

3D
aero

White-light Interferometry for Automated Inspection
of
Jet Engine Components

Background – a joint venture of...



Industrial Sensors

Automation Experience

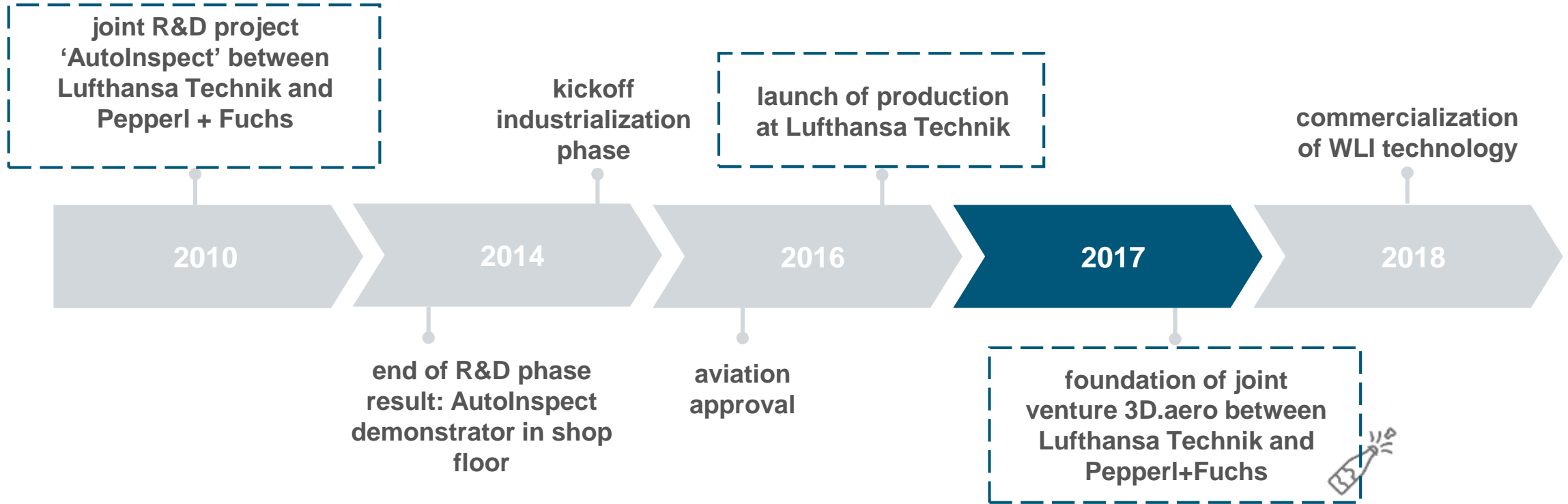


