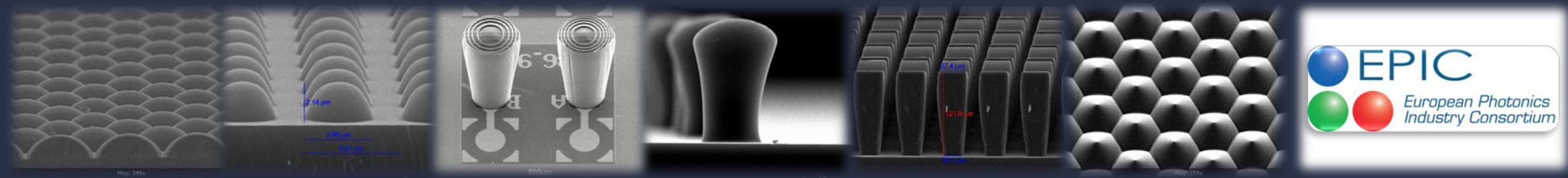


A new era for micro-optics manufacturing : the final frontier ...

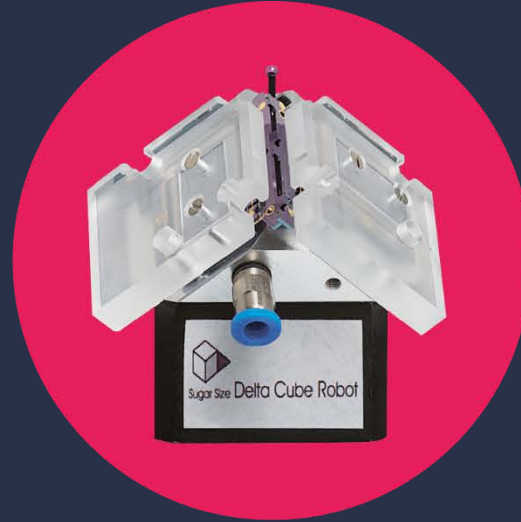
Rolando Ferrini

CSEM SA – MicroNano Optics, Switzerland

EPIC Online Technology Meeting on Micro-Optics Manufacturing, 22.04.2020



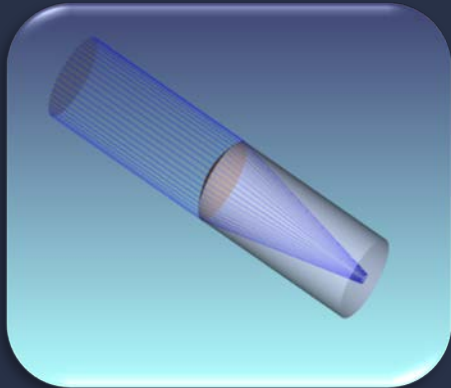
CSEM mission



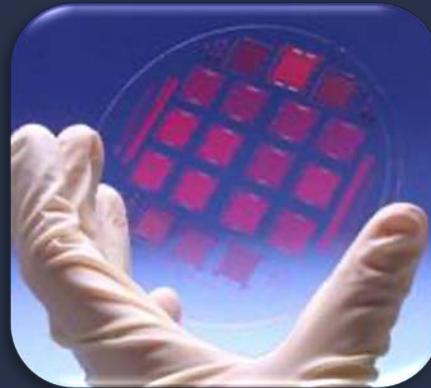
Development and transfer of world-class (micro-)technologies to the industrial sector – in Switzerland, as a priority – in order to reinforce its competitive advantage.

- Cooperation agreements with established companies
- Encouraging the creation of start-ups

