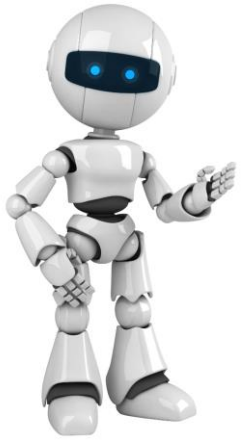
CDA
We inspire and manufacture value

CDA - Mass Manufacturing of Wafer-level Micro-optics on Polymer

EPIC Online Technology Meeting on Polymer Optics July 6, 2020

www.cda.de



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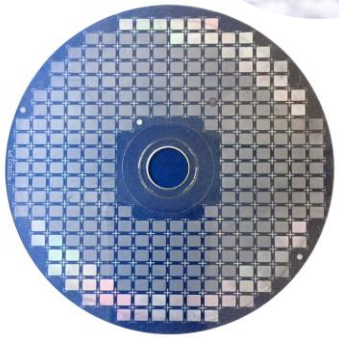
CDA – Core Competencies and Served Markets



Mass manufacturing
Serial production
Prototyping
Flexible production

Customized
Micro-optics
Polymers

Wafer-level
- Beam splitters
- Diffractive diffusors
- Micro-lens-arrays
- Meta lenses
- HOE
- Waveguides

Consumer Electronics
- AR/VR/MR
- Facial recognition
- NIR illumination

Automotive
- HUD
- LiDAR
- Projections

Industrial
- Robotics
- 3D sensing
- Encoders

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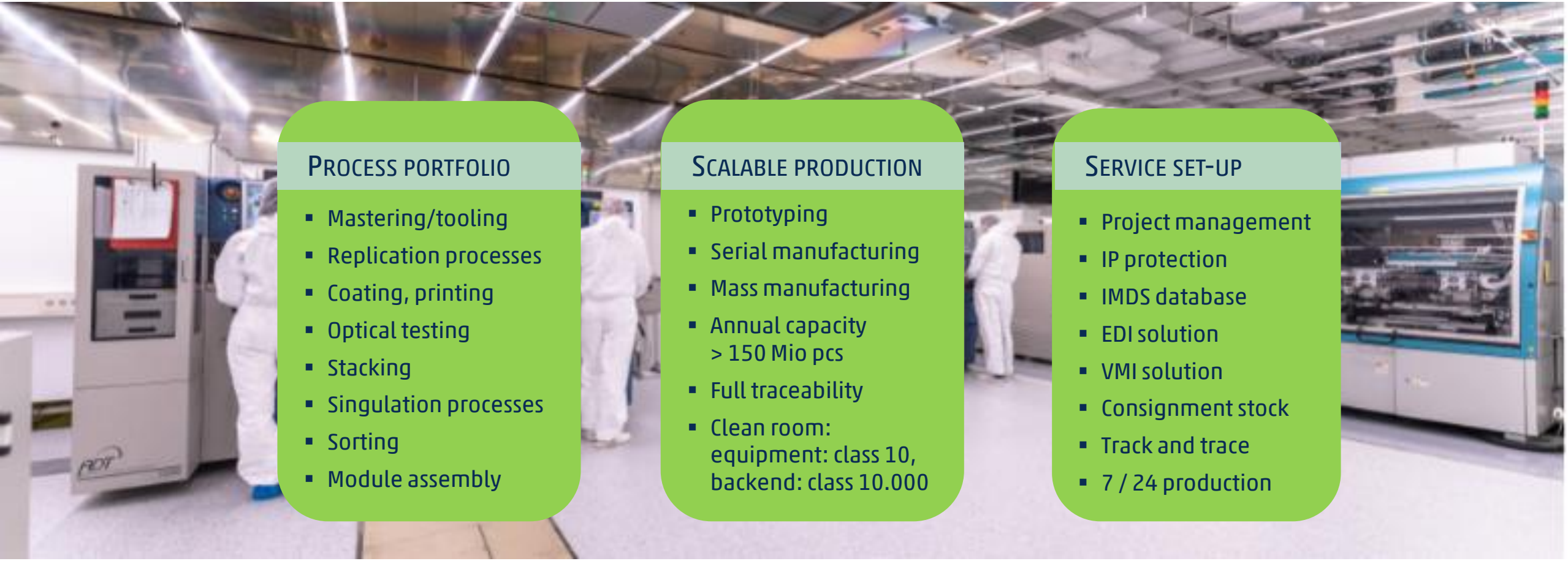
CDA - Technology Portfolio and Process Know-how