Experience in aircraft industry

strong need

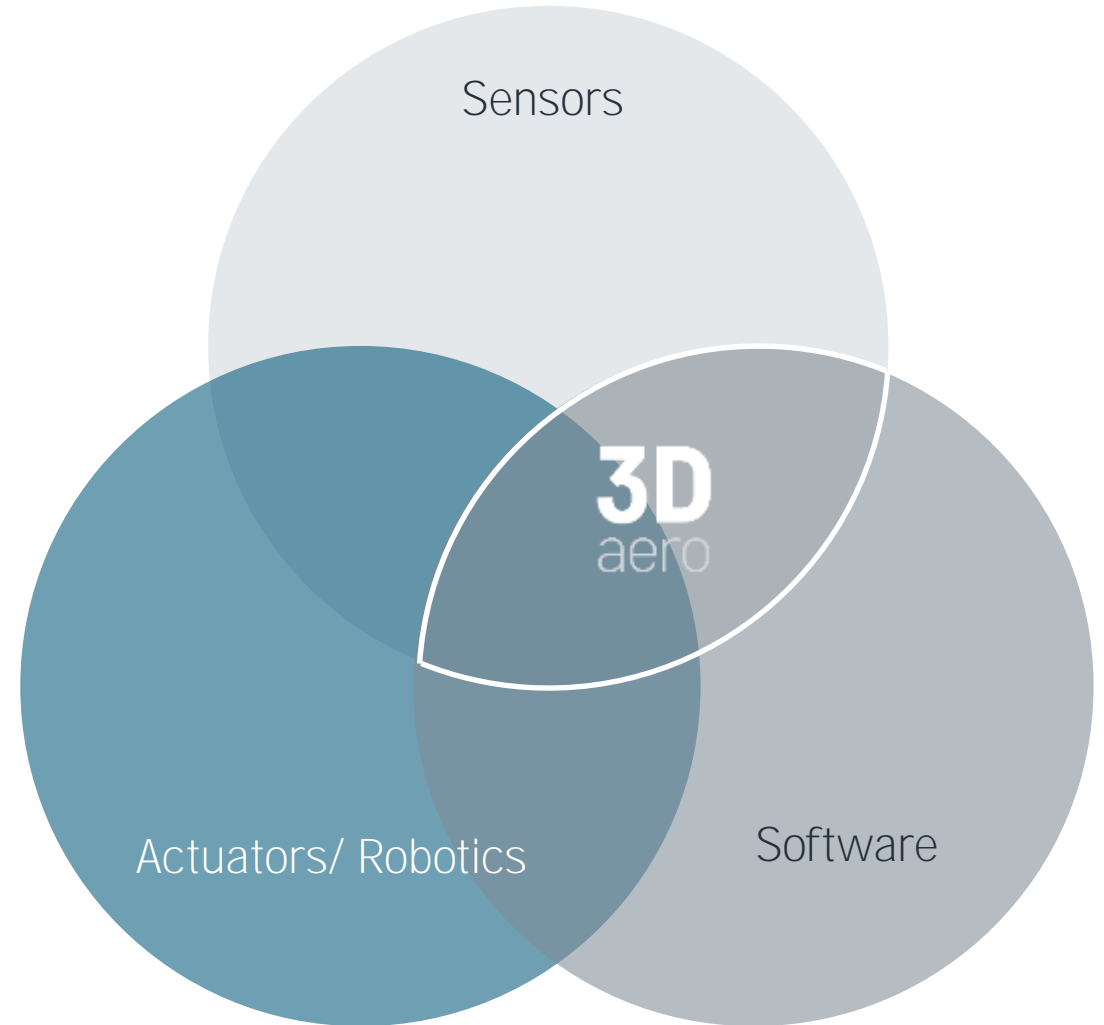


From R&D to start-up

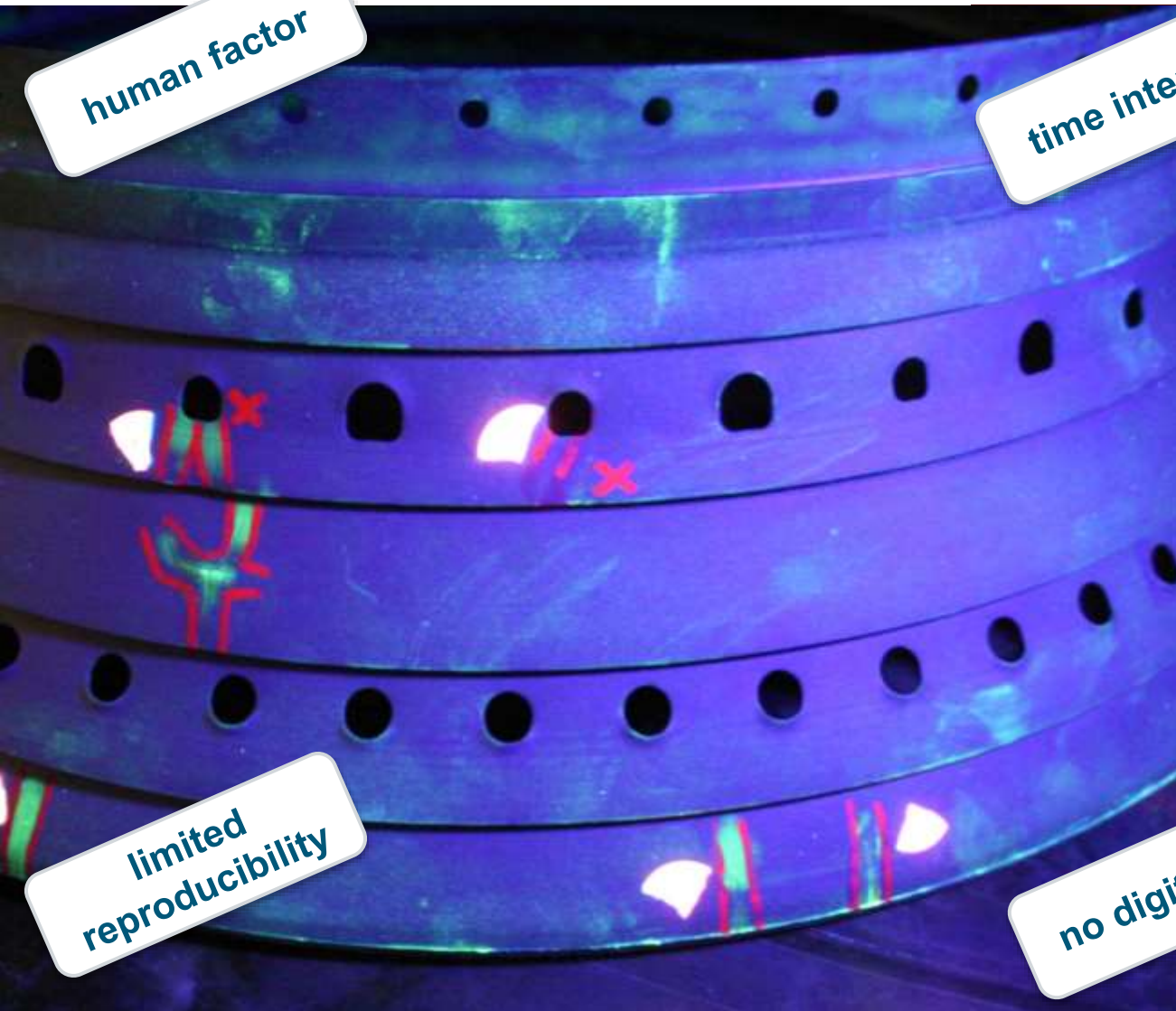




„intelligent enabler systems for
aircraft production and
maintenance“



