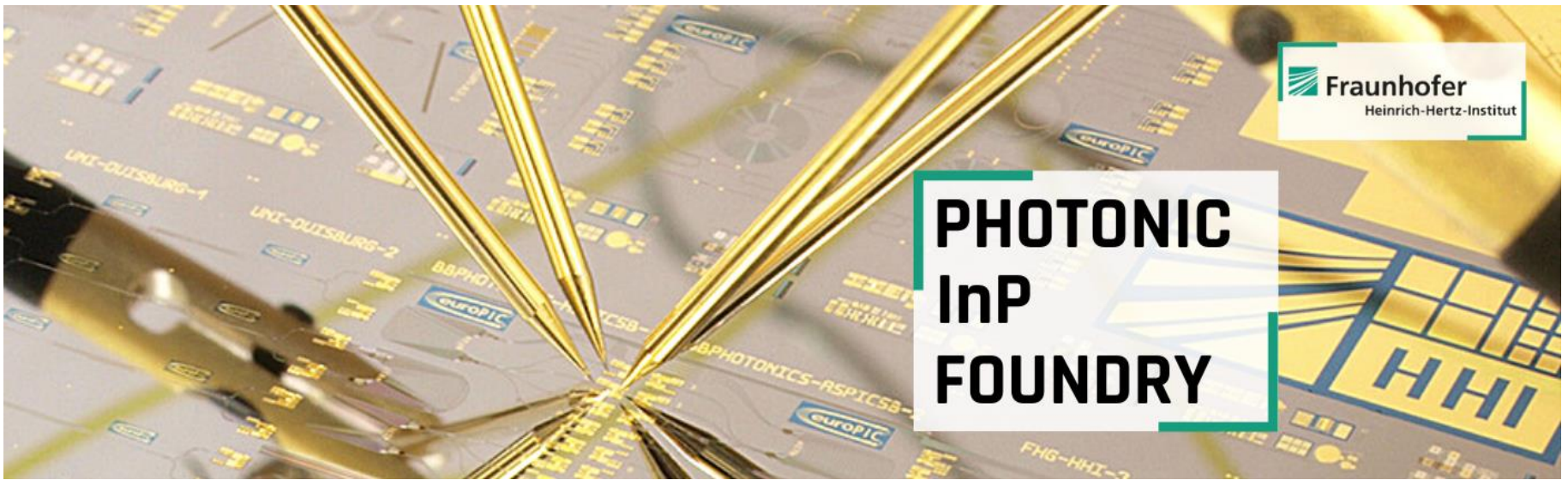


A compact RF PIC assembly for fast and convenient prototype development up to 40 GHz

RFconnect on a Glance



Fraunhofer HHI: Video, AI, Networks, and Photonics

600+ people, 80% self-financed

Video Compression



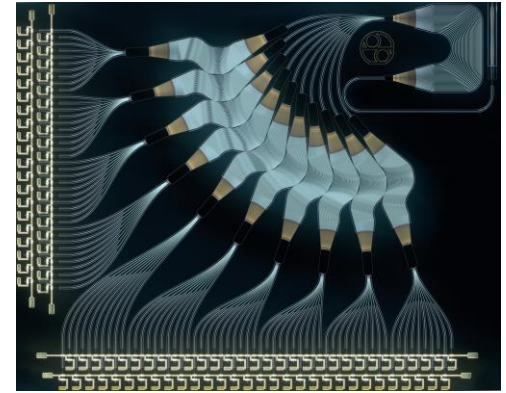
- H.265 / HEVC: 4th Emmy received
- ~5B devices

Photonic & 5/6G Networks



- LiFi for high speed data in EMI environments
- Quantum networks

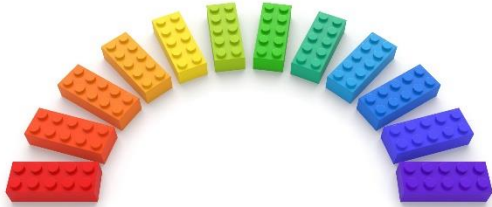
InP and Hybrid PICs



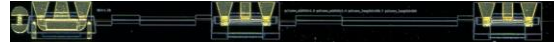
- **Up to 145 GHz**
- **Terahertz & biosensing**
- **QKD components**