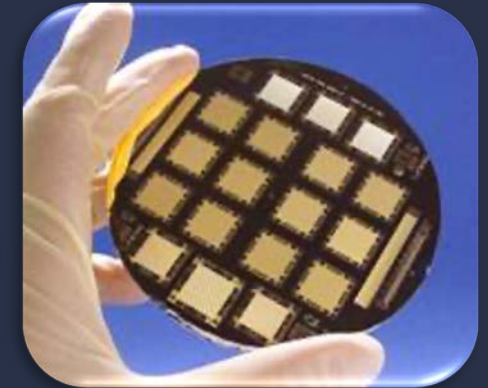
Manufacturing by imprint technologies



Design & simulation



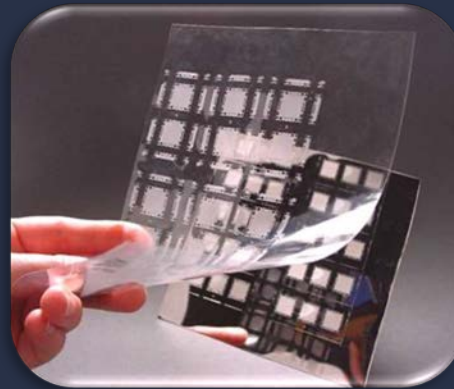
Origination



Tooling



Manufacturing upscaling



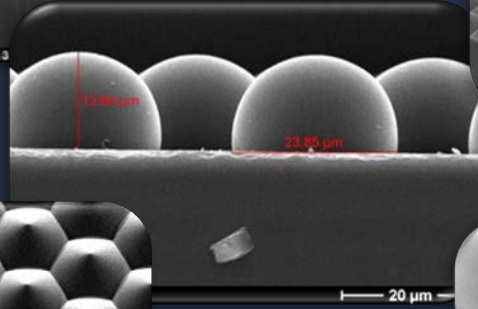
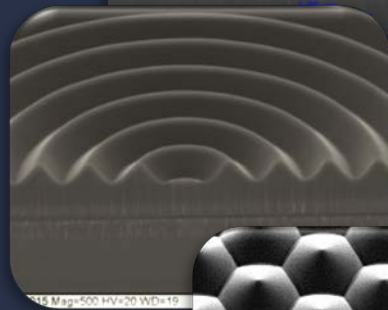
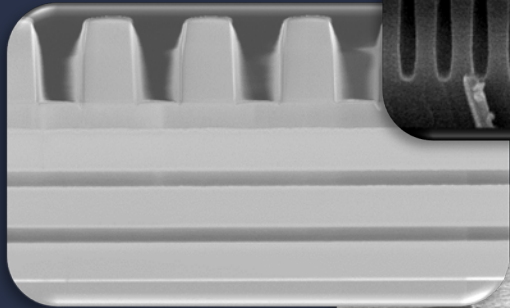
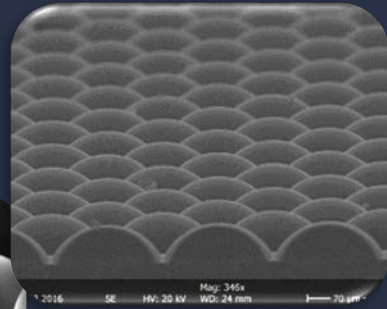
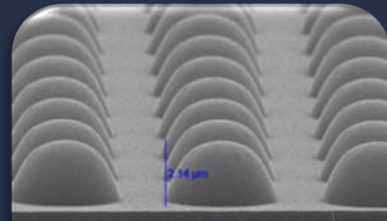
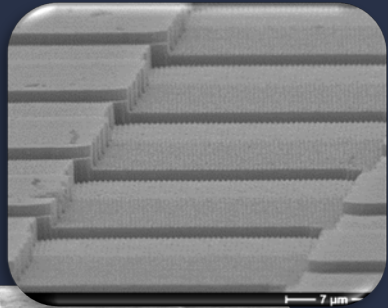
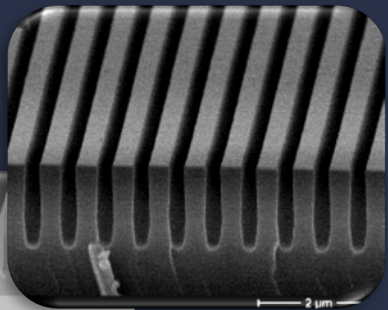
Replication