Engine parts inspection and repair today



human factor

time intensive

limited reproducibility

no digital data



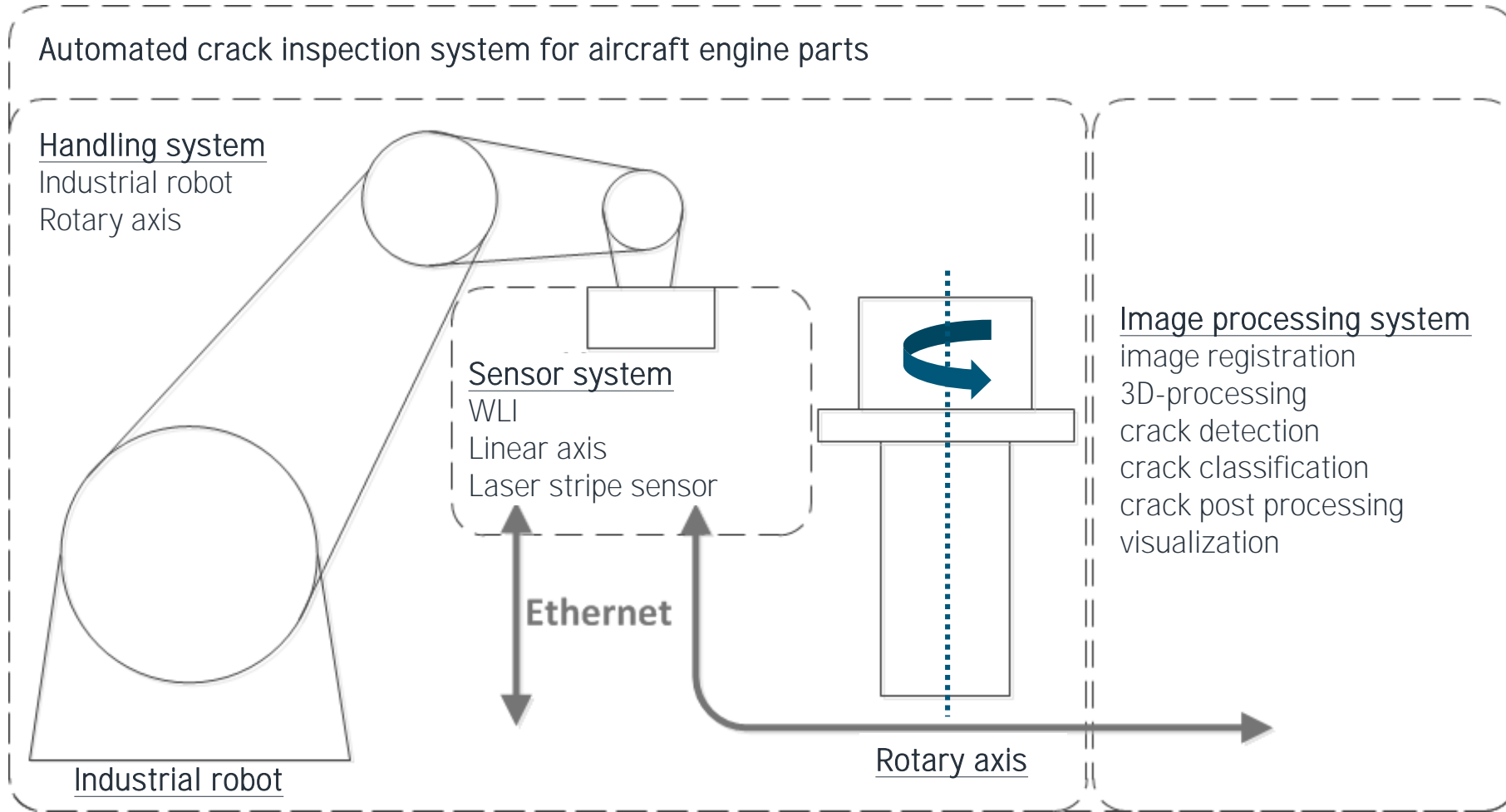
several process steps

limited ergonomics

Digital MRO requires digital inspection!

