

# ESPROS Photonics Corporation

## Key Technology of the 21<sup>st</sup> Century

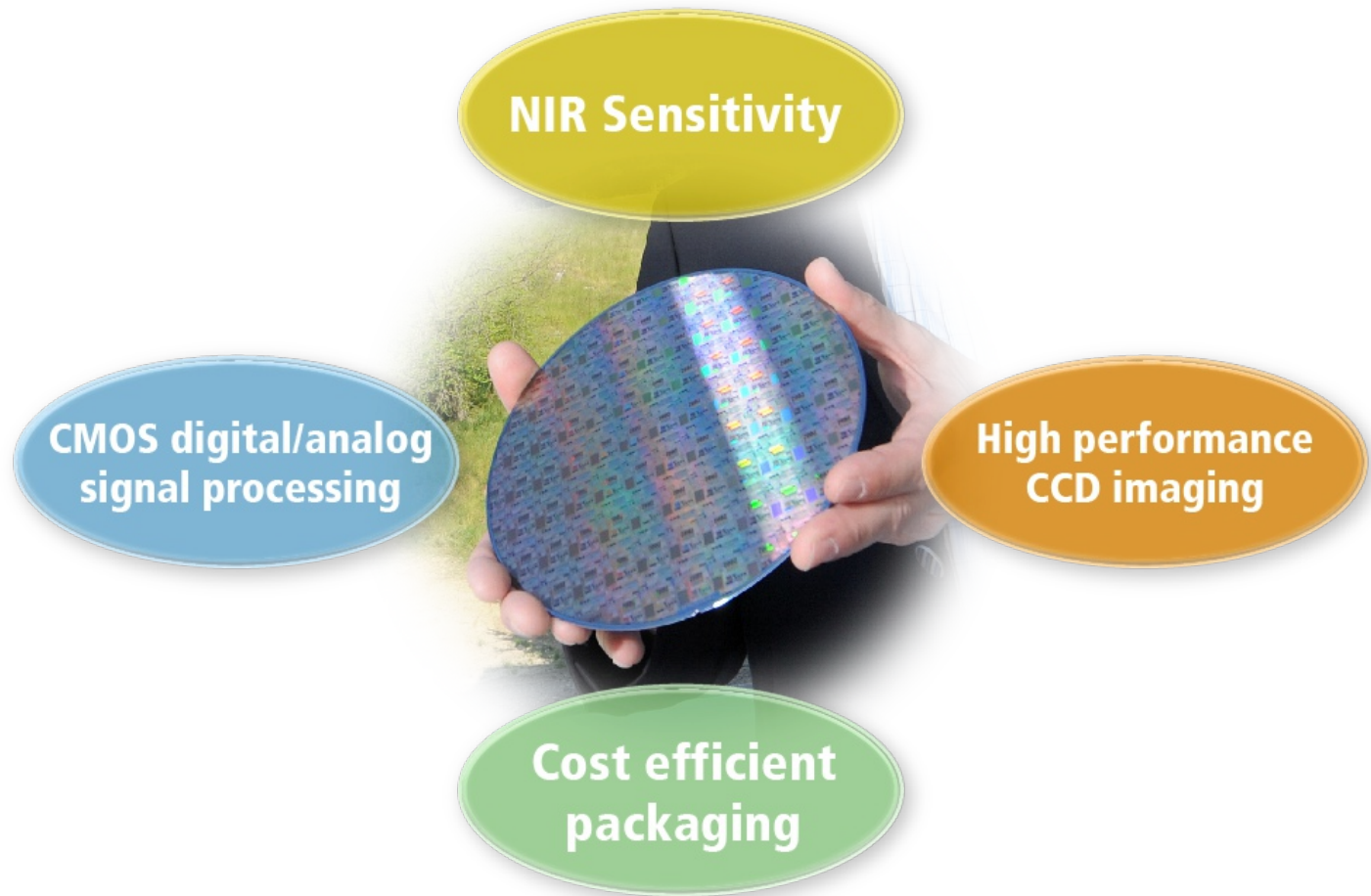
High Speed, Backside Illuminated 1024x1 Line  
Imager with Charge Domain Frame Store in  
Espros Photonic CMOS™ Technology

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Espros Photonics AG, Sankt Galler Strasse 135, CH-7320 Sargans, Switzerland

