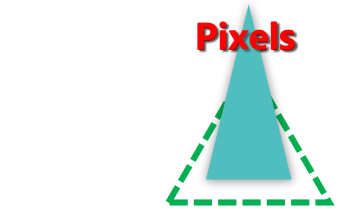
Plan

120M Pixel camera



Bandwidth 25G

Specifications

- Imager — Canon 120M
- Resolution — 120M（13,280x9,167）
- Pixel Size — 2.2μm x 2.2μm
- Opt. Format — APS-H
- Frame Rate — 9.39fps
- Interface — CXP6 4-Lane

Concentrate on Pixels

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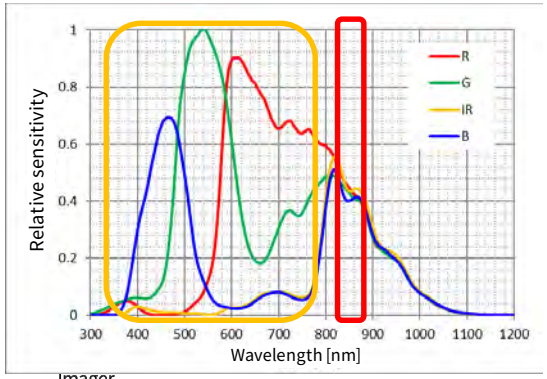
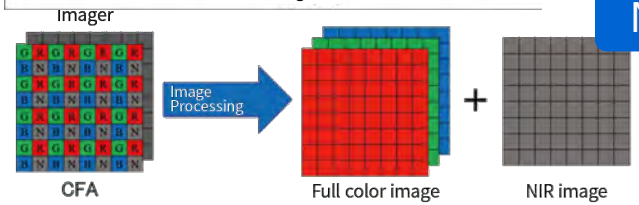
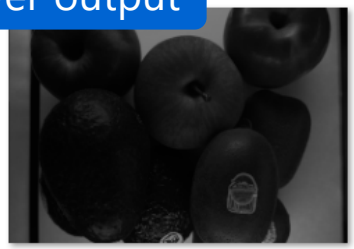
Proposal by Toshiba Teli





White LED Irradiation

Bayer output



RGB image

NIR image

NIR860nm LED Irradiation

Bayer output

RGB image

NIR image

Demonstrating a camera equipped with RGB+NIR filter sensor

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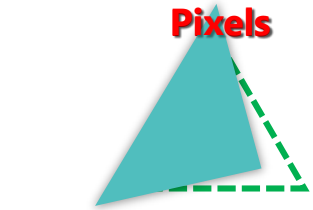
Proposal by Toshiba Teli

Plan

CoaXPress 2.0 camera



Specifications

Imager	Gpixel GMAX6532
Resolution	65M（4,096x3,000）
Pixel Size	3.2μm x 3.2μm
Opt. Format	APS-H +
Frame Rate	76fps
Interface	CXP12 4-Lane

Both of Pixels and Frame rate

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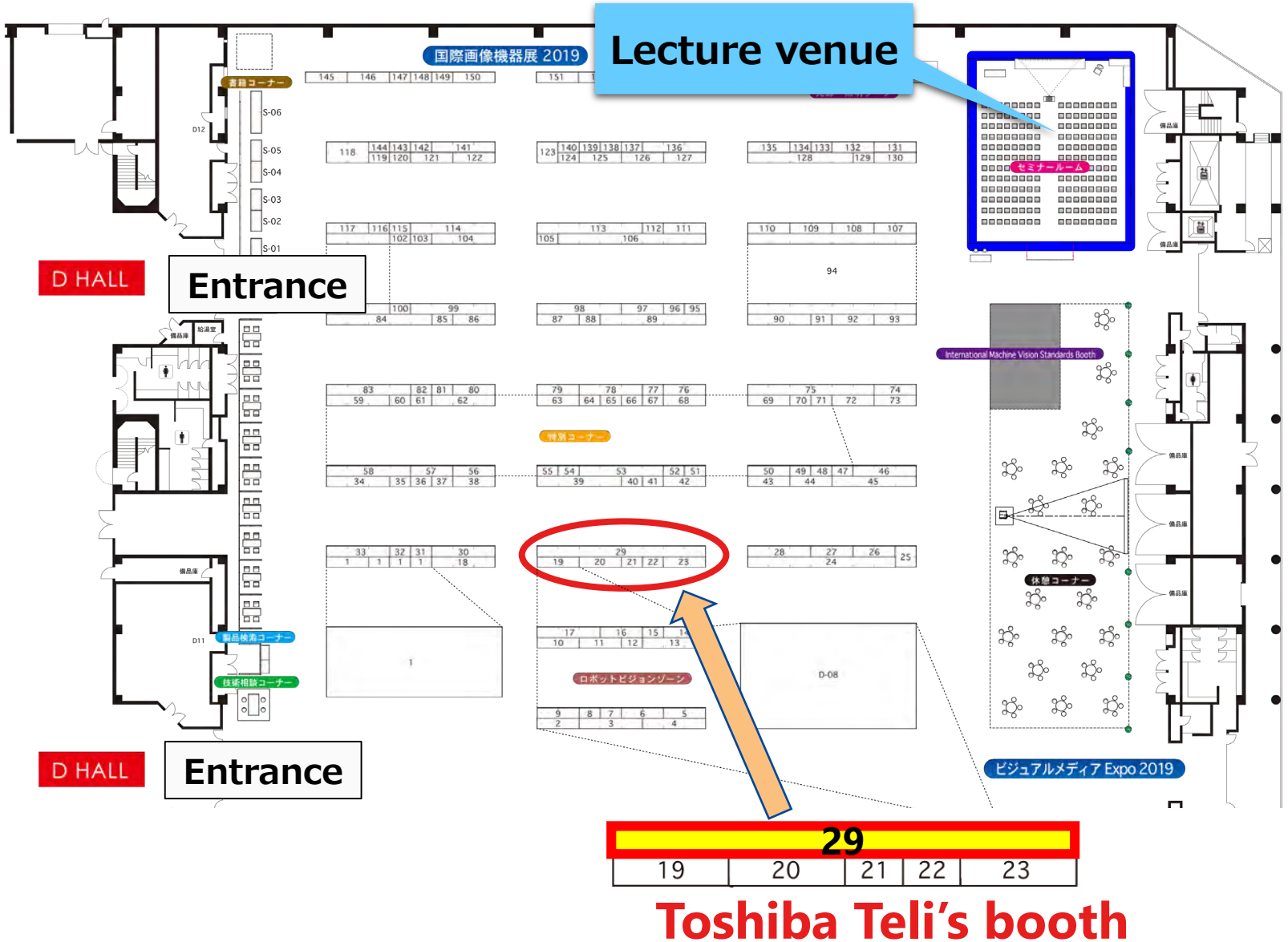
Directory of Toshiba Teli's booth



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新しい未来を始動させる。

We turn on the promise of a new day.

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