The PIXAPP Photonic Packaging Pilot Line
Standardised & Lower Cost Photonic Packaging

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PIXAPP Photonic Packaging Pilot Line
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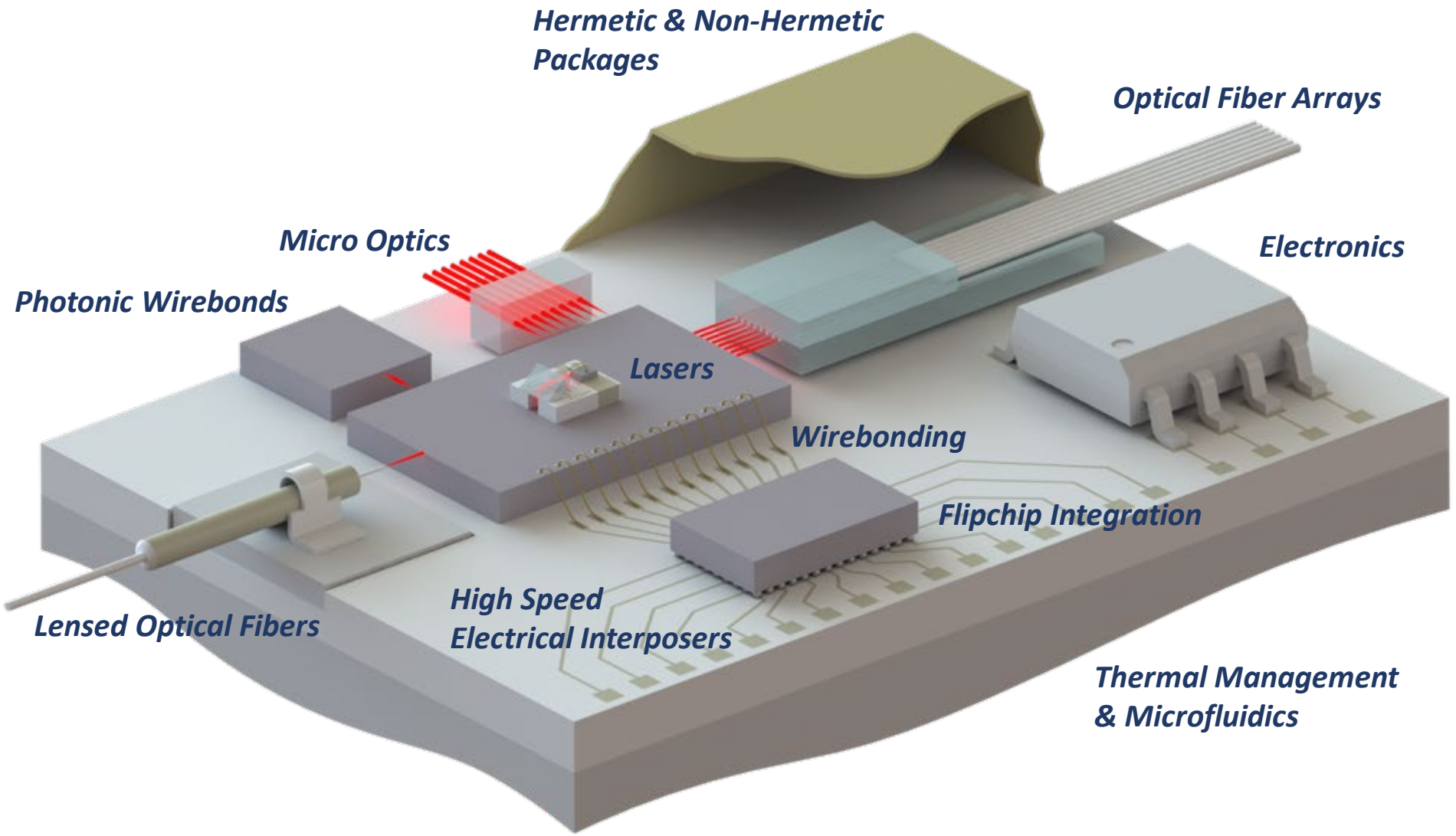
Standardised Packaging (building blocks)



Assembly Design Kits (standardised photonic packaging)

