

plasmoni

Project presentation

Energy- and Size-Efficient Ultra-Fast Plasmonic Circuits for
Neuromorphic Computing Architectures



General information

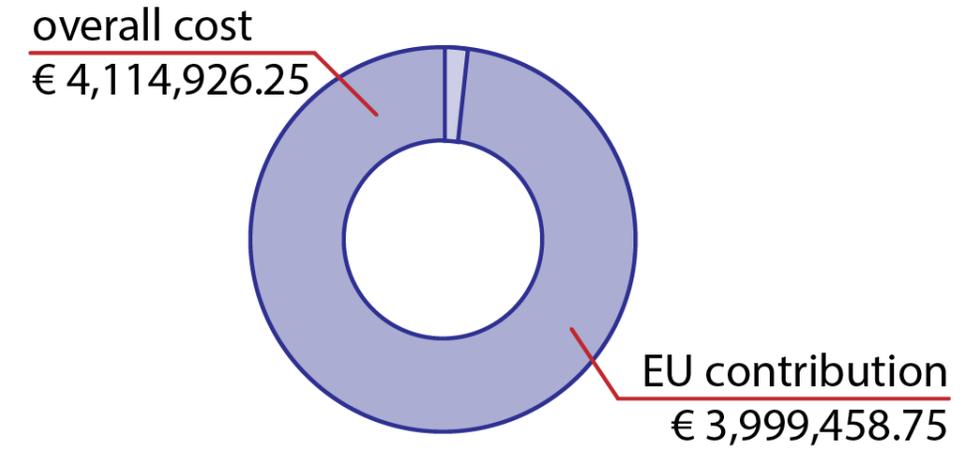
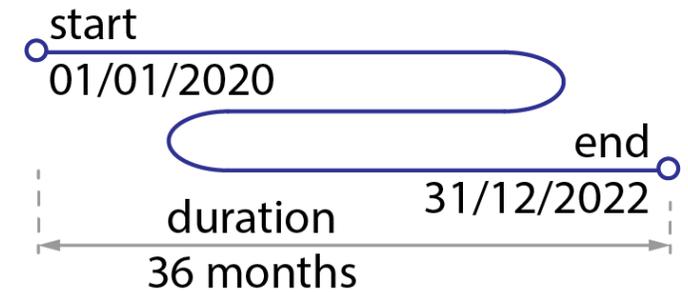
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Consortium



