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Innovation in the Mixed Signal World

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Quick Summary of Analog Devices

We connect the physical and digital worlds to transform signals into actions.

Founded in 1965– continued emphasis on product and technology innovation

Hybrid manufacturing strategy: half of revenues from internal fabs, half from foundries

125k+ Customers

~11k+ Engineers

$1.6B* R&D Investment

$9.5B* Annual Revenue

70 Design Centers

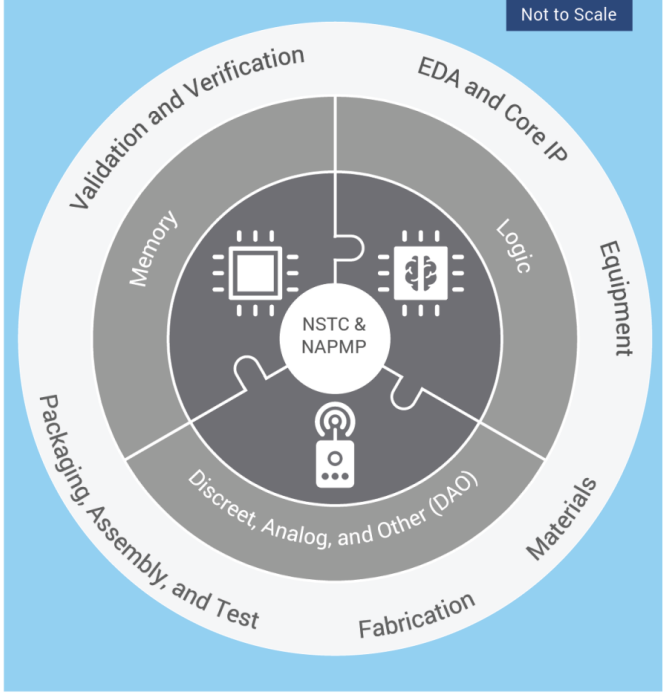
>6.5k Patents

75k+ SKUs

* Figure represents pro forma combined revenue and R&D investment for ADI and Maxim Integrated Products, Inc., with Maxim's financial results mapped to ADI's fiscal year ended October 30, 2021. Maxim revenue and R&D investment prior to August 26, 2021 (the date of ADI's acquisition of Maxim) are included for informational purposes only and have not been incorporated into ADI's income statement for fiscal 2021. Pro forma figures are unaudited.

Analog/Mixed Signal Capabilities

- Extremely diverse set of technologies: materials, devices, circuits, architectures, systems
  - Often running at very different scales
- High level of innovation, not necessarily on lithography
- Markets and Development are global



Sense	Measure	Connect	Interpret	Secure	Power
Machines and devices sensing the physical world around them	*Precisely gauging and tuning performance*	*Connecting the edge with the cloud*	*Processing and interpreting data at the edge*	*Ensuring the integrity of data, systems, and IP*	*Achieving new levels of energy efficiency*

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Core Markets and Technologies