Foundry PDK

Die Template A

Die Template B

D-BB1

D-BB2

D-BB3

OptoDesigner

P-BB1

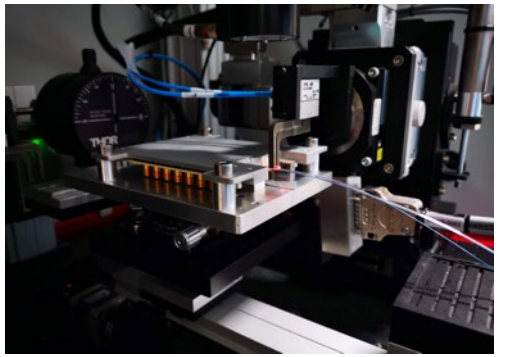
P-BB2

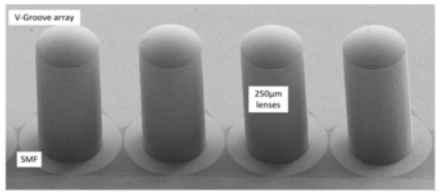
D-BB1

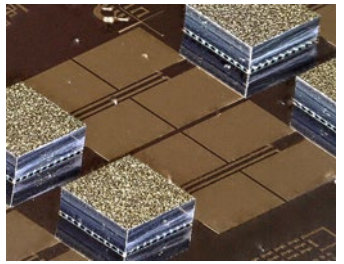
D-BB2

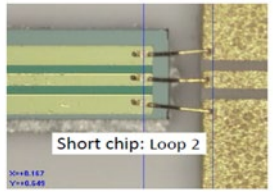
D-BB3

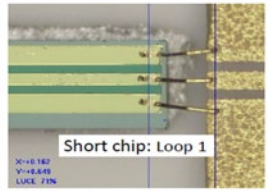
Package ADK

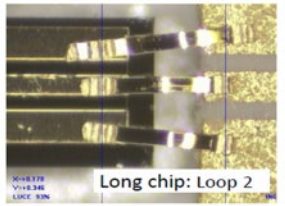


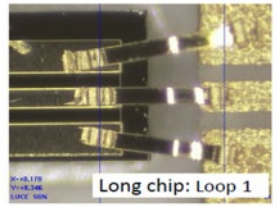