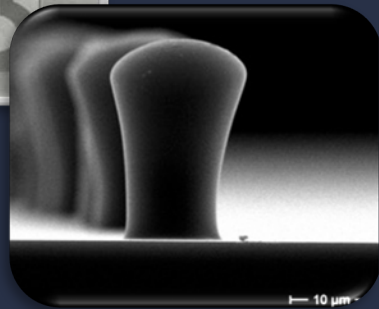
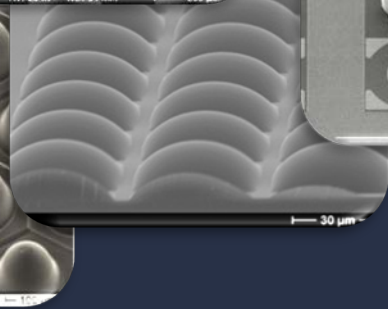
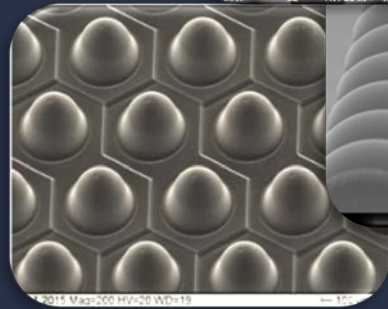
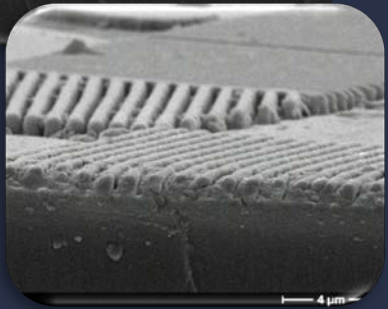
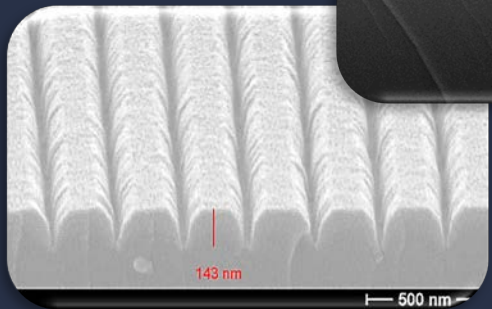
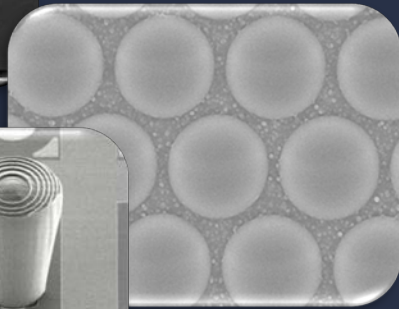
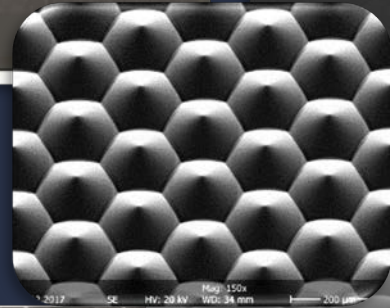
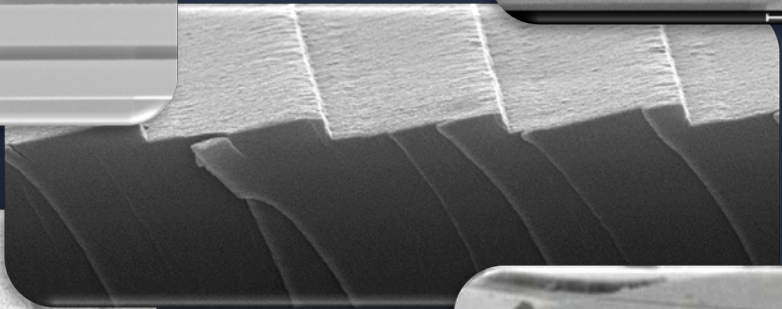
Nano- & Micro-optical structures