Aerospace and Defense

Automotive

Communications

Consumer

Energy

Industrial Automation

Instrumentation

Intelligent Buildings

Power

Healthcare

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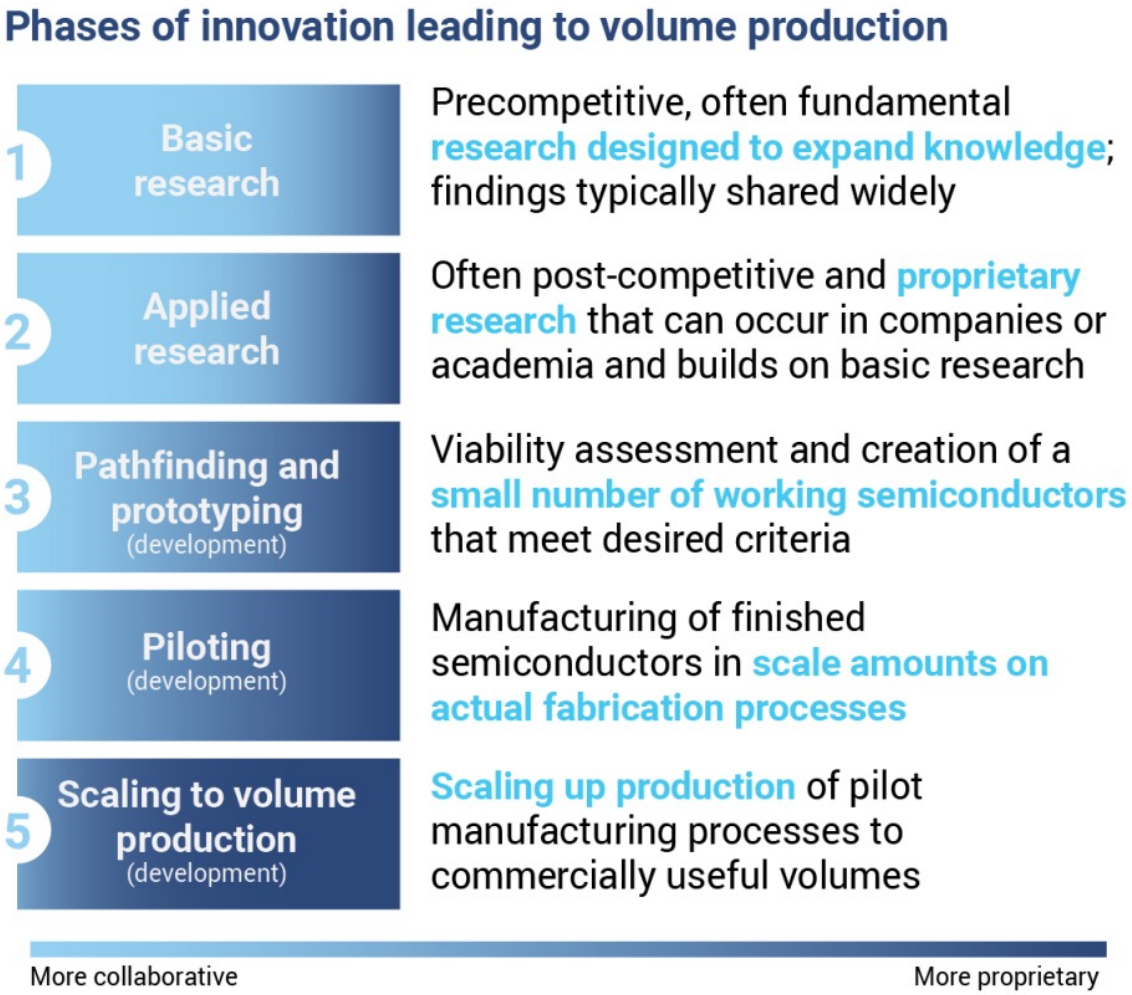
Innovation Phases



- **Collaboration becomes more challenging (but not impossible) as you move closer to commercialization**
- **There are extremely important innovations that happen in steps 4 and 5: lack of access to/experience in manufacturing can create serious "blind spots"**
- **The "valley of death" problem is half technical, half business/ecosystem: often requires coordination "across the stack"**