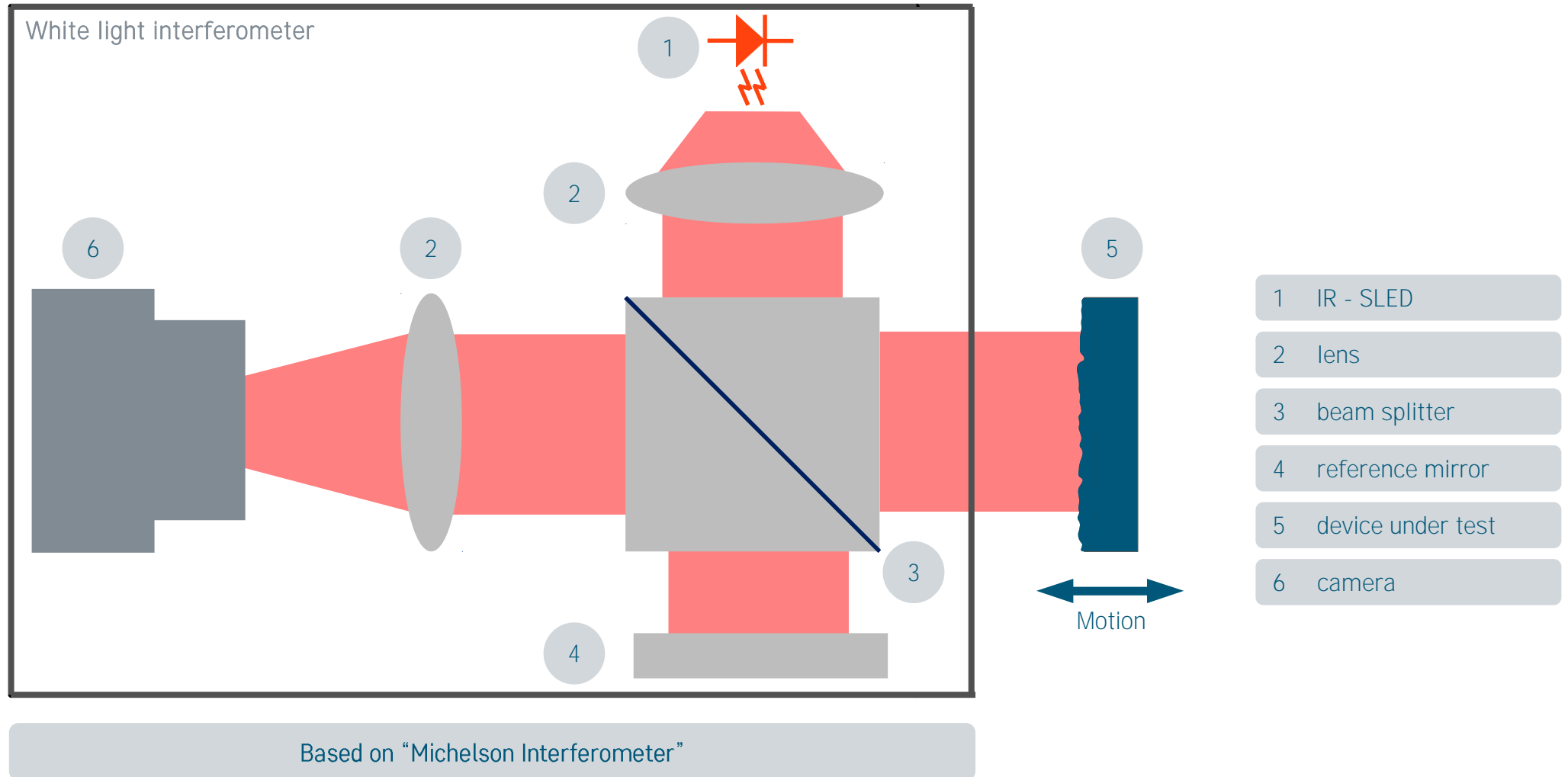
Crack inspection is one of the most common MRO processes