Nano

Micro



4





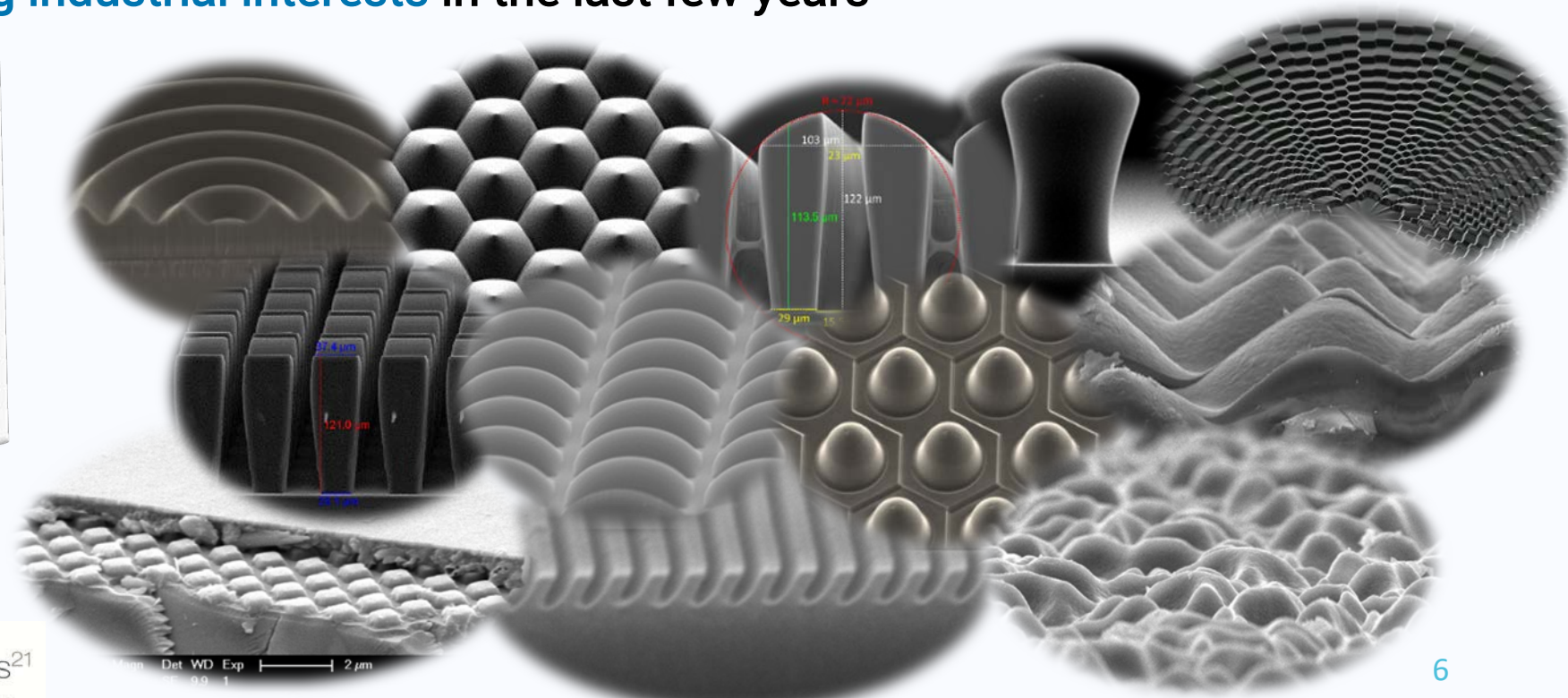
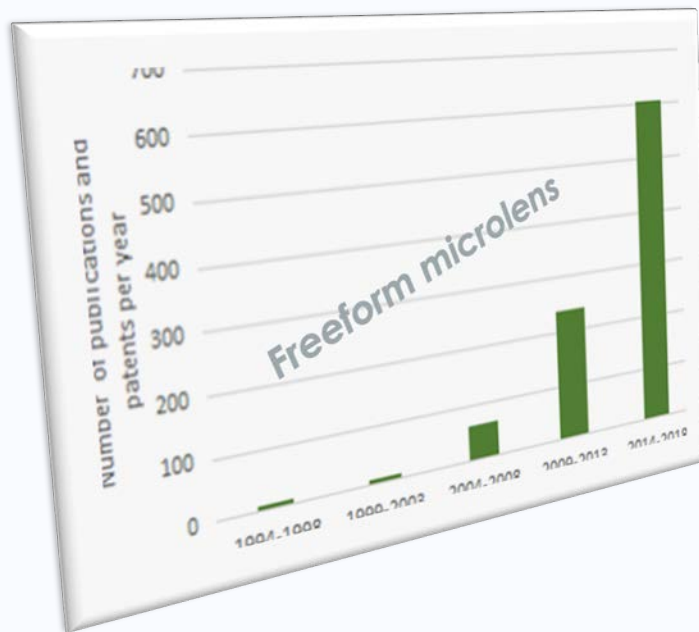
Phabulous

THE EUROPEAN ~~PILOT LINE~~ FOR THE MANUFACTURING OF
~~FREE-FORM MICRO-OPTICS~~

Free-form micro-optics

Free-form micro-optics consists of micro-optical components

- with no symmetry restrictions
- gaining an increasing industrial interests in the last few years



What's PHABULO_μS

PHABULO μ S ...

... is the European one-stop shop for the manufacturing of free-form micro-optics

... offers

- ❑ accelerated innovation & production cycles
- ❑ manufacturing services
- ❑ prototyping → piloting → large volume production



« Who »