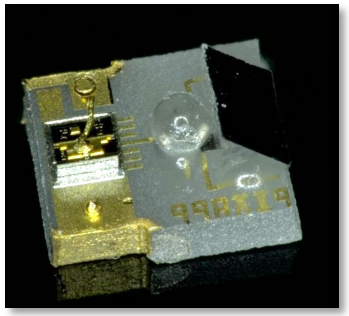












D-BB Device Building Block
P-BB Packaging Building Block

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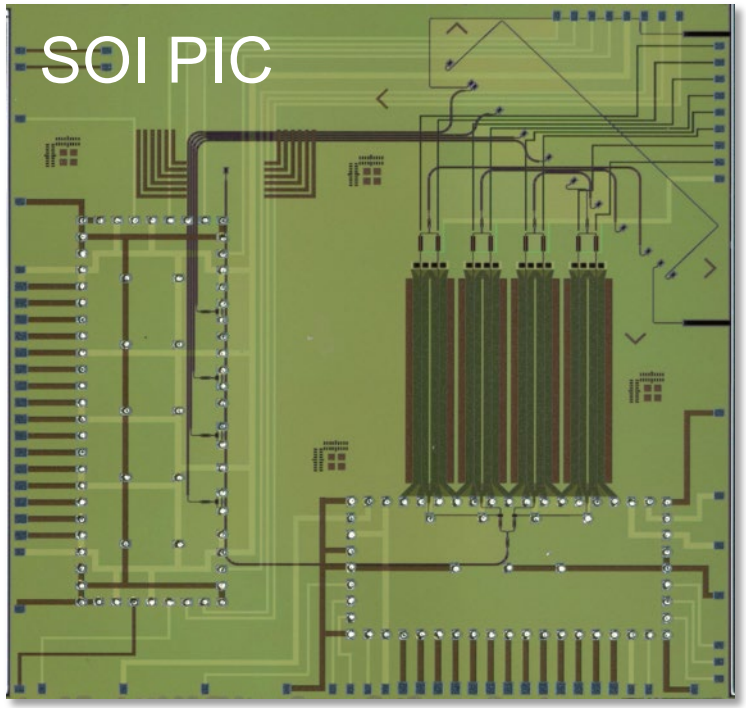
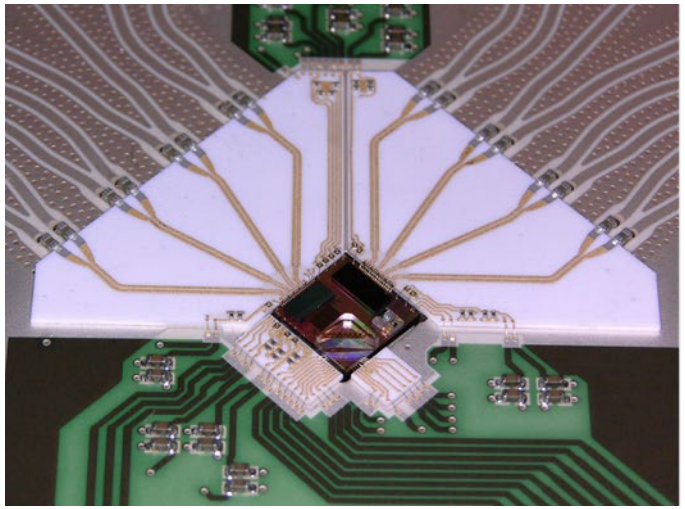
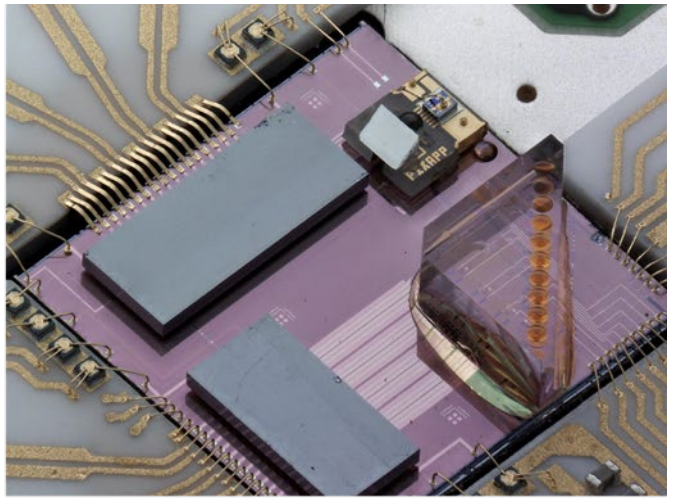
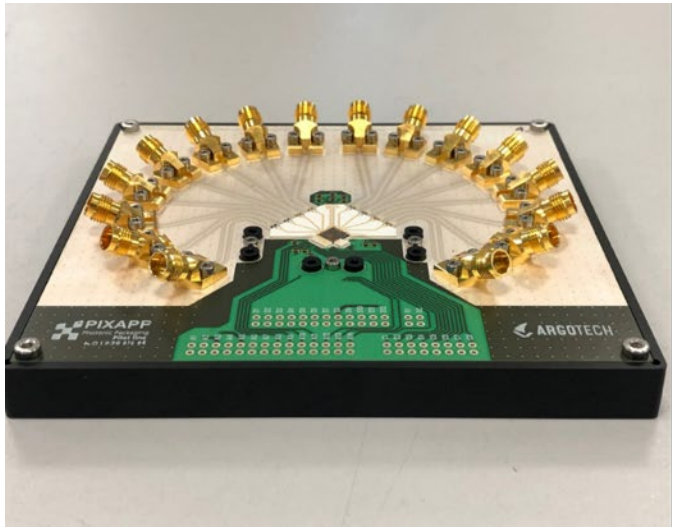
Assembly Design Kits (standardised photonic packaging)