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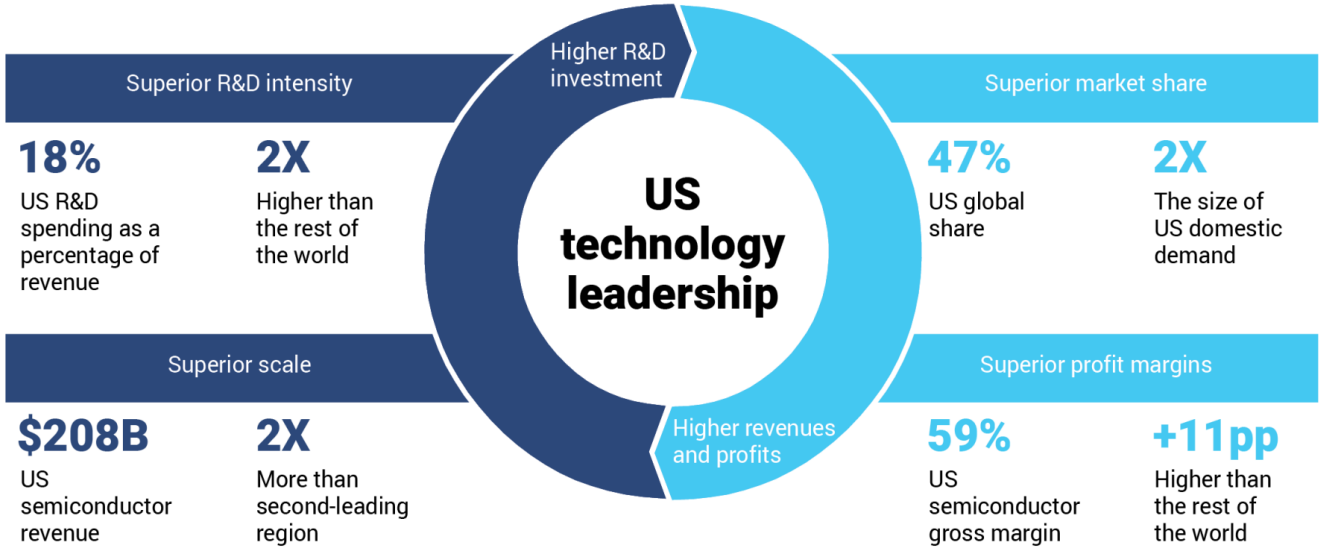
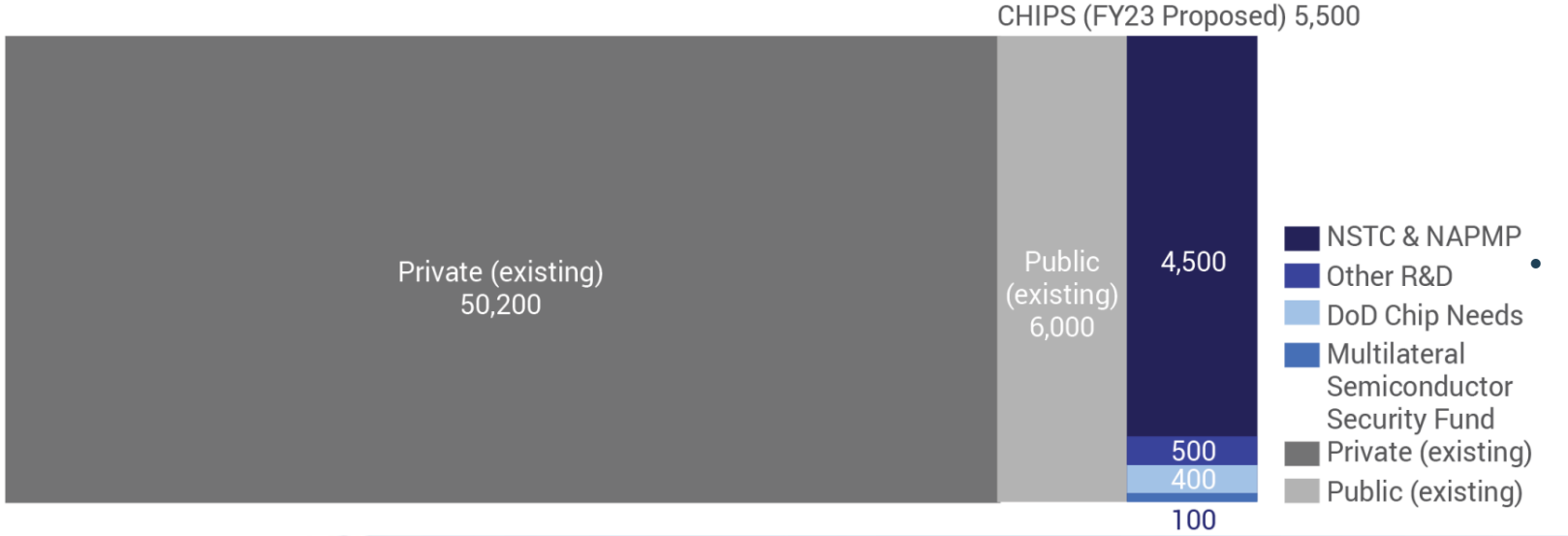
How Can CHIPs R&D Funding Make a Difference?



Note: All numbers are for 2020. Revenue weighted averages of reported financial data from top companies in each region. pp = percentage points

Estimated FY 2023 US investment in semiconductor R&D ($M)



US Semiconductor Industry already spends big on R&D. . .

Aim to Fill Critical Gaps:

- **Convene collaborative "full stack" ecosystems**
- **Sponsor increased access (eg MOSIS in the 1990's)**
  - **Academia**
  - **Small/Medium Sized companies**
- **Talent, Talent, Talent . . .**

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