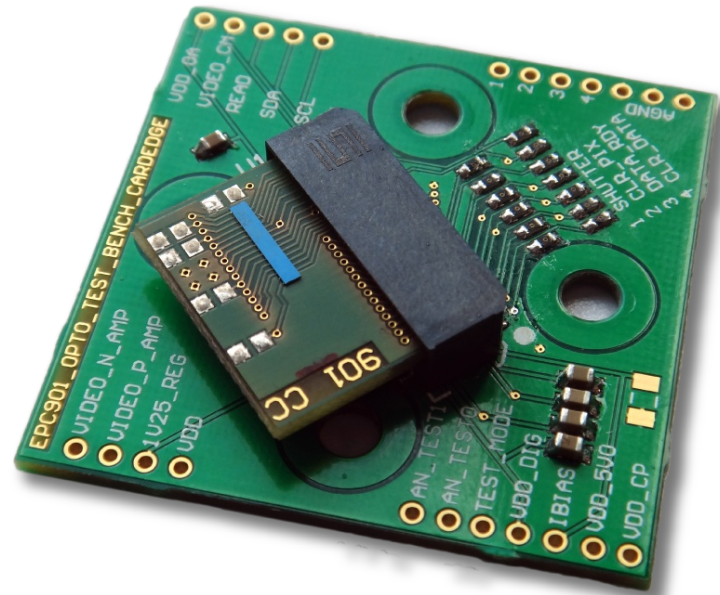
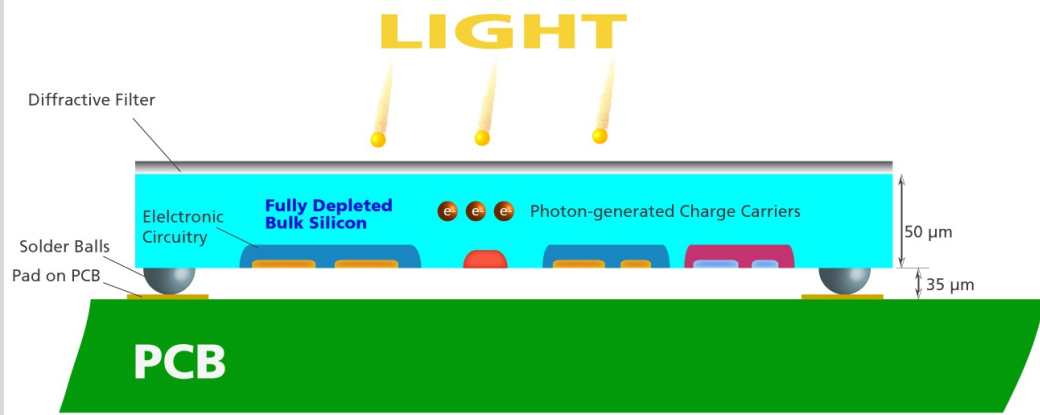
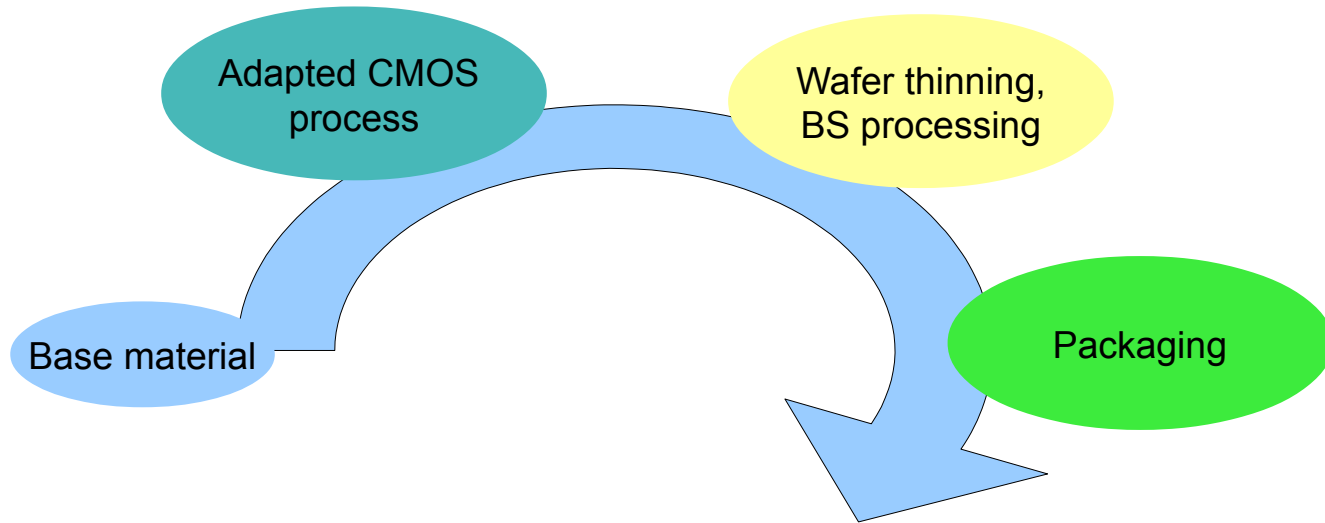
IISW2013 Snowbird, UT  
June 15<sup>th</sup>, 2013

