SENSE

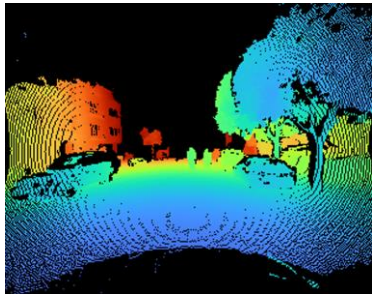
Intelligent 3D Vision Systems

EPIC Online Technology Meeting on 3D Sensing

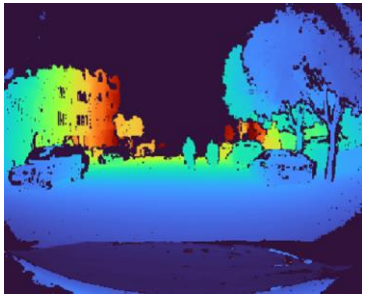
November 23, 2020

Hod Finkelstein, CTO, Sense Photonics

Sense Photonics proprietary images



Point Cloud



Depth Image

Intensity Image

RGB-D Image

THE WORLD'S MOST POWERFUL 3D PERCEPTION SYSTEM

- Dramatically richer data
- Proven and cost-effective solution
- Simple, manufacturable, camera-like Flash architecture

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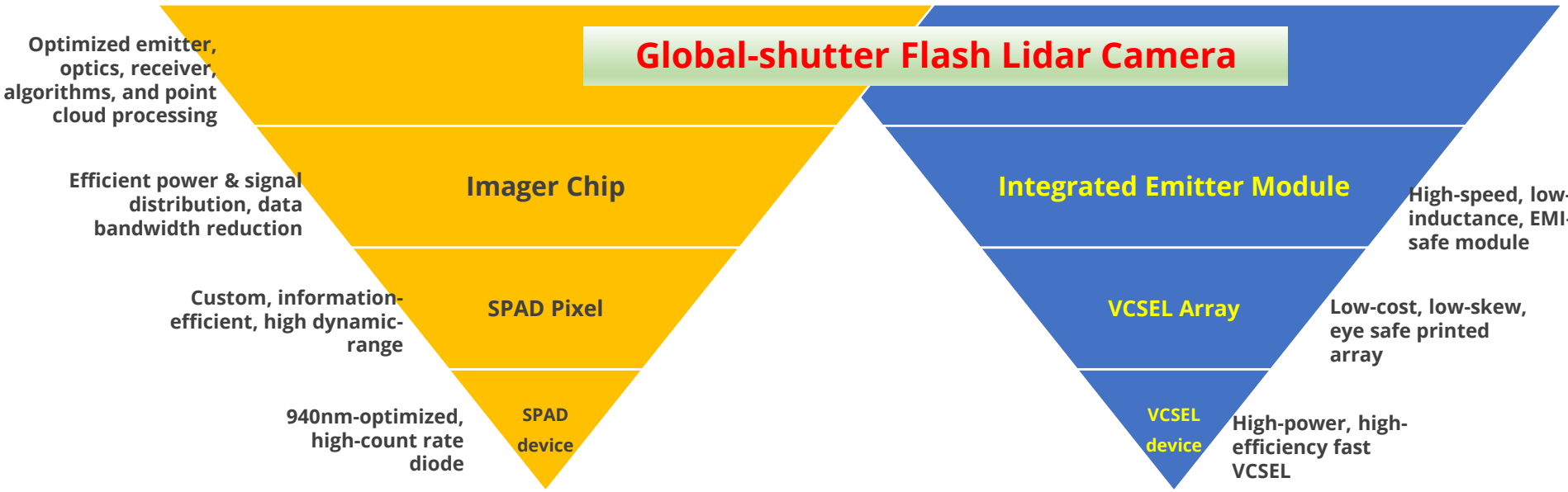
Optimized manufacturable solution