Process portfolio

- Mastering/tooling
- Replication processes
- Coating, printing
- Optical testing
- Stacking
- Singulation processes
- Sorting
- Module assembly

Scalable production

- Prototyping
- Serial manufacturing
- Mass manufacturing
- Annual capacity > 150 Mio pcs
- Full traceability
- Clean room: equipment: class 10, backend: class 10.000

Service set-up

- Project management
- IP protection
- IMDS database
- EDI solution
- VMI solution
- Consignment stock
- Track and trace
- 7 / 24 production

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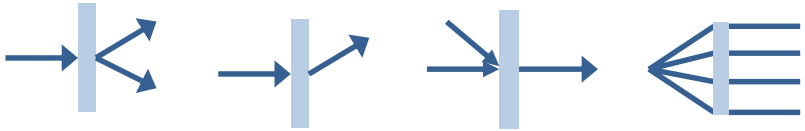
CDA – Optical Functions and Feature Sizes

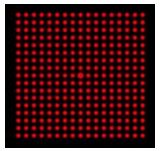
Design Rules

- Feature sizes from 0,5µm and up

Example optical functions of DOEs



splitting deflcetion combining collimation

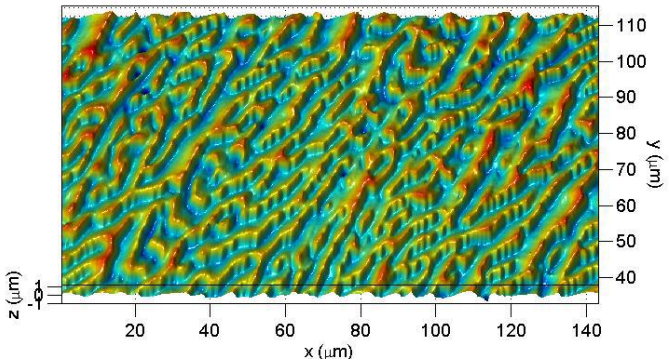


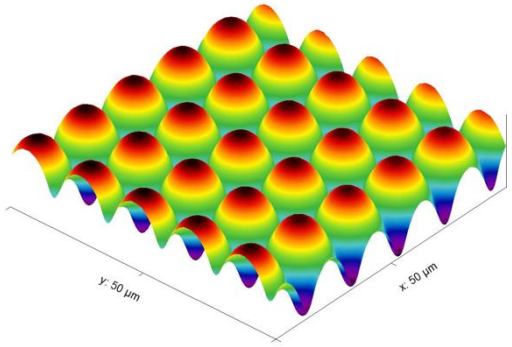
spot arrays

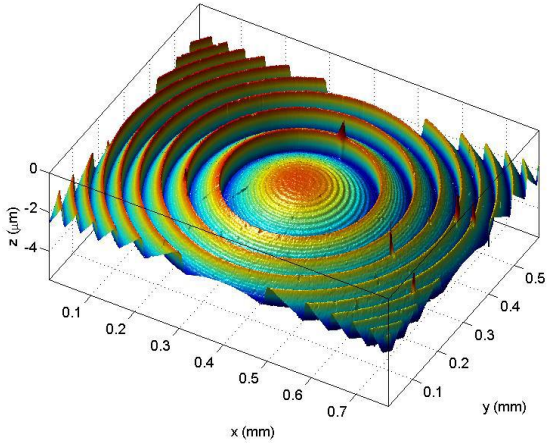
lines

diffusers

pattern generators







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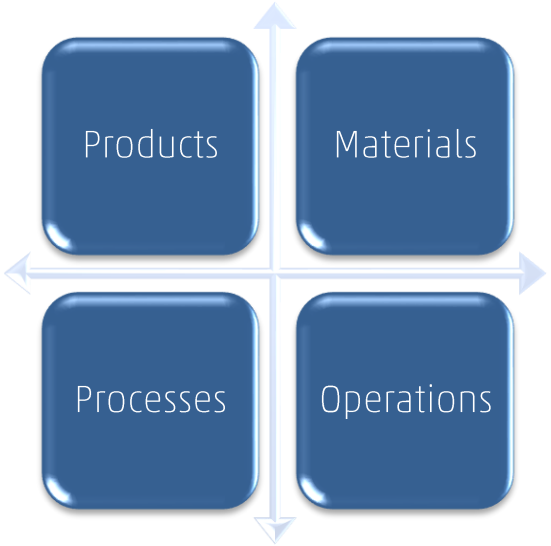
CDA – Path Foreward