AutoInspect machine setup

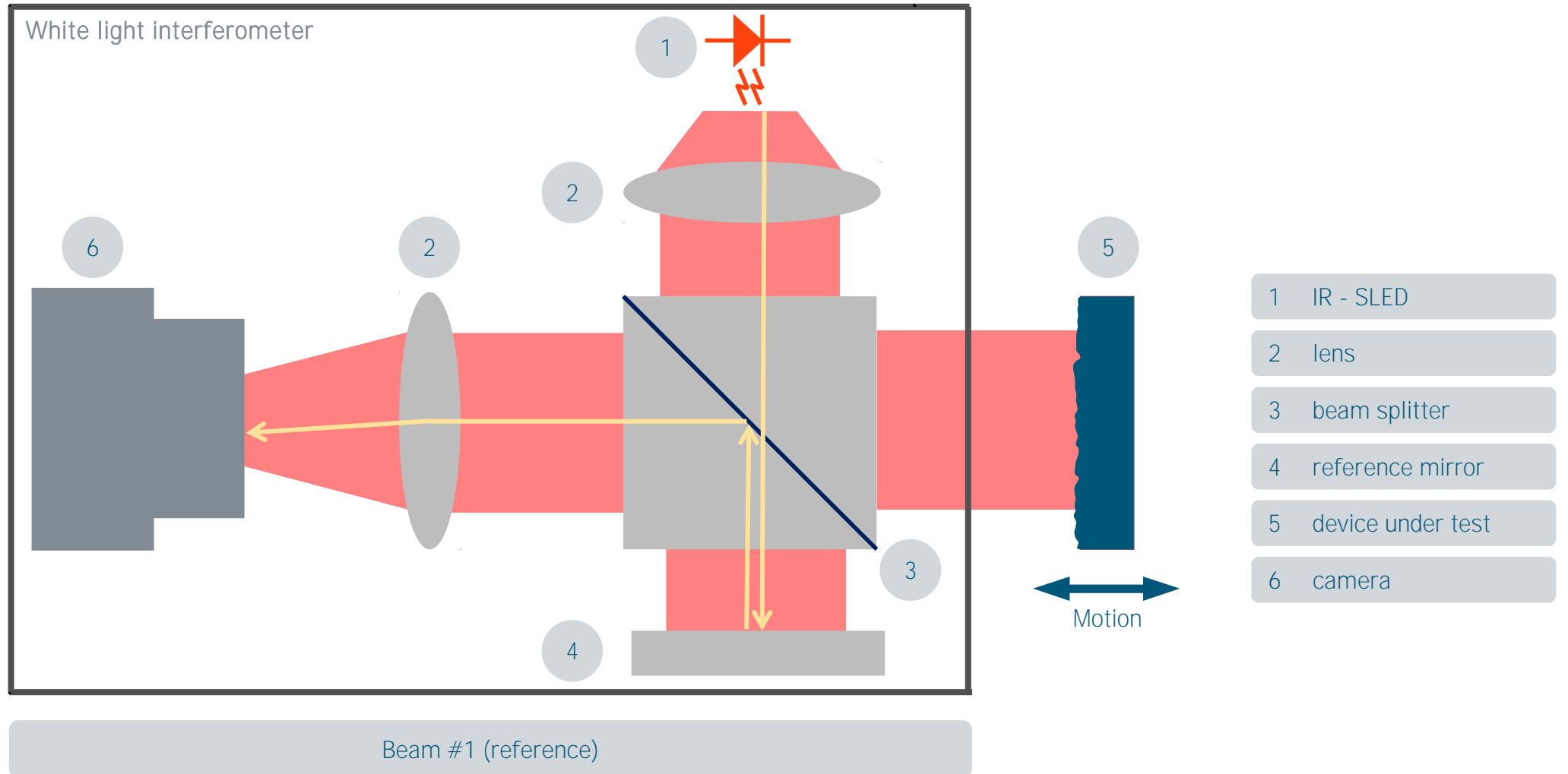


- 24/7 operation
- Patent granted EU/US
- 130 GB raw data per scan
- 100 nm vertical resolution
- ecological clean process