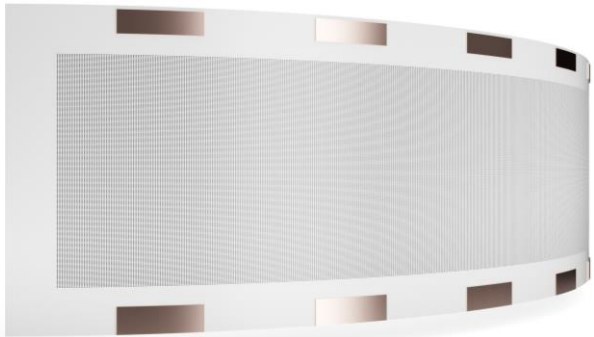
Application-specific architecture



Standard semiconductor technologies harnessed to provide a non-scanning 3D camera

Global Shutter Flash LiDAR

Enabled by Innovative Components



Sense Illuminator

Laser Array of 10,000+ VCSELs custom printed on heat-conducting flexible substrate

Sense Silicon

Backside illuminated CMOS SPAD array with >100,000 pixels for 100 klux operation

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Sense Photonics

Tech Advantages

	Sense Flash	MEMS	Macro Mirrors	Optical Phased Array	Rotating
100% solid-state reliability	✓	✗	✗	✓	✗
High-resolution at high frame rate	✓	✓	✗	✗	✗
Global shutter output	✓	✗	✗	✗	✗
RGB fusion without timestamp correction for motion blur	✓	✗	✗	✗	✗
Low BOM cost with easy assembly, calibration, alignment	✓	✗	✗	✗	✗

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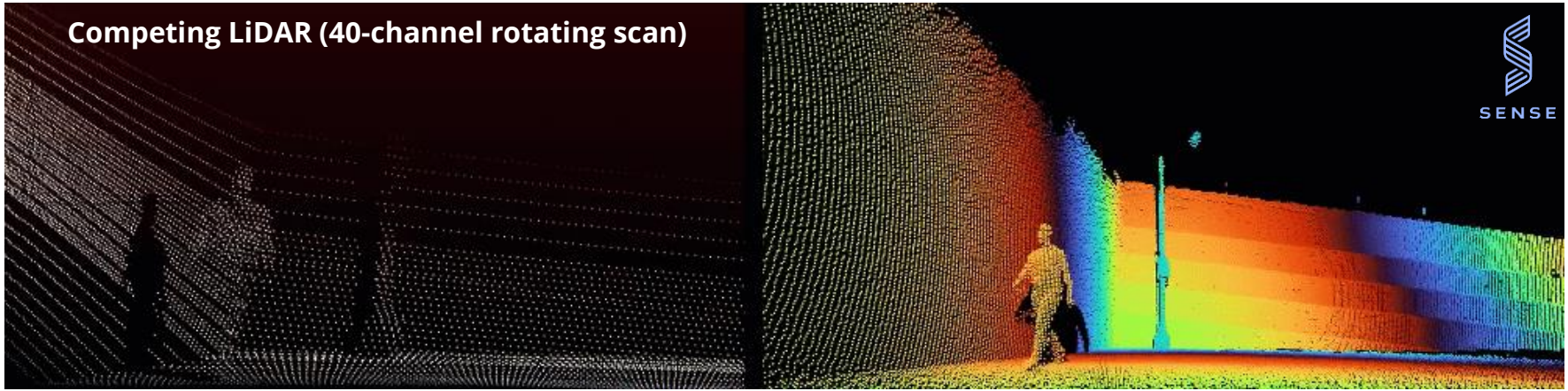
Flash Architecture
Output Comparison



- ✕ Limited laser channels in vFOV
- ✕ Non-uniform line distribution with gaps
- ✕ Individual timestamp for motion blur correction (ex: rolling shutter)

- Resolution defined by # pixels, not # lasers
- High-res data without vertical gaps
- Full frame of pixels captured simultaneously (global shutter)