# Our Goal

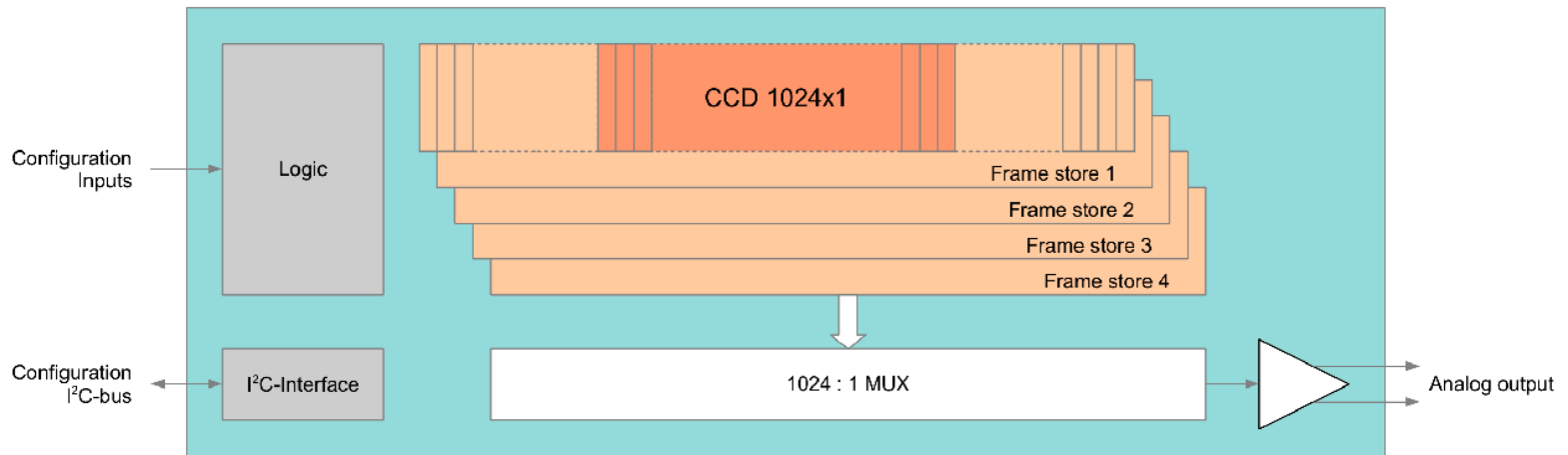


**Provide high performance yet cost efficient solutions  
for special imaging applications**

# Our approach



# The application



## Key requirements:

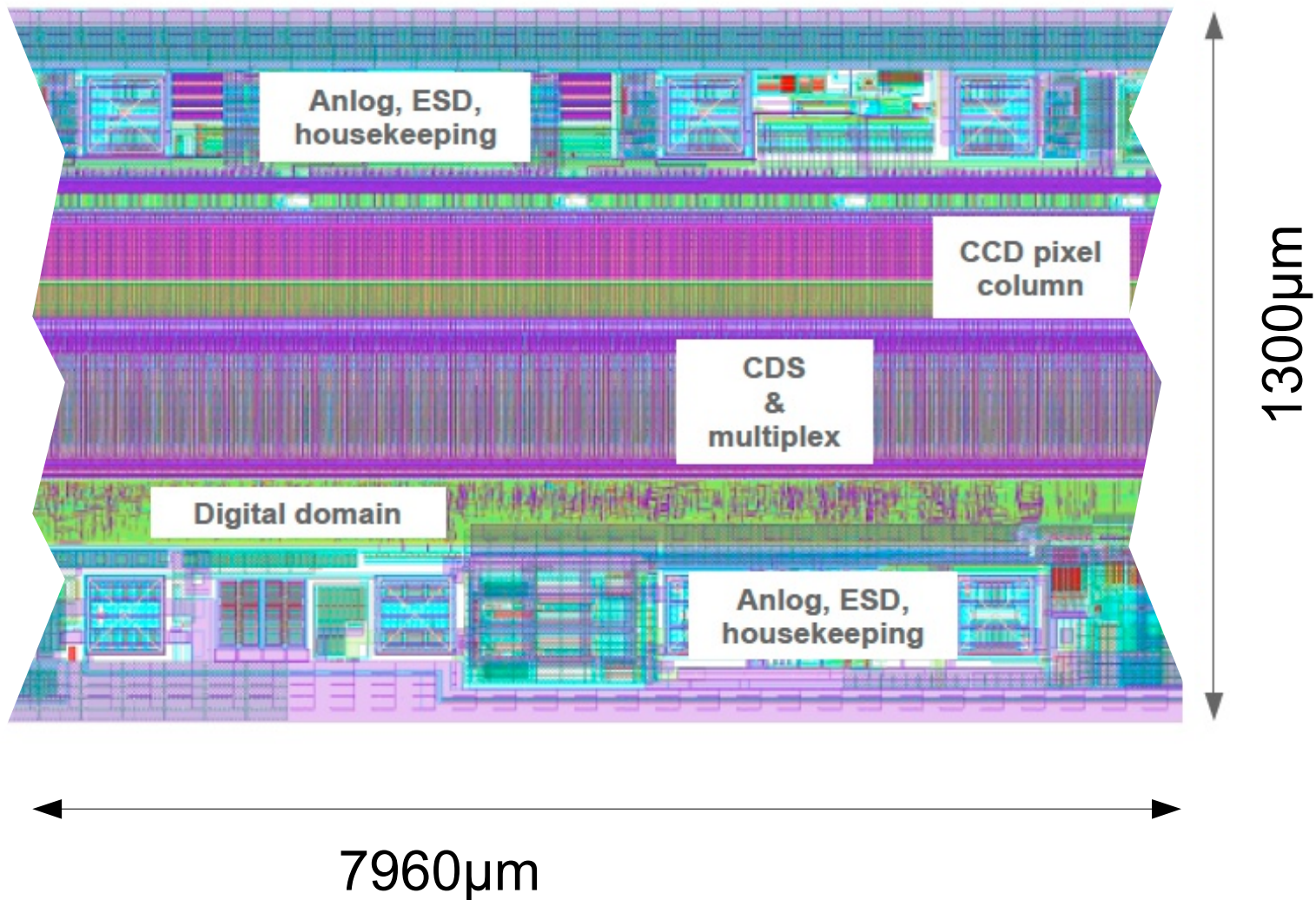
**1024 pixels: 7.5 $\mu$ m x 120 $\mu$ m**