Photonic InP Foundry

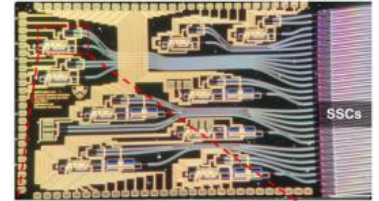
Drag and drop photonic integration



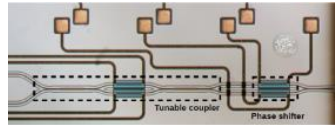
Bends 	Tunable Gratings 	Photodiodes
Couplers 	Amplifiers, Phase Sections 	Balanced Photodiodes
Pol. Elements 	Lasers 	
TO MZIs 	EA/EO Modulators 	RF tracks, crossings, ...



Dual-Pol EML (HHI)



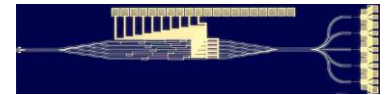
All-optical Neuron (Univ. Princeton)



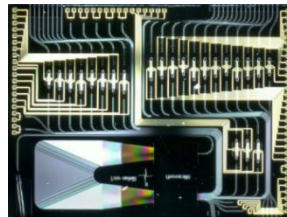
Mode Multiplexer
(Univ. Milano)



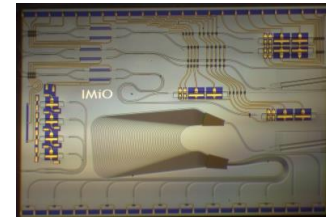
Quantum Entropy Source (Quside)



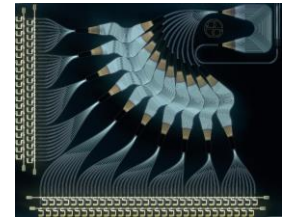
Stokes Vector Rx (HHI)



Nanosecond Wavelength Switch
(Microsoft)



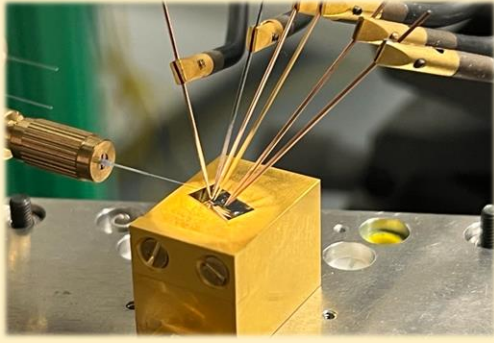
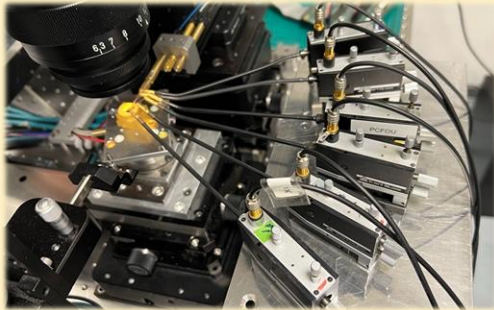
Fiber Sensor Interrogator
(Univ. Warsaw)



100ch WDM Rx
(Bright Photonics)

PIC Characterization – Difficulties and Solutions

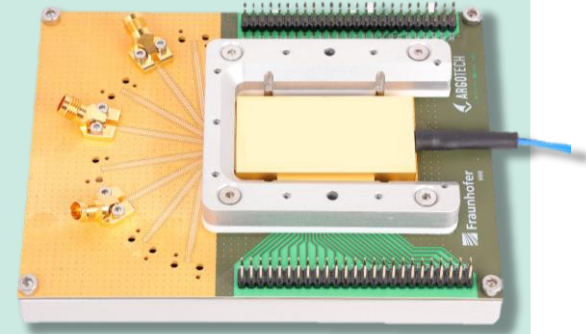
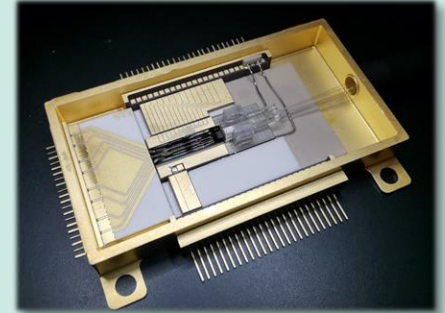
Standardizing prototype development with RFconnect