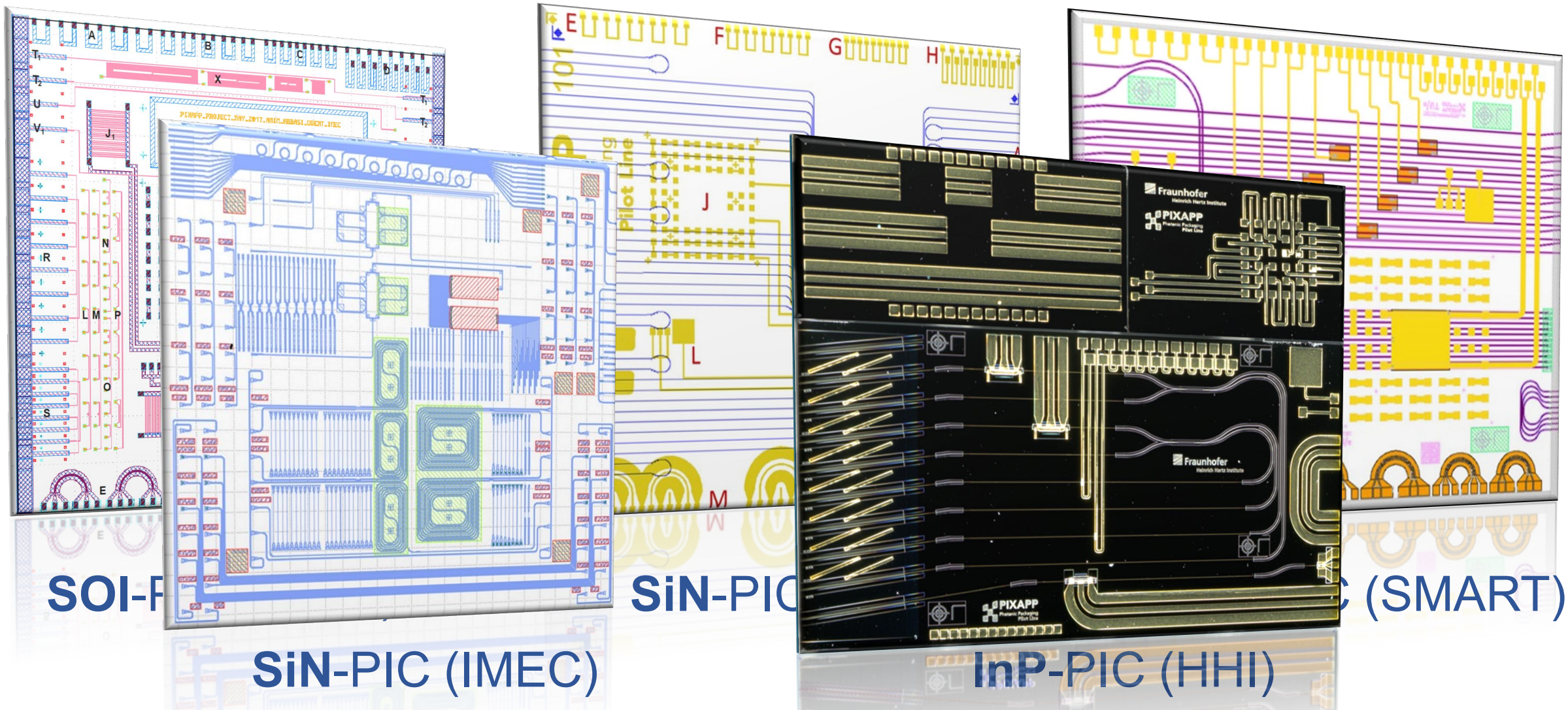








Standardised Packaging (reference PICs)



SOI-P (SMART)

SiN-PIC (IMEC)

SiN-PIC

InP-PIC (HHI)

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Standardised Packaging (reference PICs)