**Single analog video out up to 50klines/s**

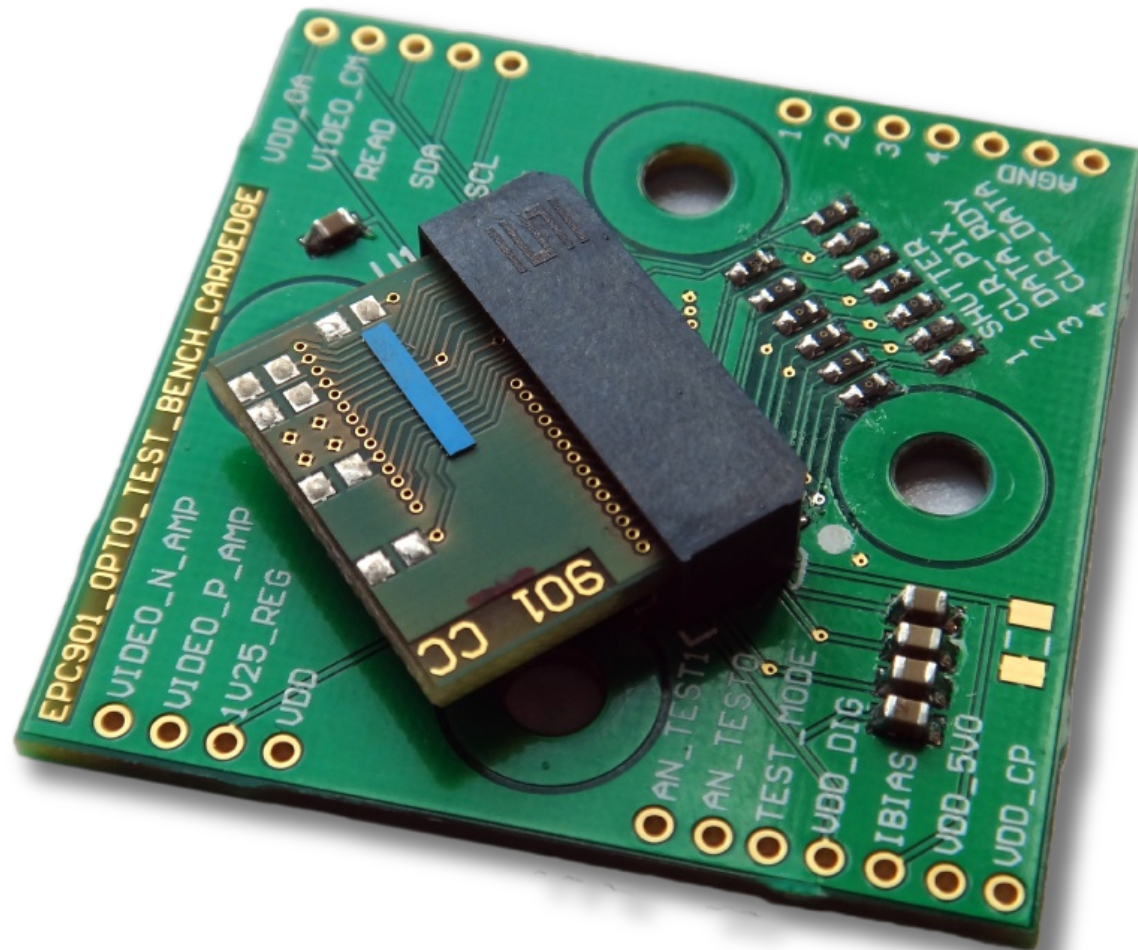
**High-speed frame store: burst rate 500klines/s**