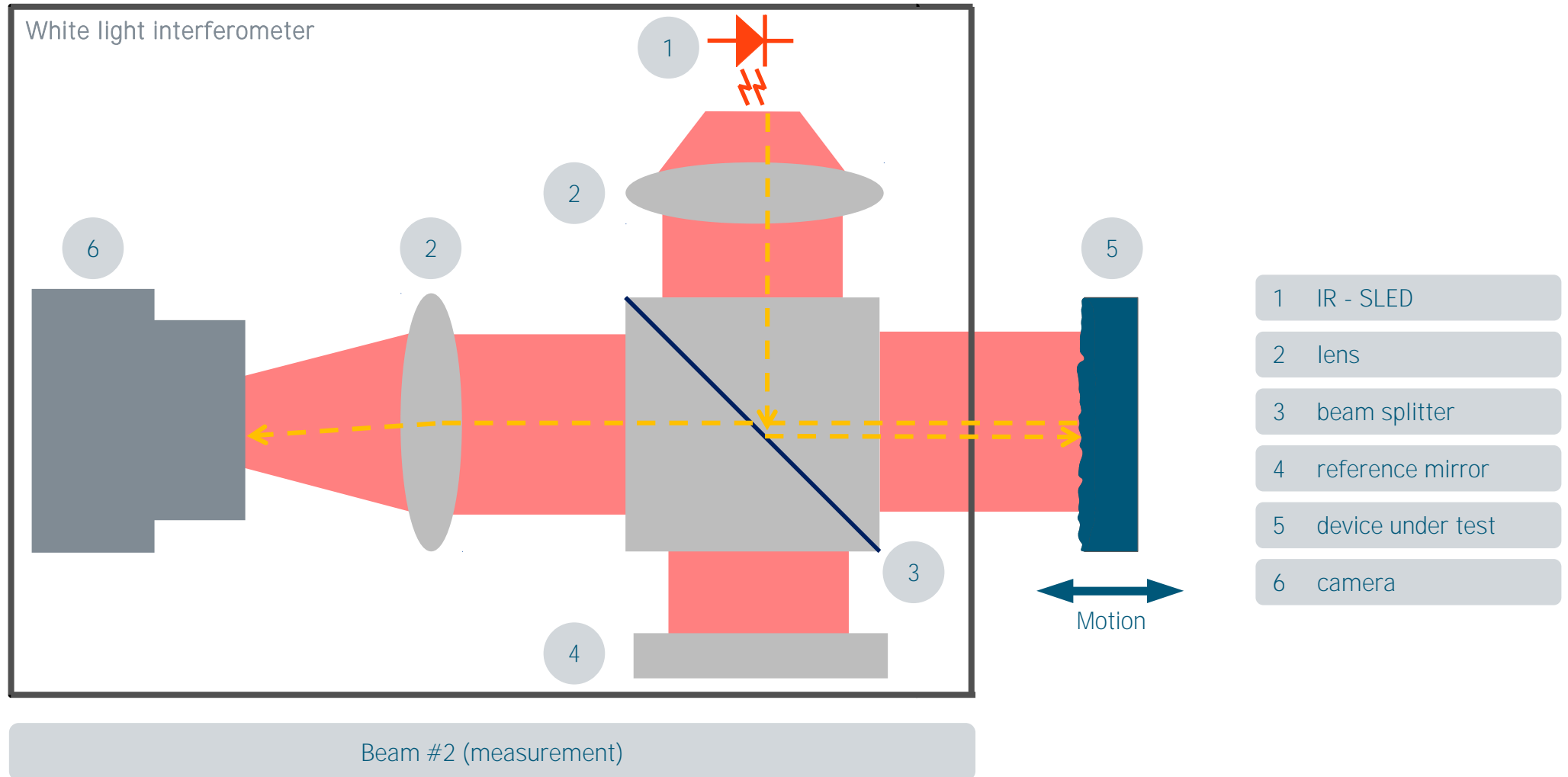
Principle White-light interferometry



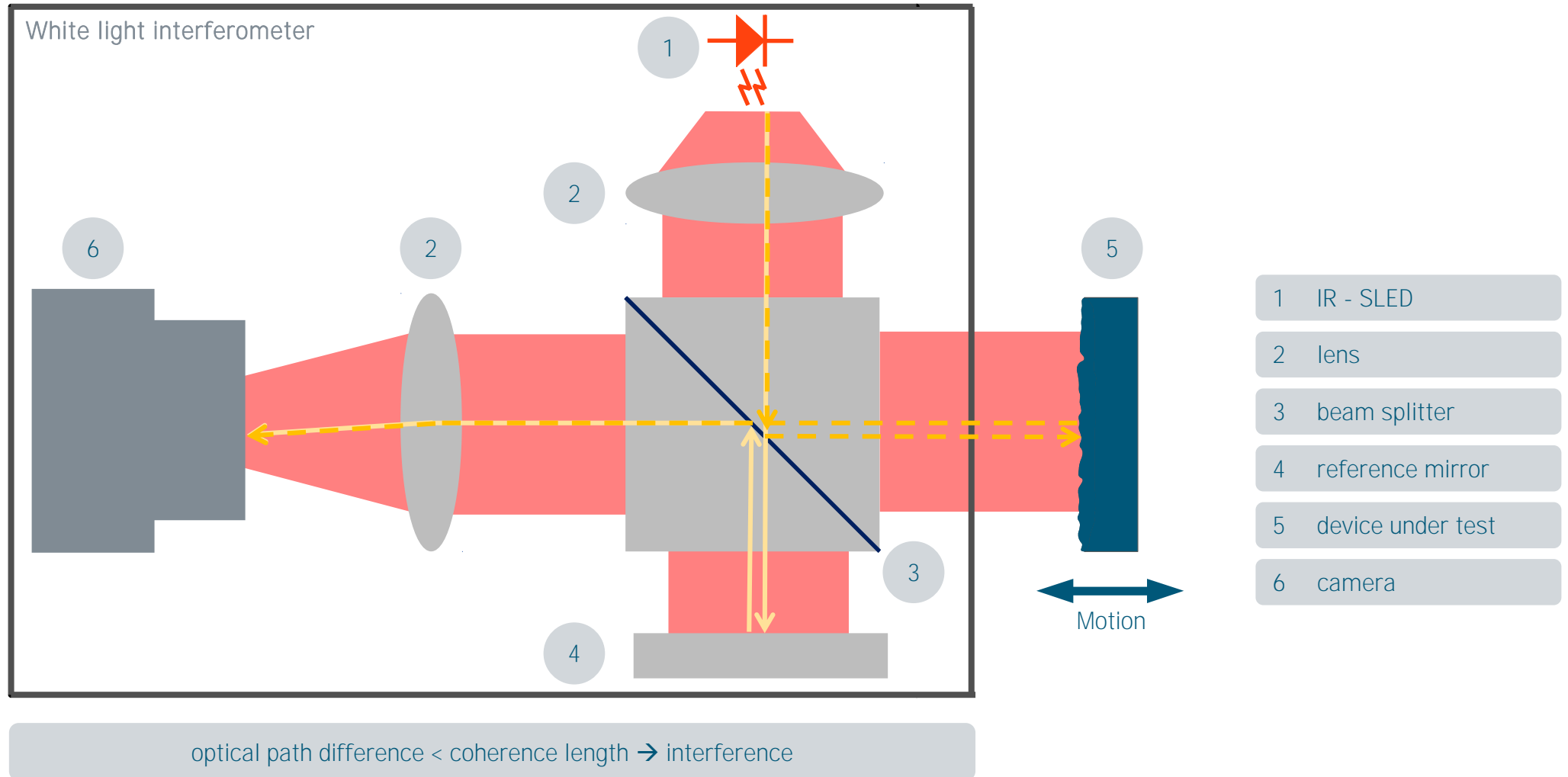
Principle White-light interferometry



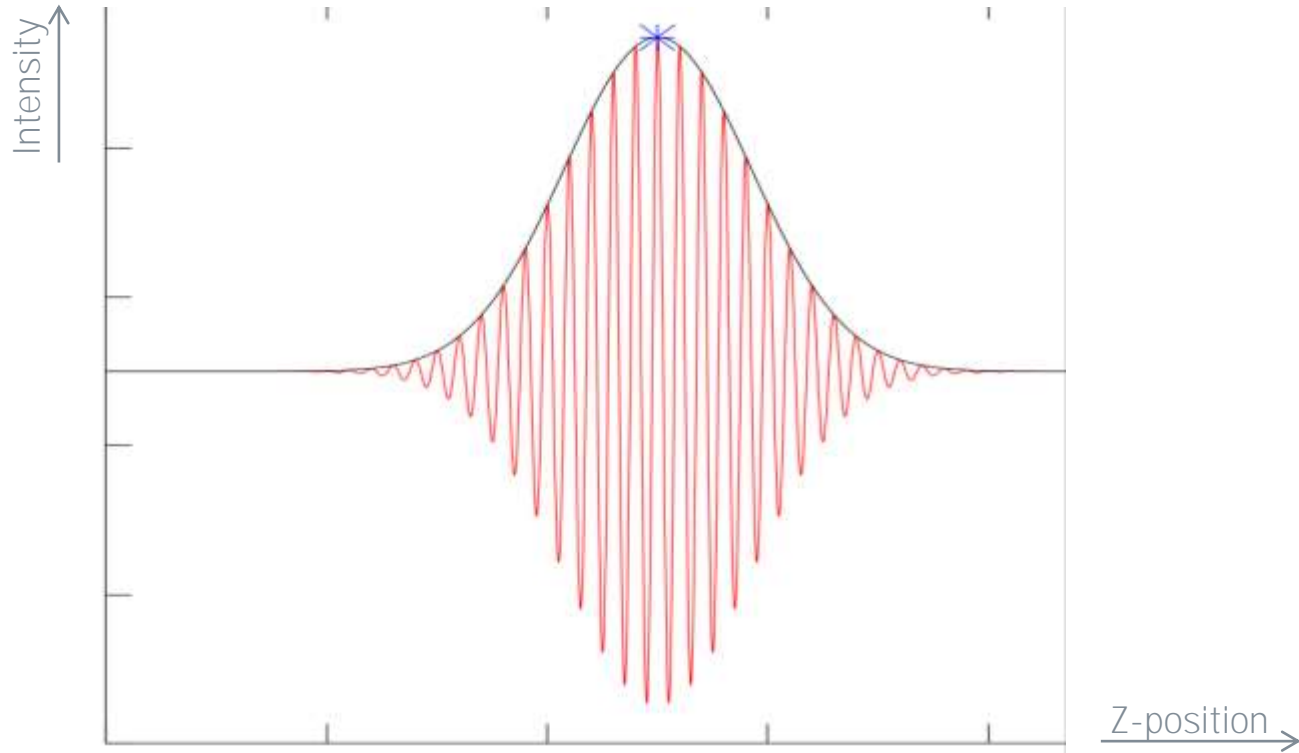
Principle White-light interferometry



Principle White-light interferometry



Principle White-light interferometry

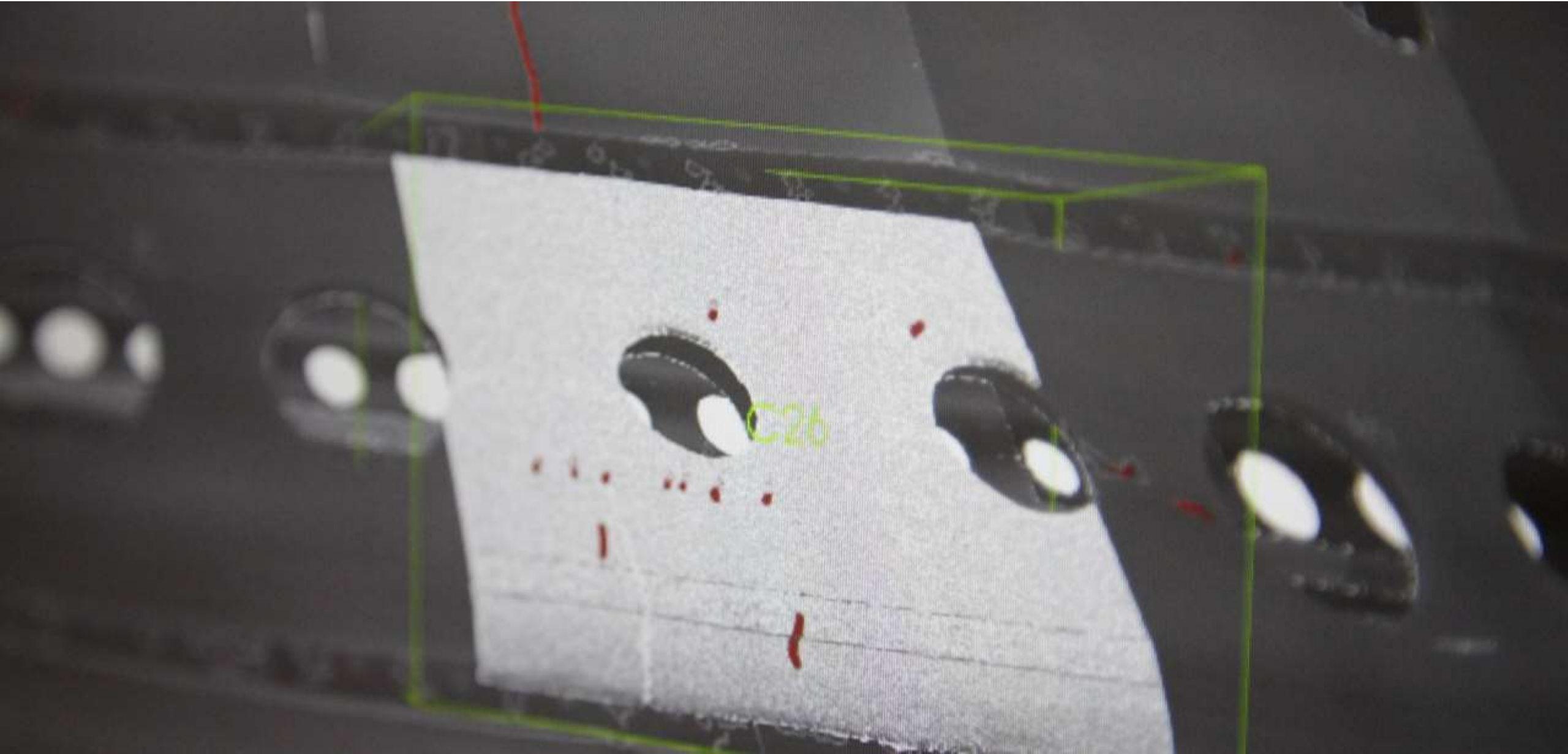


demodulation → envelope

Detection of maximum intensity Distance to object