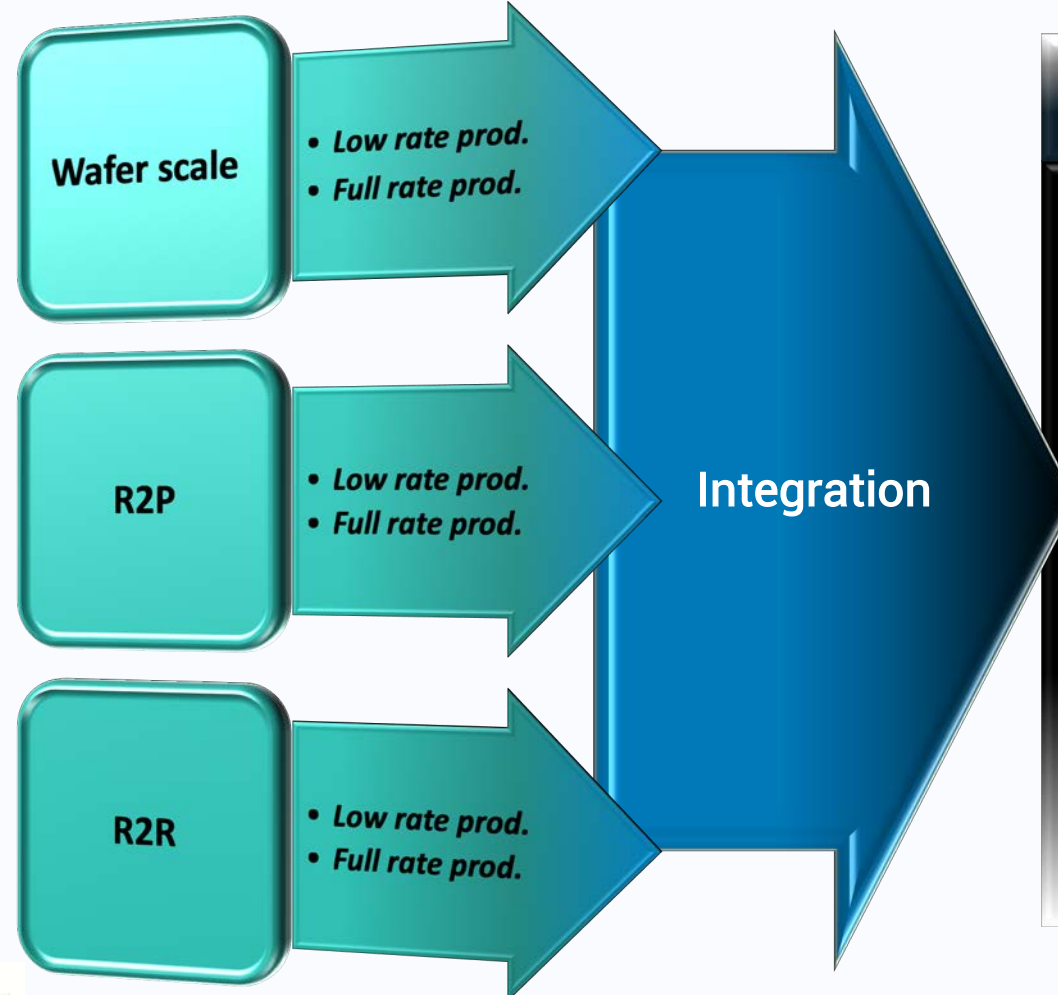
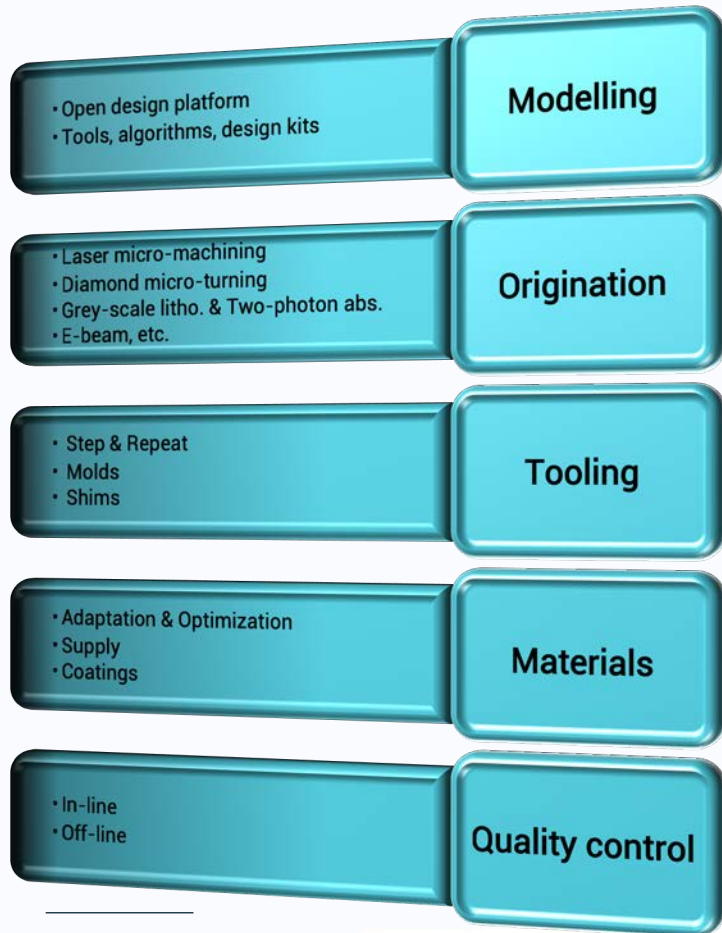
We are ...