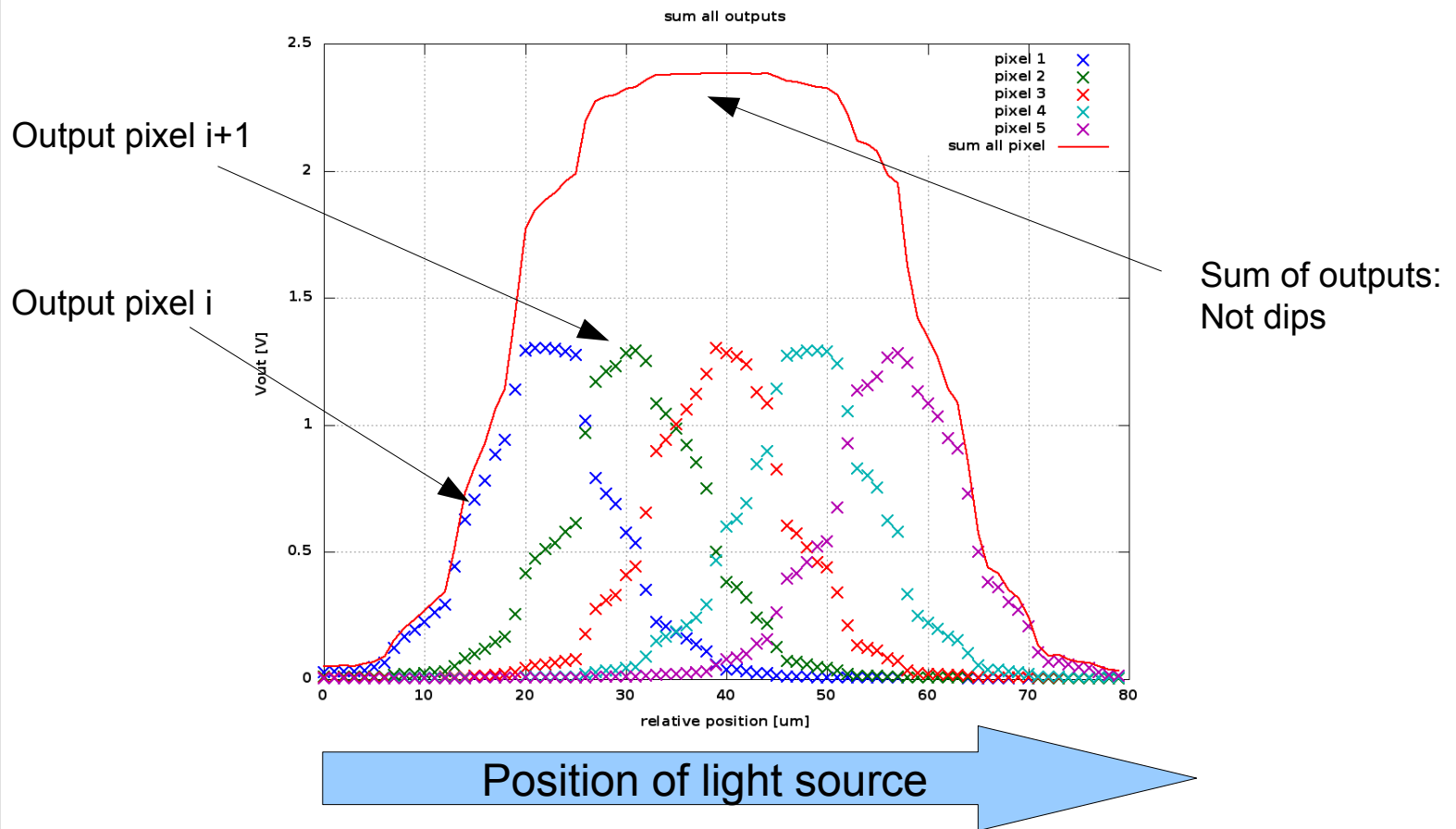
# The product



# The product



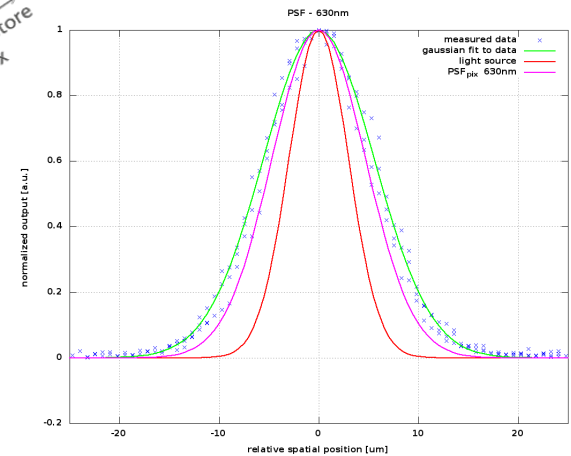
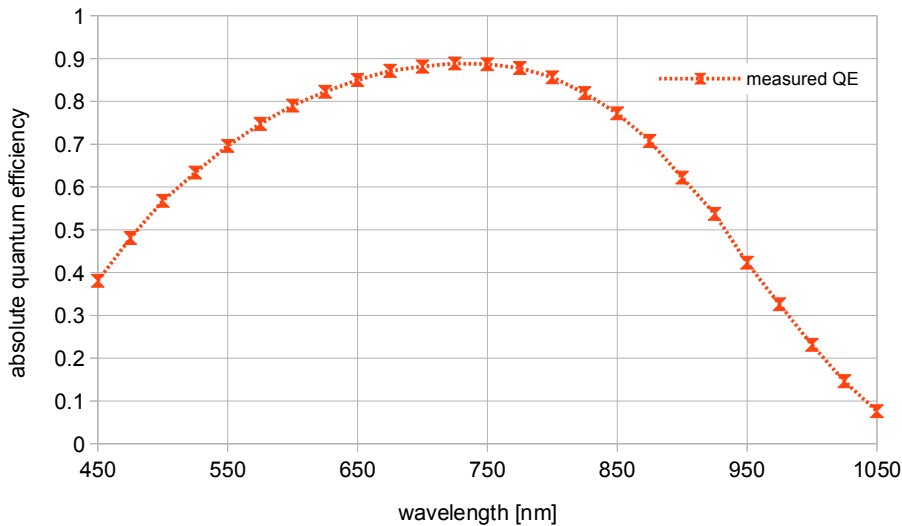