ficonTEC R&D
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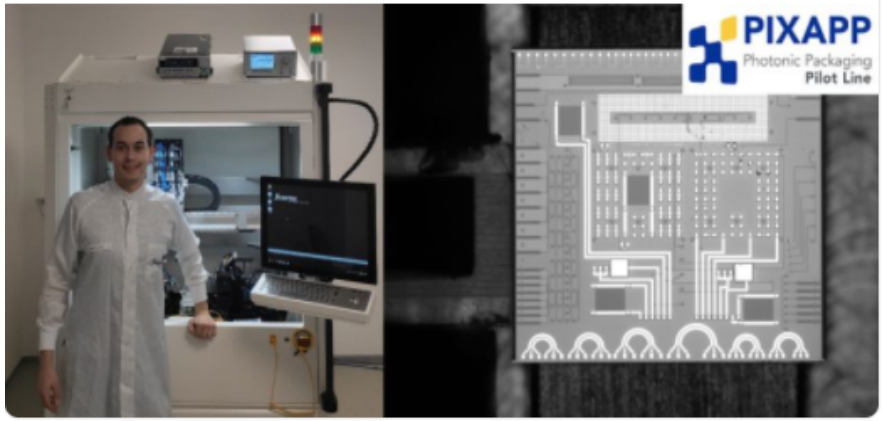
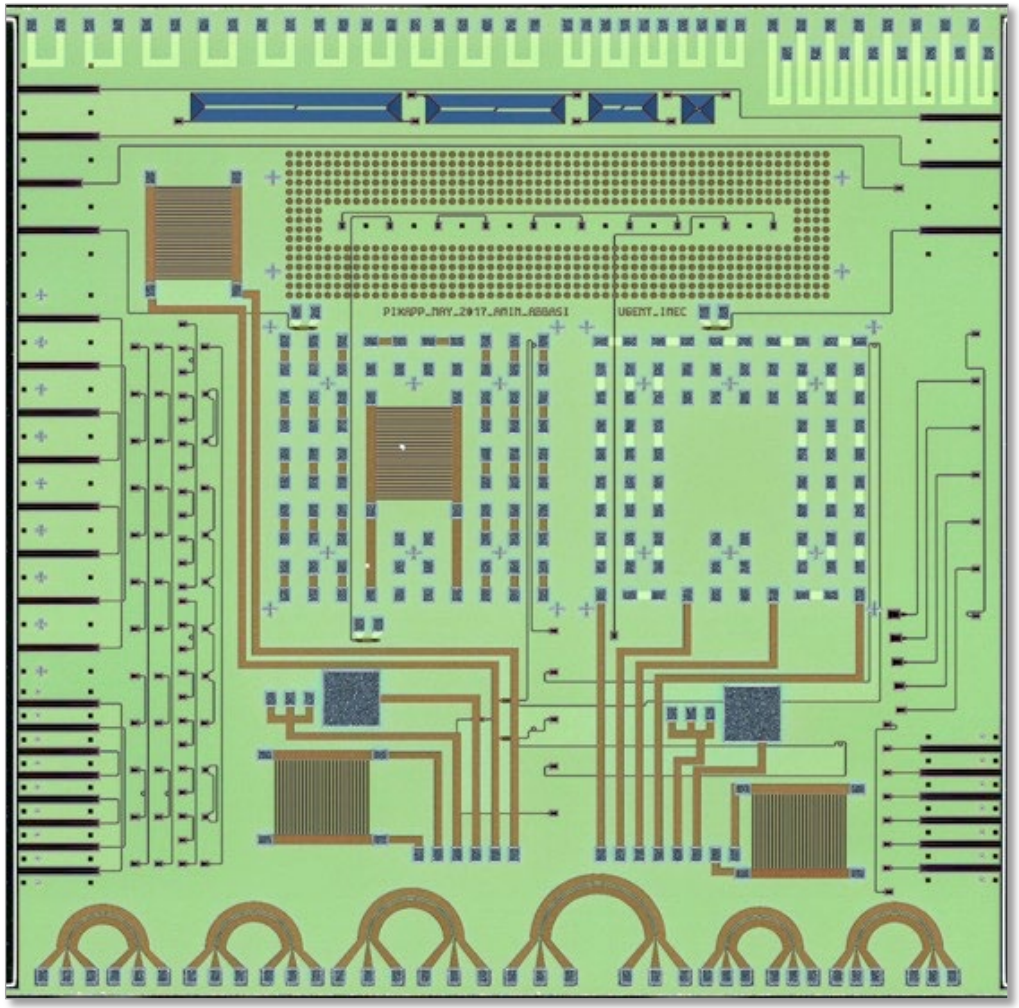
PIXAPP Pilot Line reference PICs allow part independent machine acceptance.