- High cost for material
- Time consuming
- Tangled cables
- Error-prone



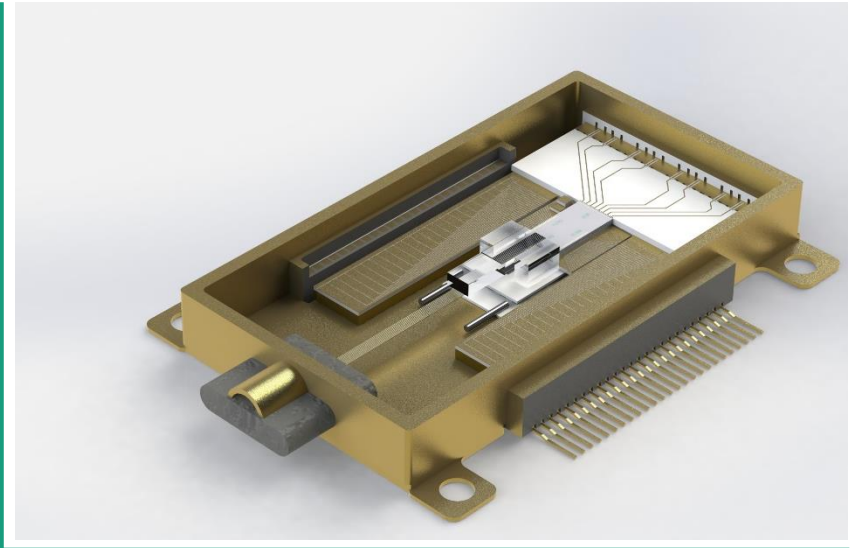
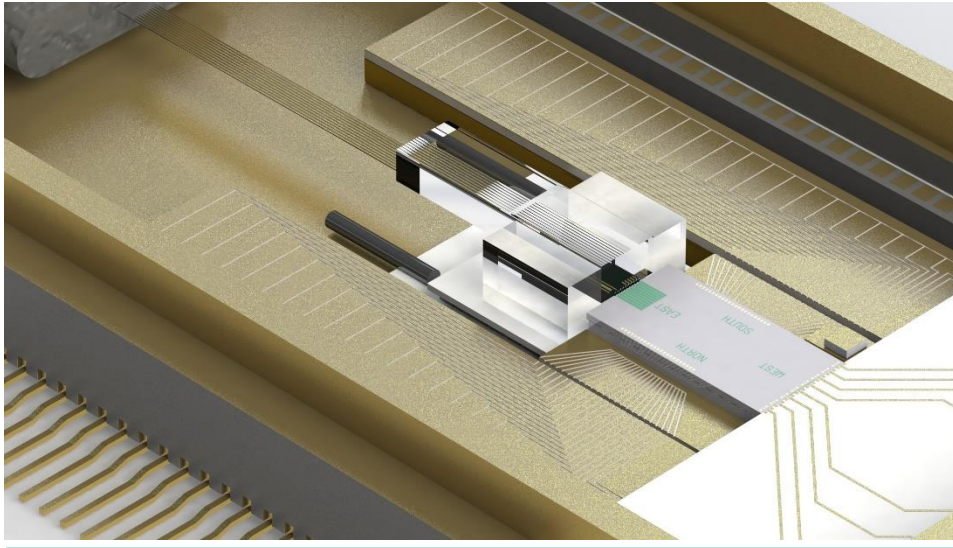
- Standardized
- Reproducible
- Comparable
- Scalable