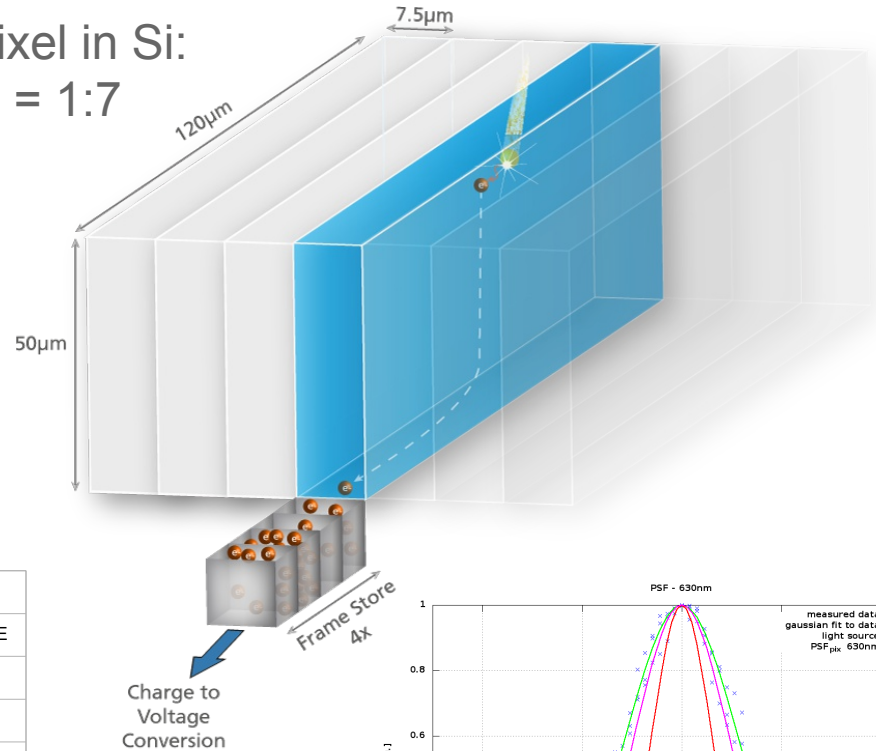
# The Pixel: Fill factor



Scan point light source across pixel field:  
No dips in summed intensity observed  
==> 100% fill factor