10 partners



7 countries



4 universities



2 R&D centers

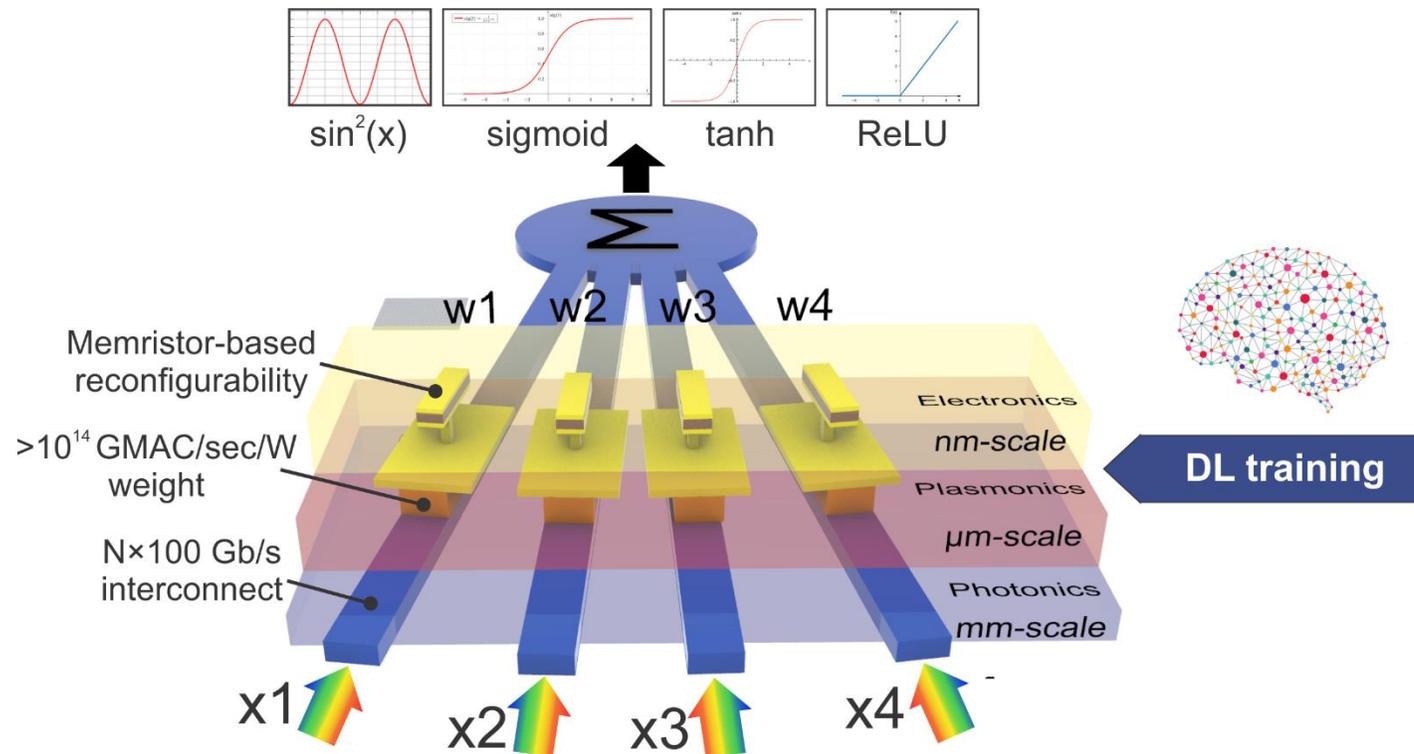


4 companies



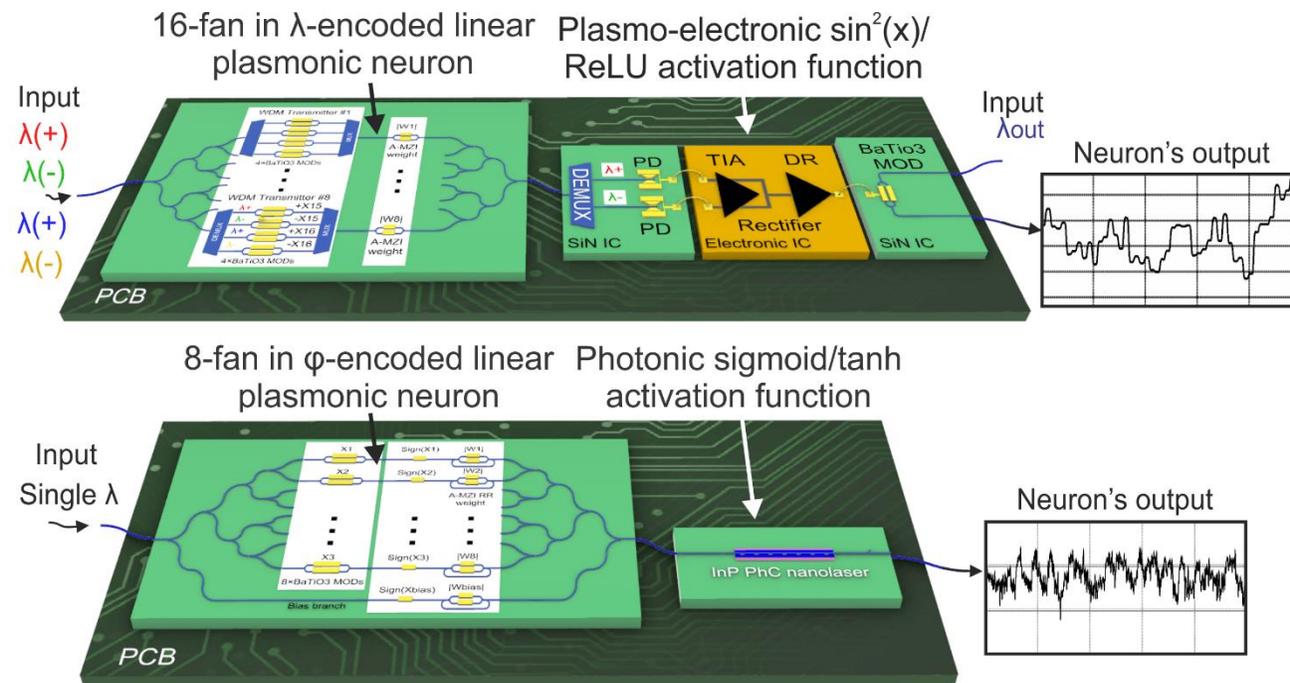
Concept

PlasmoniAC invests in **neuromorphic computing** towards sustaining processing power and energy efficiency scaling, adopting the **best-in-class material and technology platforms** for optimizing computational power, size and energy at every of its constituent functions.