RFconnect - Standardized Assembly with DC, RF & Opt. Ports

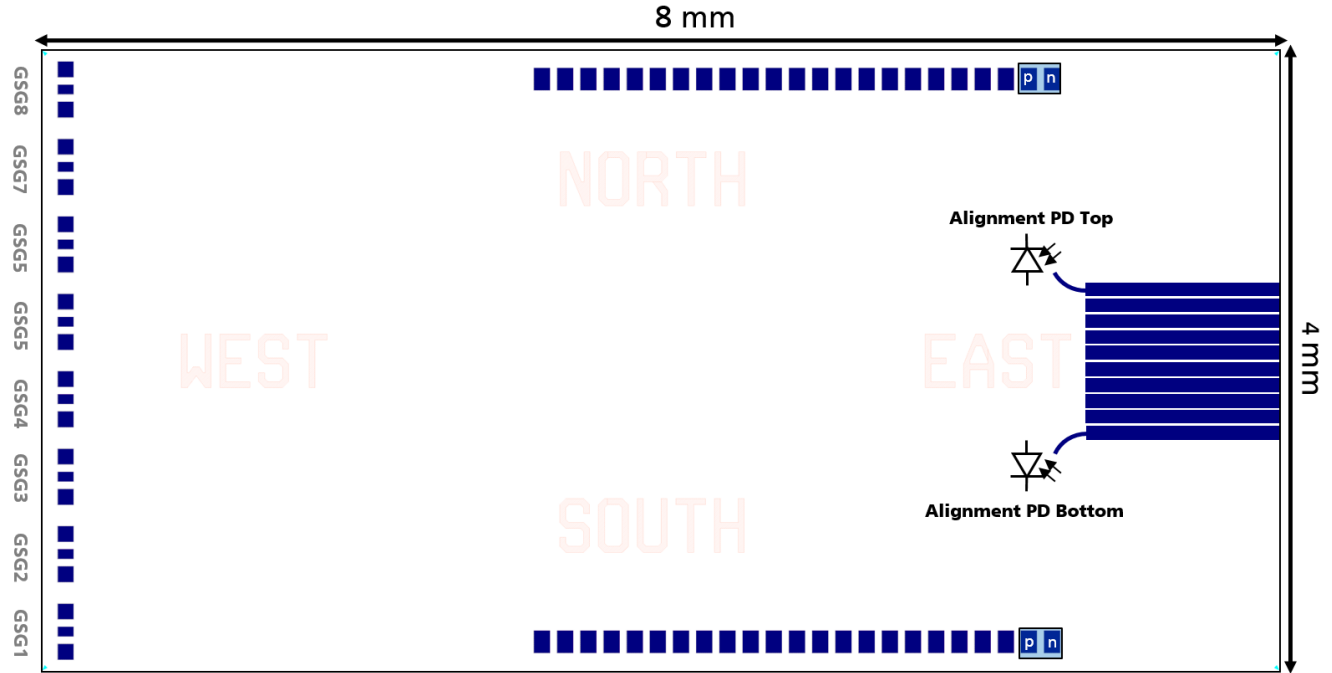
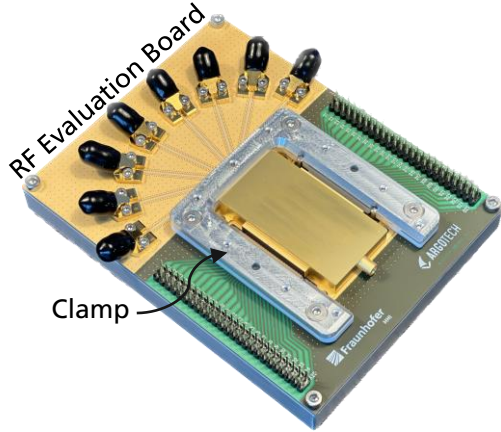
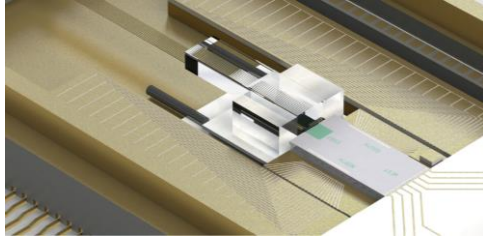
PIXAPP Gold Box