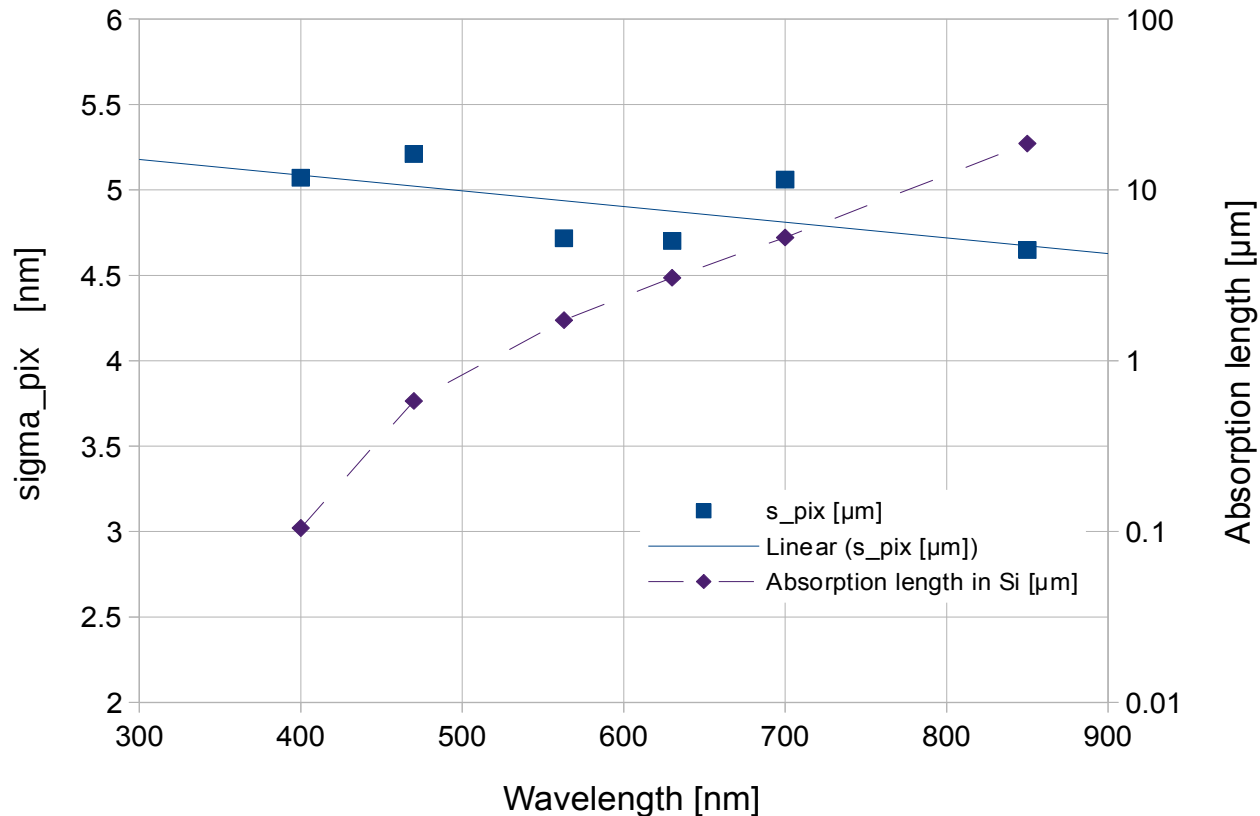
# The Pixel: QE & resolution

Geometrical aspect ratio of pixel in Si:  
 $7.5\mu\text{m}$  (pitch) /  $50\mu\text{m}$  (height) = 1:7



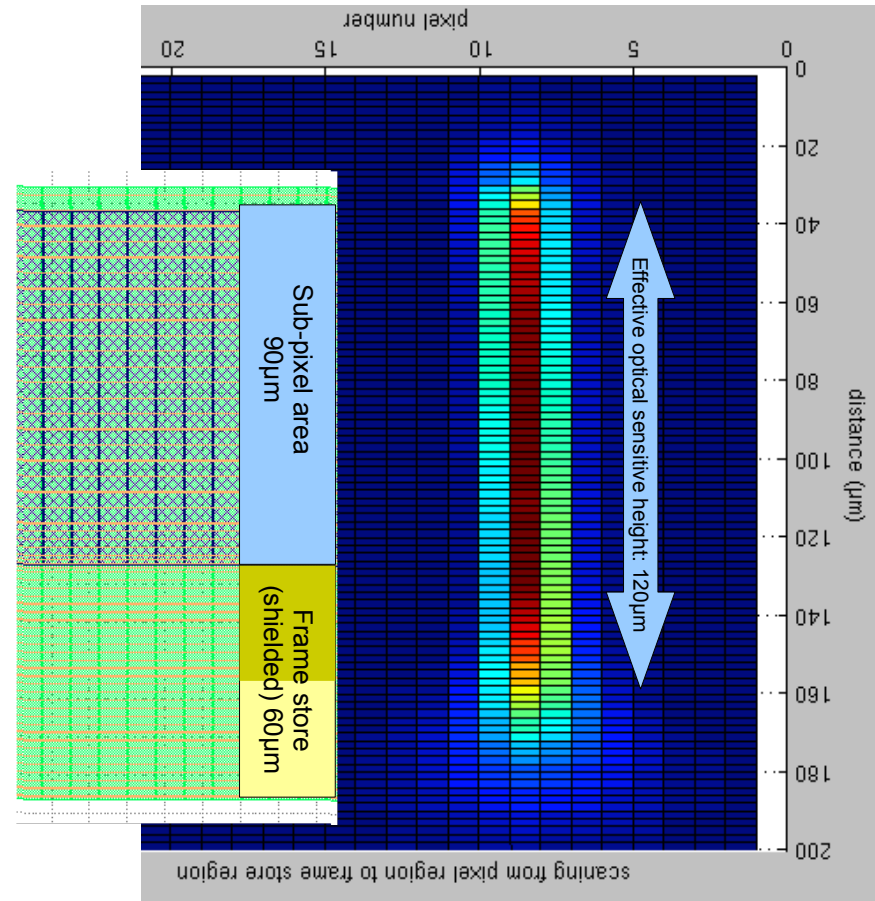
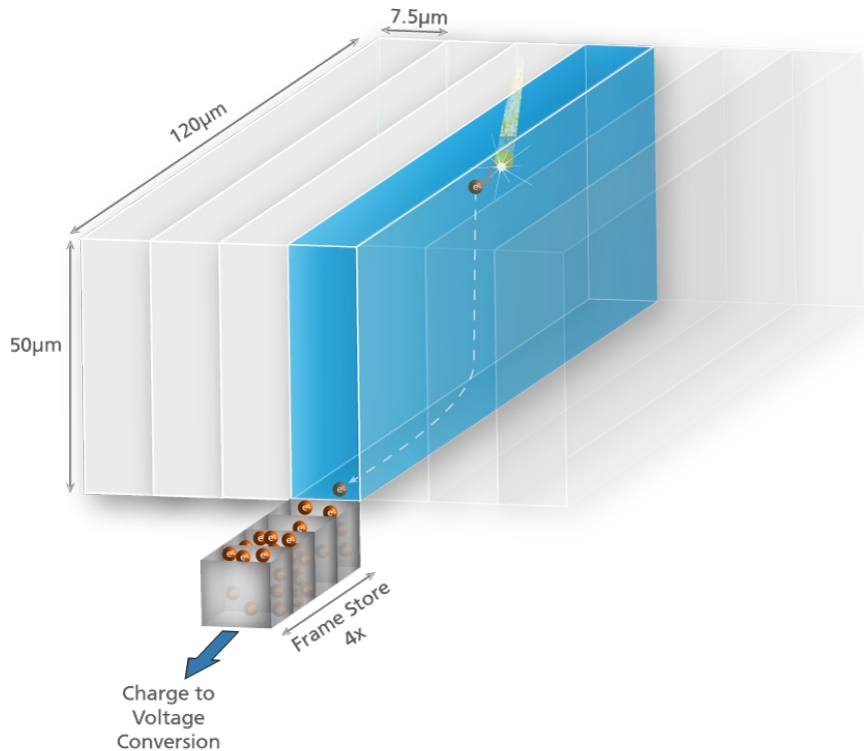