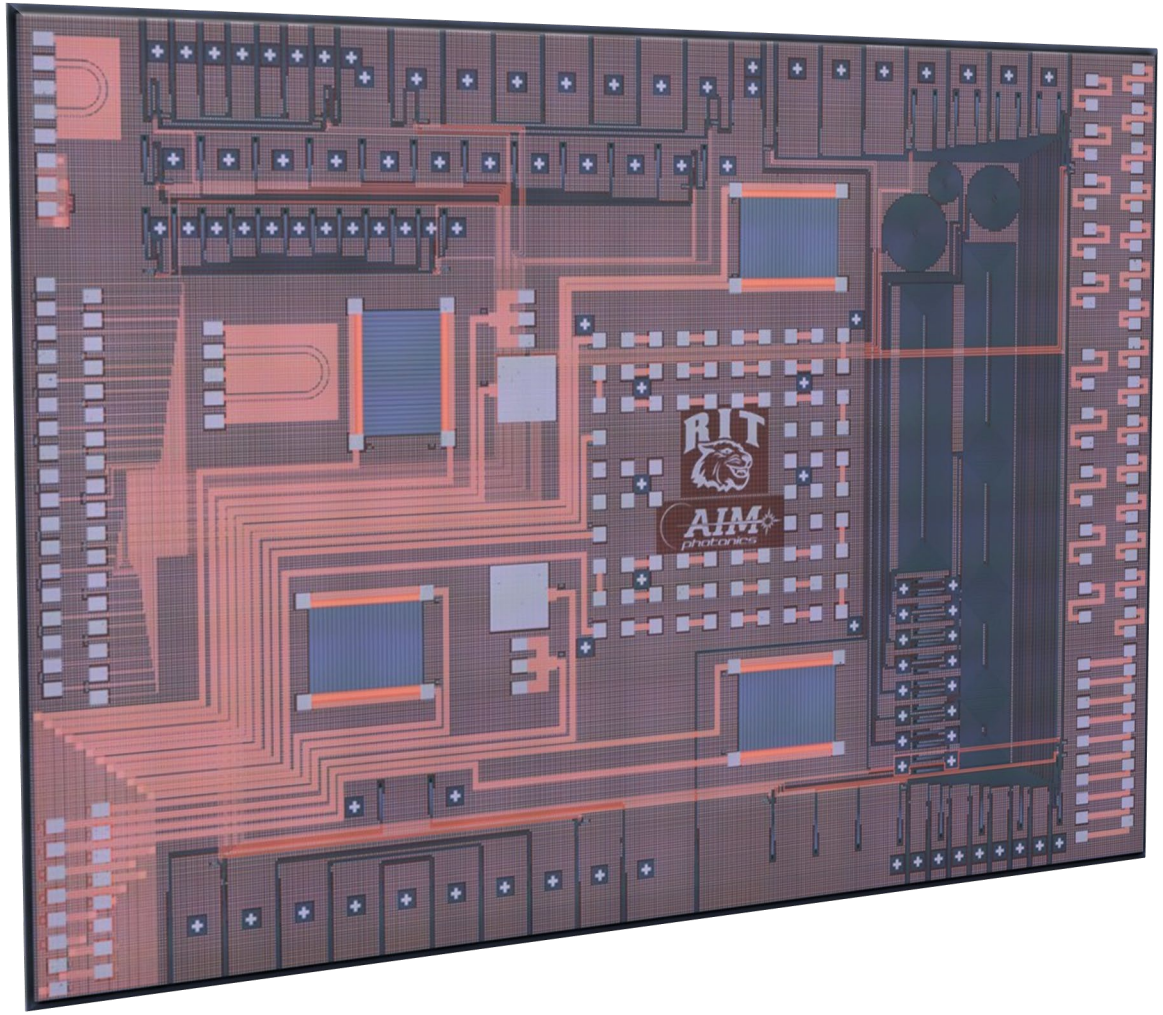
Within the H2020 pilot line PIXAPP Pilot Line ficonTEC Service GmbH not only develops new assembly and testing hardware but also benefits in multiple other ways:
Just before Christmas, our automation engineer Soufian El Allouki was able to perform a machine acceptance purely based on reference photonic integrated circuits (PICs) developed within the PIXAPP Pilot Line project. These PICs contain multiple features specifically designed for typical packaging challenges like optical grating and edge coupling or DC and RF wire bonding. Thereby, these PICs allow demonstration of assembly hardware performance independent of customer parts enabling a much faster identification of possible problems.
In this specific application a fiber array (coming from the left in the picture below) has been aligned in an edge coupling way to the loop back waveguides on the PIC. By monitoring the signal through the reference chips our fast active alignment algorithms could be proven to the customer.
#PIC #PIXAPP #Photonics #ficonTEC





Standardised Packaging (reference PICs)

- Edge Couplers
- Grating Couplers
- Flipchip
- Wirebonding
- RF Lines
- Photodiodes
- Heaters
- Laser Integration (to be developed)