Objectives

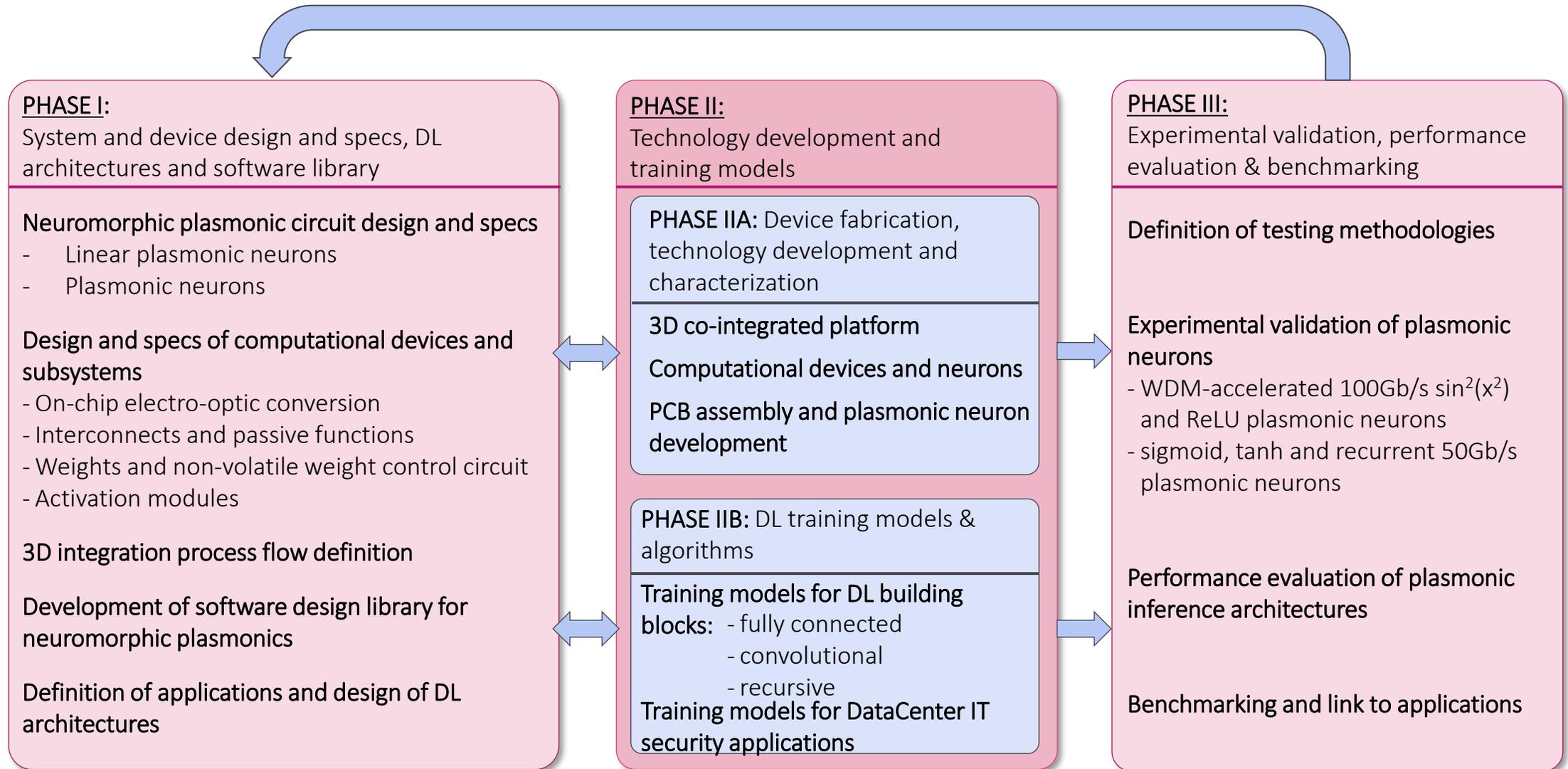
PlasmoniAC will release a whole new class of energy- and size-efficient **feed-forward** and **recurrent** artificial plasmonic neurons with up to 100 GHz clock frequencies and 1 and 6 orders of magnitude better energy- and footprint-efficiencies.



Technology breakthroughs

- CMOS compatible energy-efficient low-loss **plasmonic modulators**
- **3D cointegration platform** with SiN photonic interconnects, plasmonic modulators and non-volatile memristor nanoelectronics
- 16- and 8-input WDM and phase-encoded **programmable linear plasmonic neurons** @100 Gb/s
- **Activation modules:**
 - Plasmoelectronic ReLU and \sin^2
 - nanophotonic sigmoid and tanh
- Custom **Deep Learning** models and algorithms
- Neuromorphic plasmonic **software design library**

Development strategy



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PlasmoniAC consortium members



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