



# spaceCoder™ for metrology

## Position measurement solution

CSEM's spaceCoder technology is a patented customizable optical solution that transforms shadow imaging into a precise absolute nanometric position measurement.

The image computation task can be stand-alone, remotely executed from the sensory part, or embedded next to the sensor. Miniaturisation may reach various integration levels: classical DSP next to the sensor on a PCB, or a step beyond with Vision-In-Package (VIP) solutions, or even further in a programmable system on chip (spaceCoder SOC-V1 ASIC).

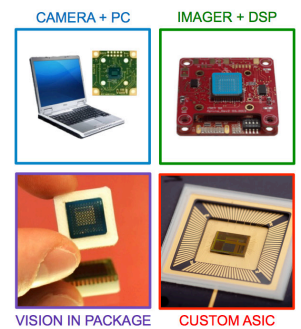
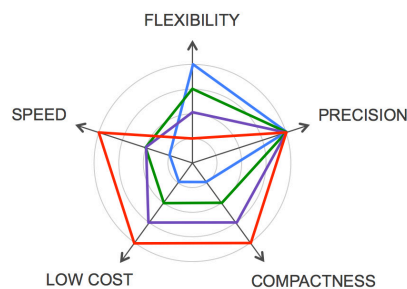
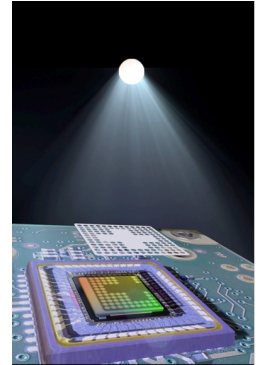
### Features

- Absolute position of a light source
- Nanometric precision at sensor level (X,Y and Z > 25 nm depending on the distance of the light source position)
- Robust, precise, accurate, stable, repeatable
- No lenses – flat and compact
- Many configurations:
  - Linear or rotary optical encoders
  - Multidimensional : linear, 2D, 3D, 6D
  - 3D pointing device, human interfaces
- From ultraviolet to infrared spectrum
- Samples and evaluation kits are available

### Innovative concept

A light source projects the shadow of a particular pattern, located on a mask fixed onto the vision sensor. The processing of this shadow-image allows assessing the 3D position of the light source.

Every pixel of the sensor contributes to the measure.



### Applications using spaceCoder technology today



Precision Industry



Space (2D position)



Automotive (rotary encoders)



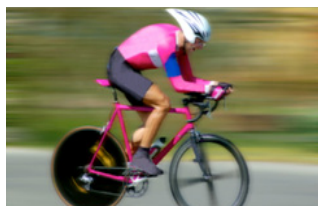
Medical (6D navigation)



Watch Industry  
(movement analysis)



Geo-positioning (sun tracking)



Sport  
(cycling performance analyzer)



User interface (3D mouse)