AIM photonics

Stefan Preble
Tom Brown
David Harame

Tyndall National Institute
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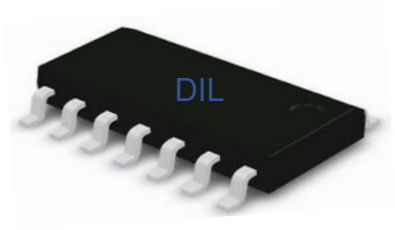
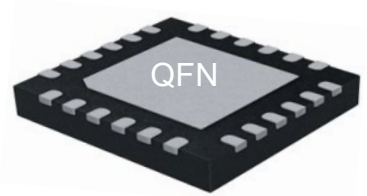
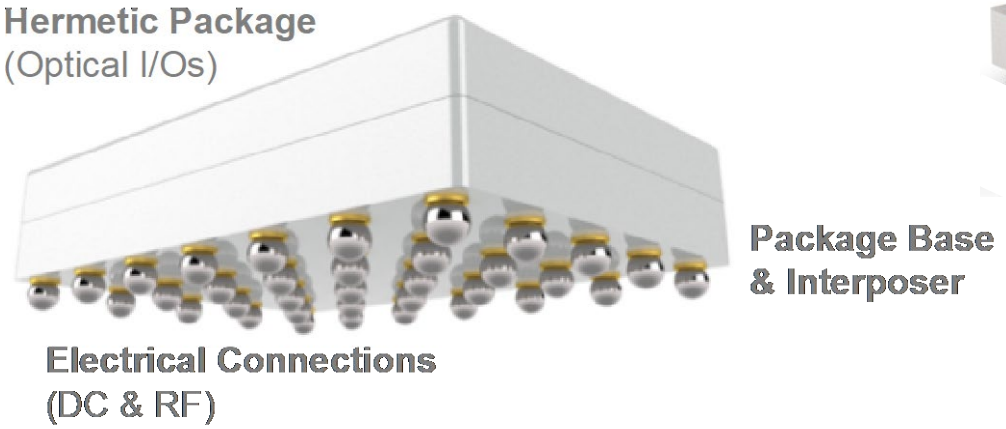
Surface Mount Photonics (reducing the cost of packaging)

Surface Mount Electronics



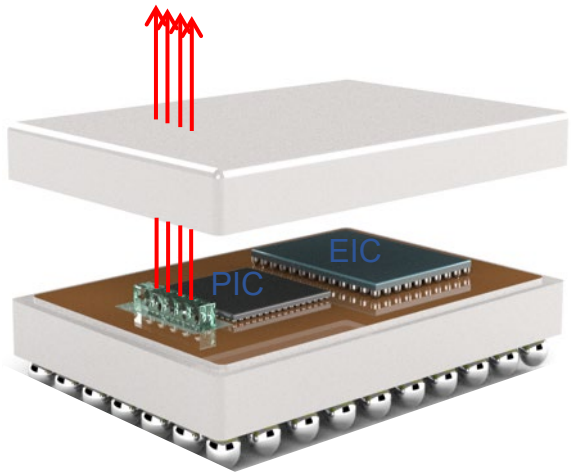


PhotonicLEAP



Surface Mount Photonics

(standardised design)