Phabulous

The image shows a map of Europe in shades of blue. In the top left corner of the map area is the European Union flag and the text "EU". To the right of the map is a vertical list of logos for various organizations and companies. The logos are: csem, JOANNEUM RESEARCH, Fraunhofer EEP, VTT, leti, SUSS MicroOptics, morphotonics, NANOCOMP, PowerPhotonix, IASER, Wielands upmt, HELLA, limbak, microoLed, ZUMTOBEL, SE SEISENBACHER, SWAROVSKI, EPIC European Photonics Industry Consortium, and AMIRÈS.

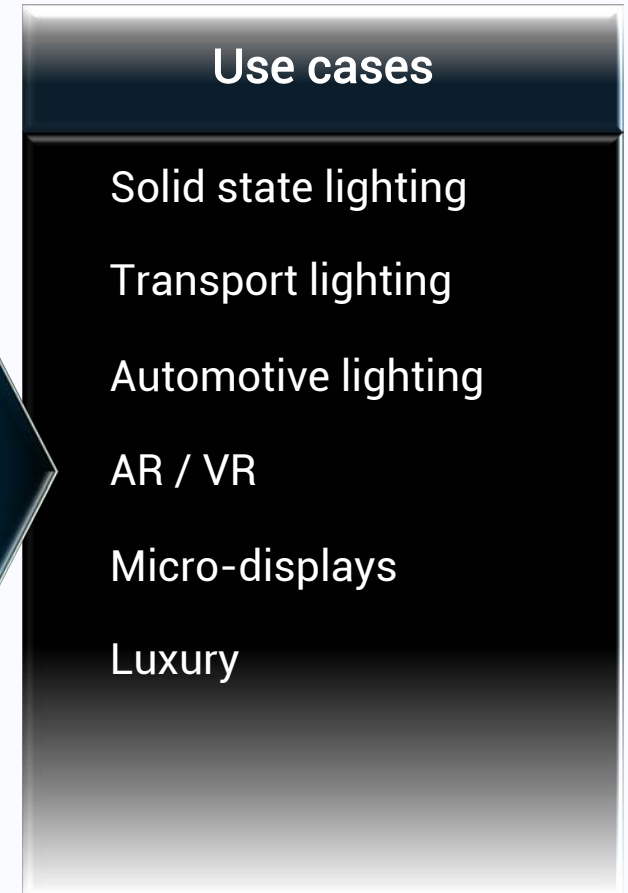
« What »