- 8 RF I/O ports
- 8 optical I/O ports
- 42 DC I/O ports
- Therm. controllable
- ESD protection included
- Lid cover available



RFconnect Design Template

4 x 8 mm² cell size



PIConnect Mainboard

A compact multisource for driving PICs

- compact multisource for PICs
- enables fast prototyping
- GUI and API available

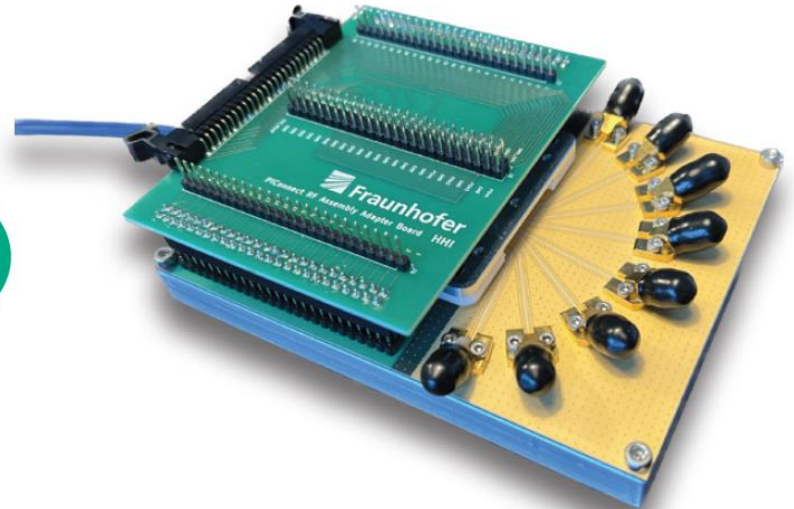


Specifications and pinout of the PIConnect Mainboard

Controller/Source	Amount	Pin	Specifications	Resolution	Monitoring
TEC controller	1	extra	5-45°C, ± 1.5 A		
NTC thermistor		1-2	10 k Ω thermistor supported	0.01 K	Temperature
Current source	8	3-18	Max. 200 mA @ max. 5 V	50 μ A, 1.2 mV	Voltage
Voltage source	8	19-34	-10...+10 V @ max. ± 20 mA	5 mV, 10 μ A	Current
Laser controller	4	35-50	Controllable optical power @ max. 200 mA & max. 3 V	50 μ A	Laser current

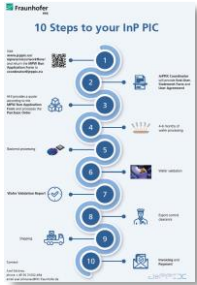
PIConnect Mainboard + RFconnect

Instant DC driving of RFconnect

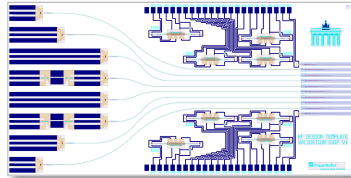


How to get Started

PIC Design and Process Flow



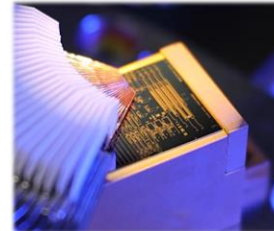
JePPIX



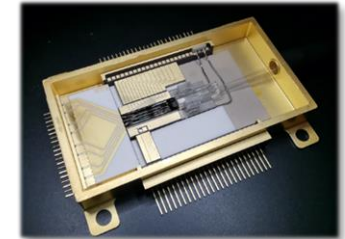
**HHI /
Design House¹**



**HHI /
Wafer Fab²**



**HHI /
other partner³**



**HHI /
other partner⁴**

- 1) e.g. Bright Photonics, VLC
- 2) e.g. SMART (InP), Lionix (SiN)
- 3) e.g. VLC, JePPIX
- 4) e.g. PHIX, Tyndall, Cordon, Argotech

Play POINSNAKÉ in Hall 4 Booth 523 & 527!

Beat the high score and ...