moving through scan range z-distances/intensity for every pixel

Result of inspection is a digital part model incl. all crack locations





Key characteristics:

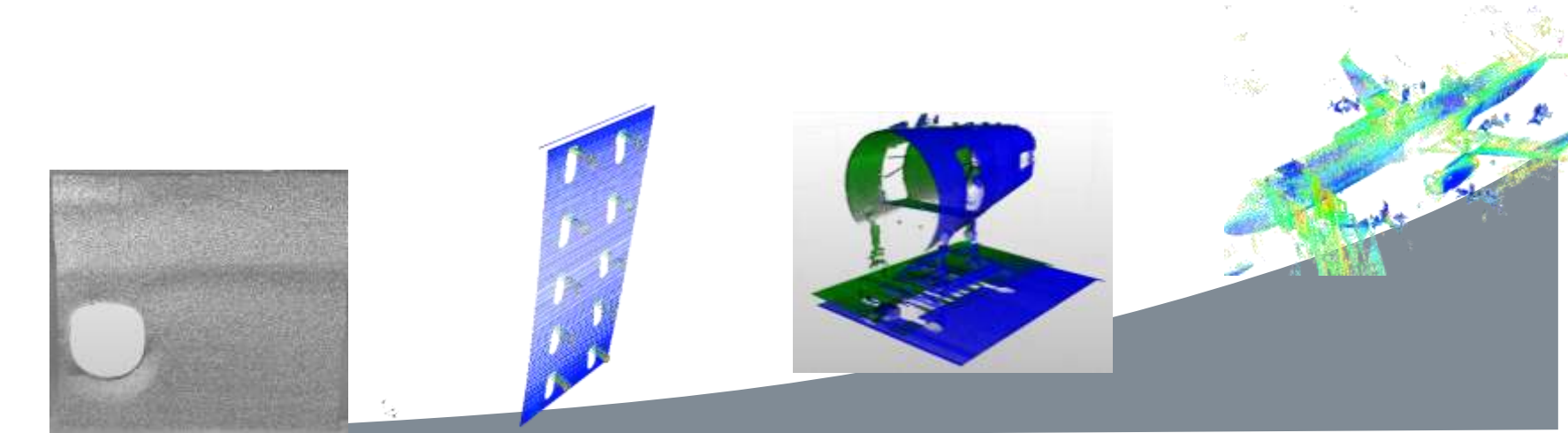
- Fully automated crack inspection on combustion chambers
- Significant improvement in productivity and ergonomics
- Door opener for further automated process steps
- Complete digital surface model in μm resolution
- Statistically proof, automated process superior to manual process (FPI)
- High of operator satisfaction due to easy operation



Spectrum of sensor technologies

3D.aero covers all dimension scales and use cases with different sensors. Following optical sensors are already integrated in different applications:

- White light interferometry
- Stereo Vision
- Lasertriangulation
- Time of Flight



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