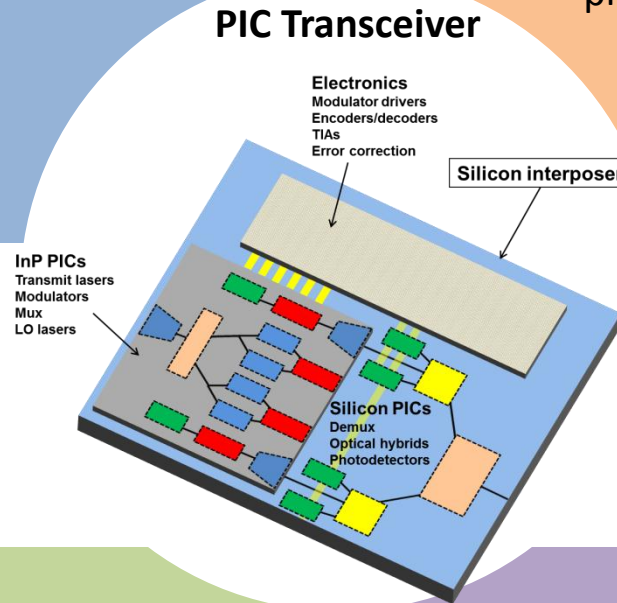


PICULS: Photonic Integrated Circuits for Ultra-Low Size, Weight and Power

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Research Objectives

- Demonstrate proof-of-concept photonic integrated circuits (PICs) for space optical communication
- Develop CMOS-compatible electronic-photonic integration techniques
 - TRL 1-2 at start: basic technology R&D
 - TRL 2-3 at end: Proof-of-concept demonstration



Approach

- Utilize photonics foundries and in-house fabrication capabilities for PIC demonstration
- Build on photonics ecosystem by employing simulation, design, and layout tools
- Merge best-in-class technologies for optimized transceiver performance
- Work with other institutions for system-level evaluations to prove feasibility of infusion

Potential Impact

- Significant cost, size, weight and power reduction for future space communications
- More efficient utilization of available optical bandwidth with integrated array technology
- Adoption of photonics manufacturing ecosystem for space comm. transceivers
- Added flexibility, increased reliability, and higher performance