Development and R&D Programs

	2020				2021				2022			
	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
Products												
Materials												
Processes												
Operations												

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EU Project PHENOmenon

12	5	3.9M€	3	January 2018
Partners	Countries	EU Funding	Years	Until December 2020

PHENOmenon
LASER MANUFACTURING OF 3D NANOSTRUCTURED OPTICS USING ADVANCED PHOTOCHEMISTRY

www.phenomenonproject.eu

- Laser manufacturing of 3D nanostructured optics using advanced photochemistry
- Develop and validate an integral manufacturing approach (material, process and technology) for large area direct laser writing of 2&3D optical structures, targeting high speed production of optical surfaces with subwavelength resolution, using NonLinear Absorption.
- Developments in photochemistry and laser beam forming will allow producing structures at different scales (100 nm to 10 microns).
- Advanced optics for the next generation of LED lighting, curved and flexible displays, holographic projections in vehicles, special safety features on ID-cards, antifogging surfaces on camera lenses

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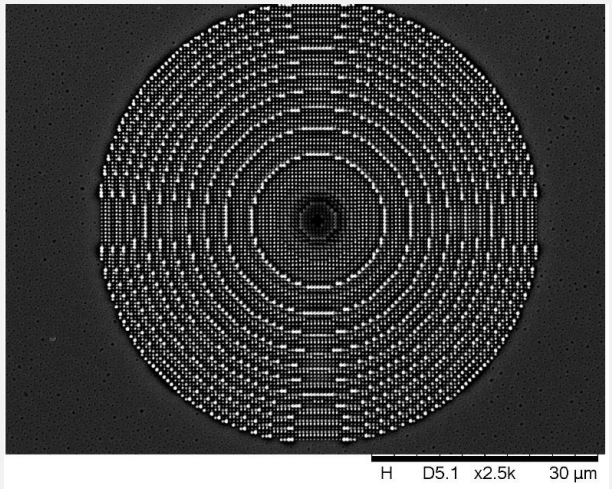
IMT Atlantique Bretagne-Pays de la Loire École Mines-Télécom · FlexEnable Truly flexible electronics · CDA We inspire and manufacture value · PSA GROUPE · Real Casa de la Moneda Fábrica Nacional de Moneda y Timbre · designLED

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 780278. PHENOmenon project is an initiative of the Photonics Public Private Partnership.

PHOTONICS21 PHOTONICS PUBLIC PRIVATE PARTNERSHIP · CDA

EU Project PHENOmenon

Meta-lens was designed by **ICFO** and fabricated by **MPO**.
The meta-lens consists of pillars with diameters between 100 and 450 nm.



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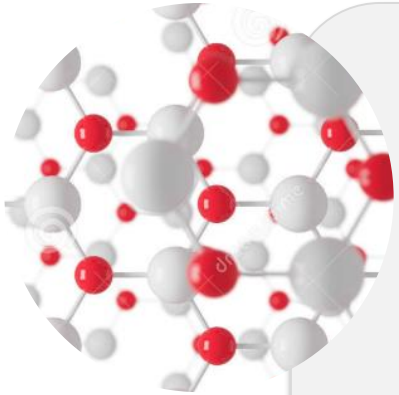
CDA – What can we do for you? What can you do for us?



What are we looking for?

- Partnerships
- New materials
- High volume customers
- Challenges

What do we offer ?

- Partnerships
- Optic design and manufacturing of customized micro-optics
- R&D developments
- Testing of materials

Contact

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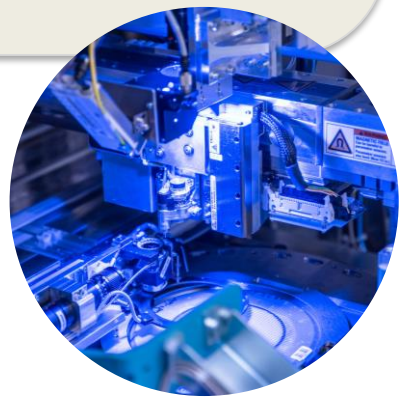

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