# Resolution vs. wavelength



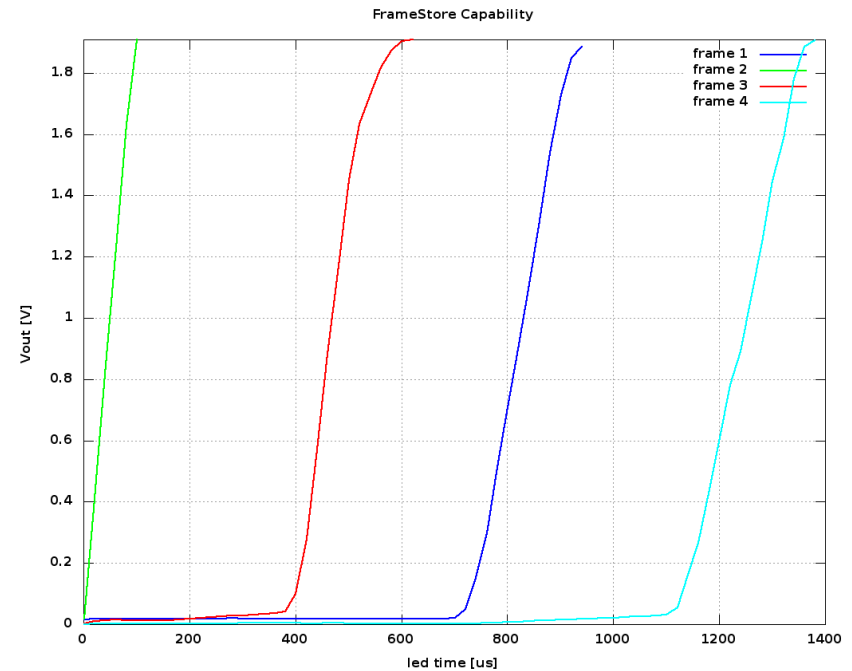
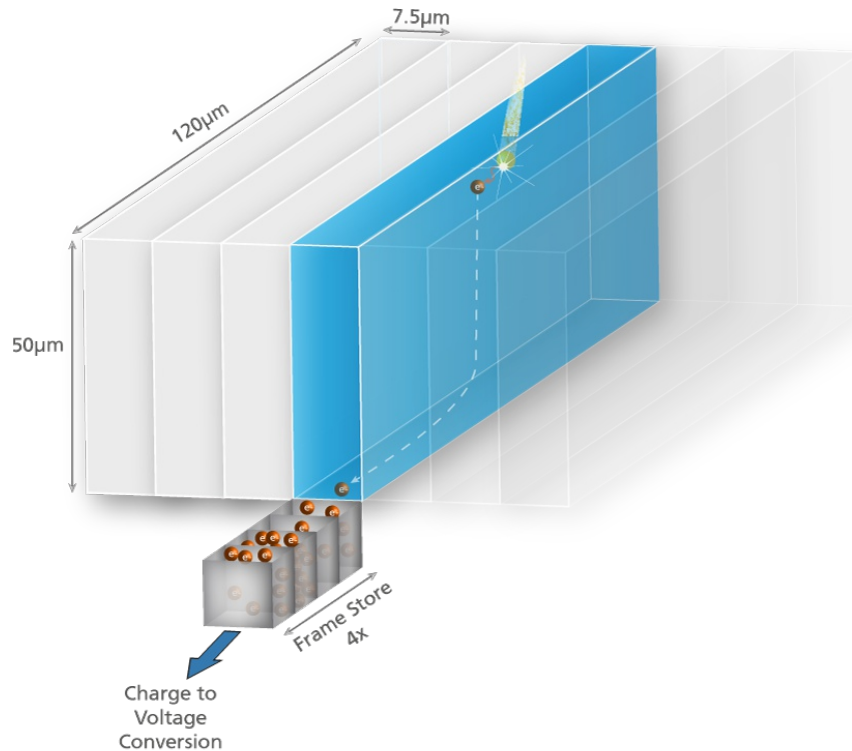
Spatial resolution is constant over wide wavelength range  
 → high-res NIR imaging becomes possible

# Frame store: Resolution



No impact on resolution by charge collection close to frame store

# Frame store: Parasitic light sensitivity



No impact by illumination in FS area up to 7x max. signal amplitude  
Limiting factor: charge spill-over

# Summary

CMOS-CCD technology with backside illumination

High-QE over broad wavelength range

Application example: Line imager

Charge domain frame store

Constant PSF from blue to NIR

Other applications can be addressed

# Thank you!

**more Info ...**  
Marketing & Sales

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24.06.13