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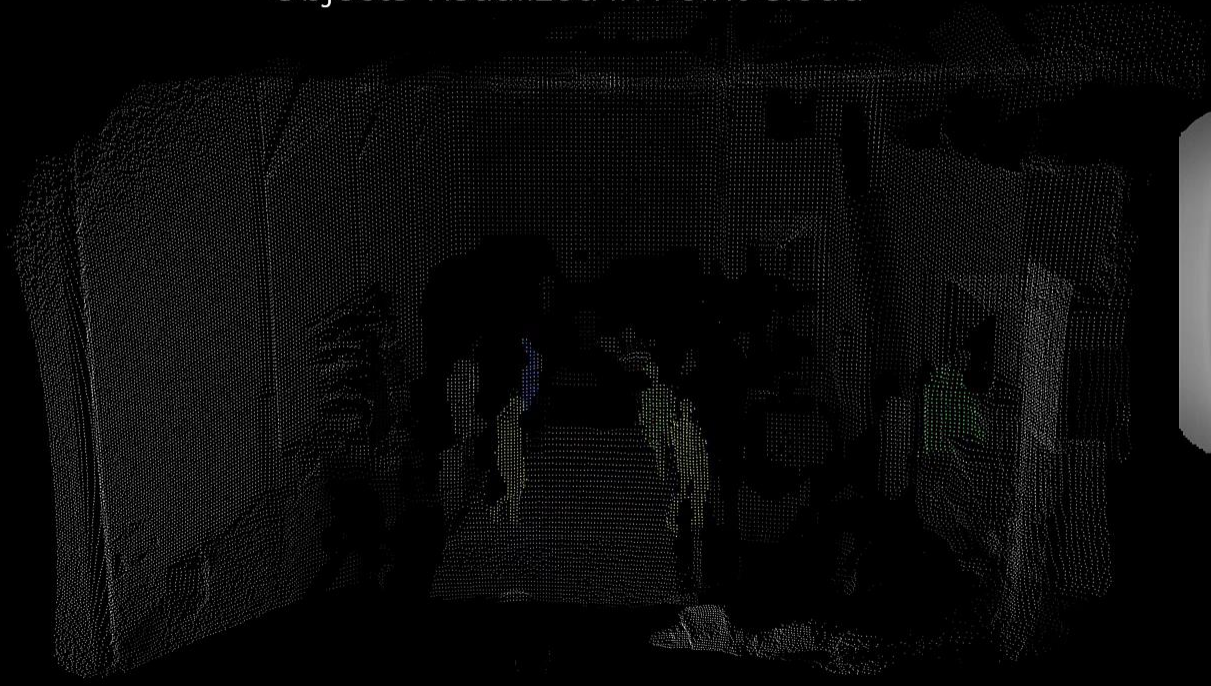
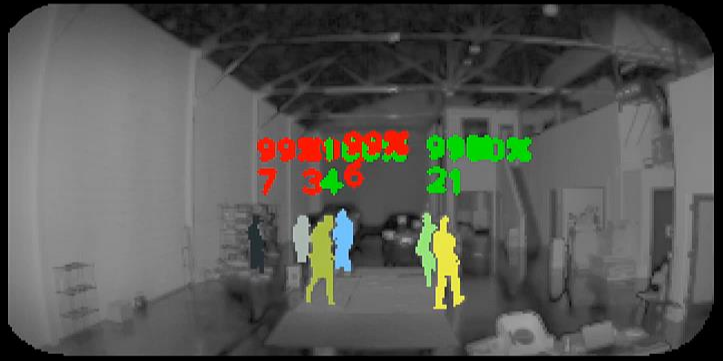
Sense AI

Objects Visualized in Point Cloud



Sensor Intensity Data



Collaboration
Potential Areas

- Beam shaping optics
- Commercial collaborations for lidar deployment

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Thank You