Production Services & UV imprint manufacturing

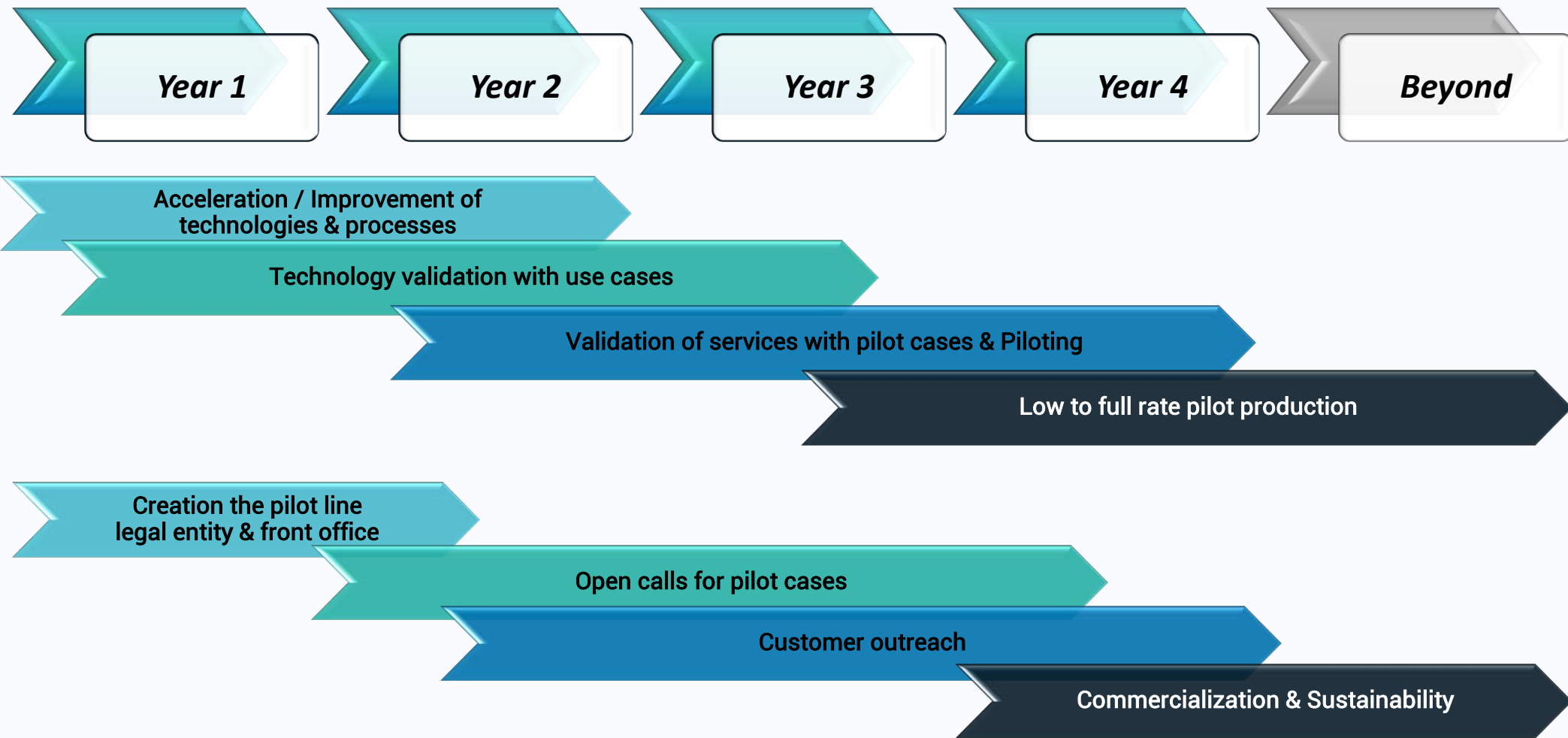


Product integration

Technology validation

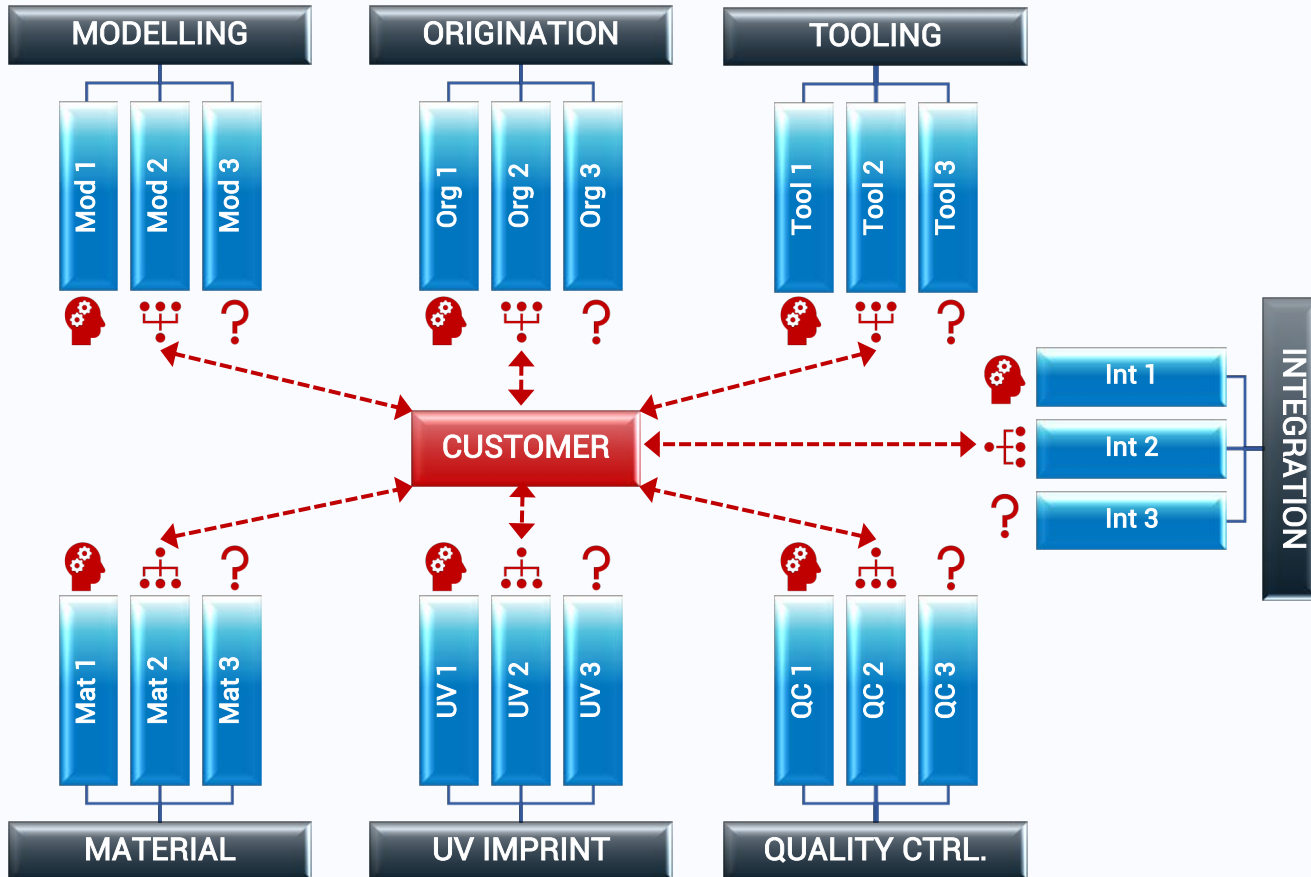


« How »

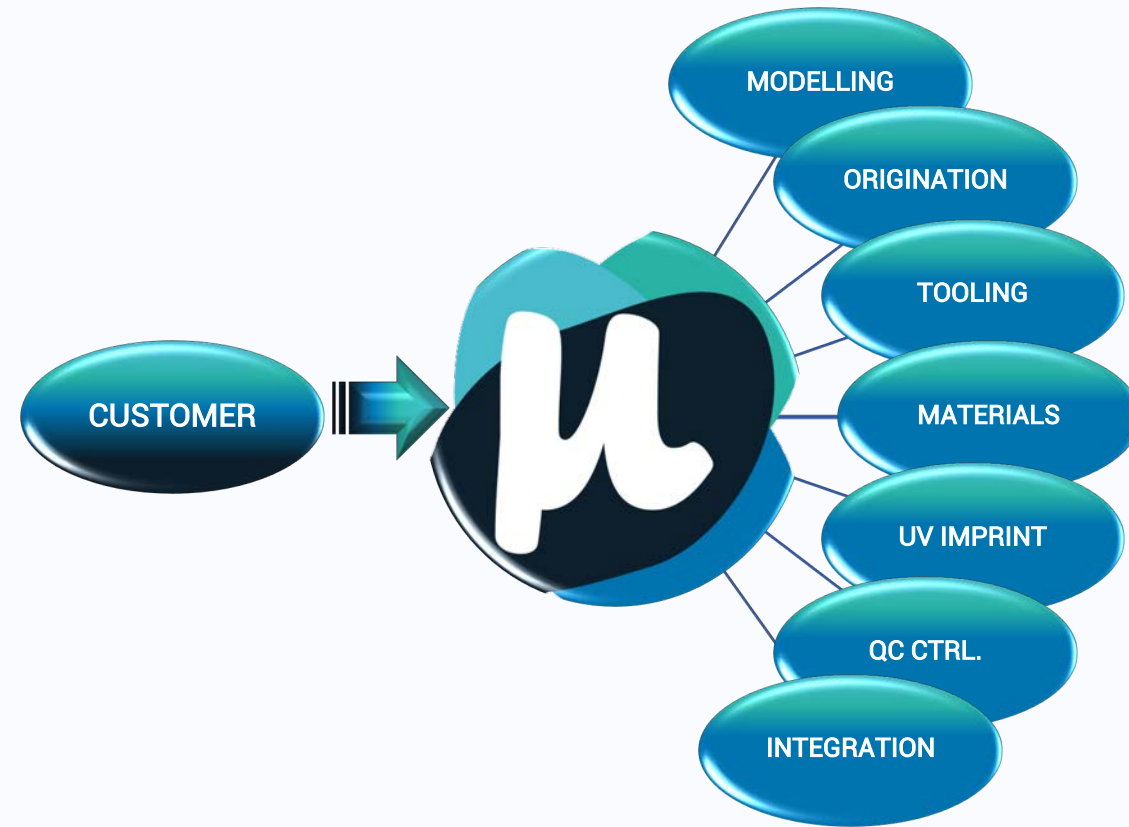


« Why »

Without PHABULOU μ S



With PHABULOU μ S



« For whom »



Micro-optics is your attention!

Phabulous

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Project Coordinator PHABULO μ S

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