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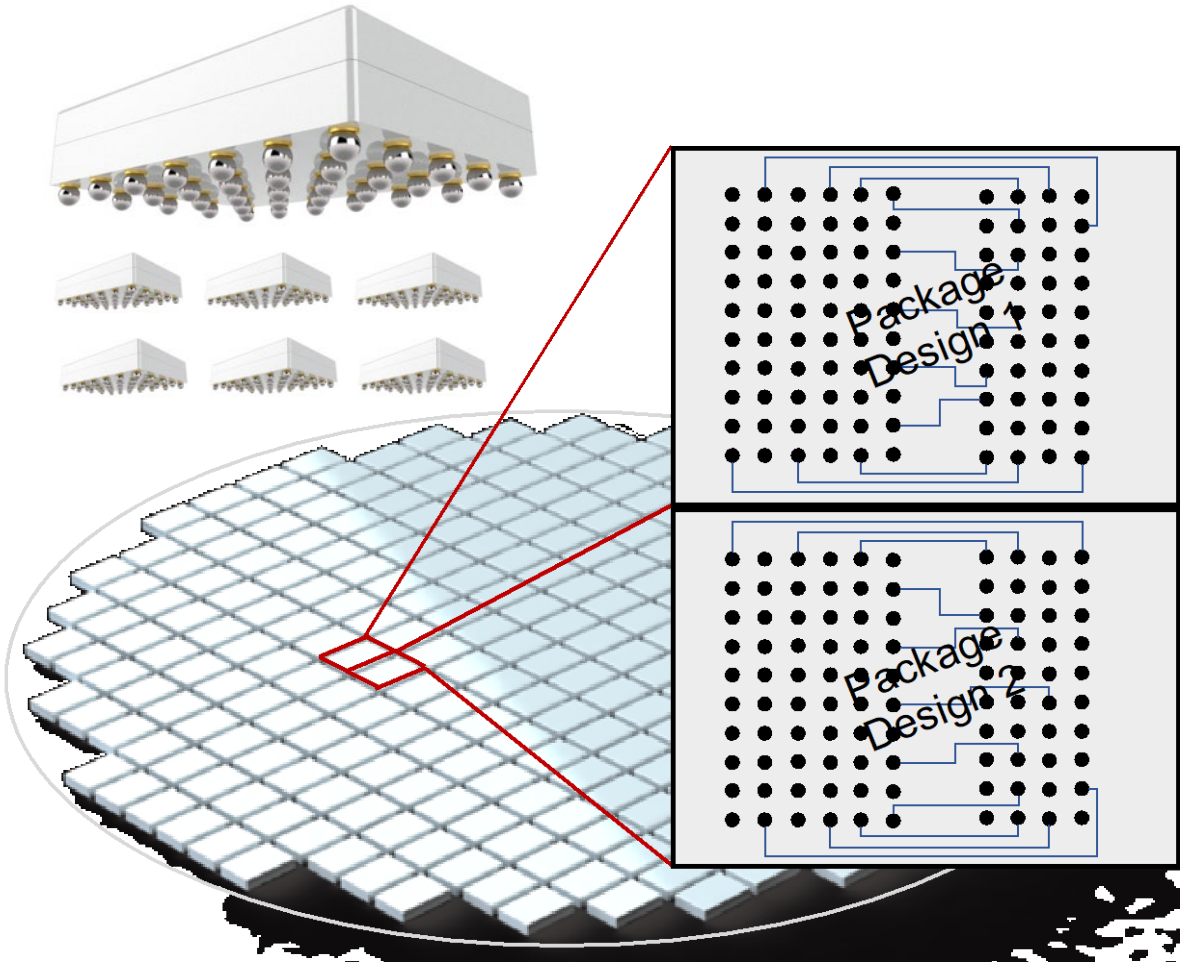
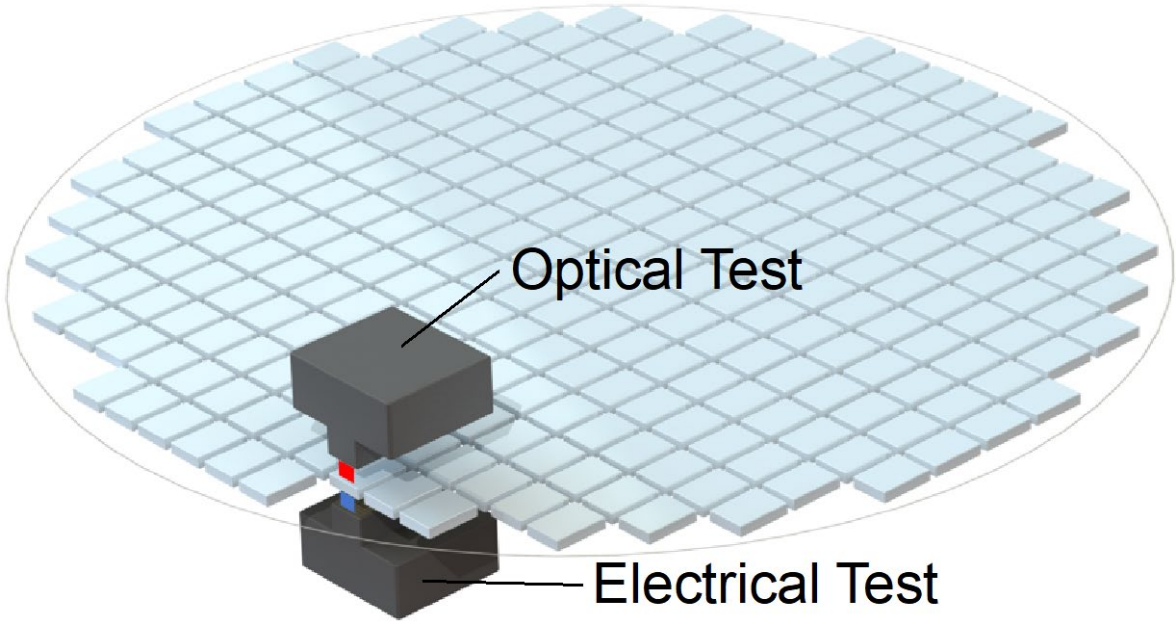
Surface Mount Photonics (packaging & test)





- Multi-Project Packaging (MPW) Runs
- Scale-up to Volume Manufacturing

- Standardized Wafer-Level Test
- Automated Electro-Optical Test