

# World leaders in semiconductor innovation

Creating ultra-thin, ultra-low-cost flexible integrated circuits

Pragmatic Semiconductor has developed an integrated circuit (electronic 'chip') platform that doesn't rely on silicon. Our revolutionary technology uses thin-film semiconductors to create flexible integrated circuits that are thinner than a human hair, and are significantly cheaper and faster to produce than silicon chips. This provides a compelling alternative for many mainstream electronics applications, as well as enabling new applications not possible with silicon.

Pragmatic's ultra-low-cost, ultra-thin, flexible integrated circuits make it possible to embed our chips into almost anything, bringing connectivity and intelligence to everyday objects. Example applications include **radio frequency identification (RFID)** and **near field communications (NFC)**, where our chips cost less than a penny and allow these everyday objects to be given unique digital identities as well as interact with their environment. This brings game-changing benefits to the entire

product lifecycle, including inventory reduction, traceability, counterfeit detection, proof of provenance, and customer interaction. Pragmatic's technology is a key enabler for a circular economy and supporting sustainability goals, preserving valuable resources by allowing organisations to effectively reduce, recycle and reuse products and materials. Examples include:

- **Reducing food waste.** By adding our chips to food packaging, retailers can use RFID and sensors to determine freshness, better controlling supply chains and enabling dynamic use-by dates.
- **Recycling materials.** Our technology can be used to significantly improve the return and recycling of single-use packaging, for example through Deposit Return Schemes (DRS), which can now be deployed with automated identification to increase availability, convenience and return rates.
- **Reusing packaging.** Our chips enable item-level traceability of multi-use assets within a universal system for recapture, sorting, cleaning, and return.



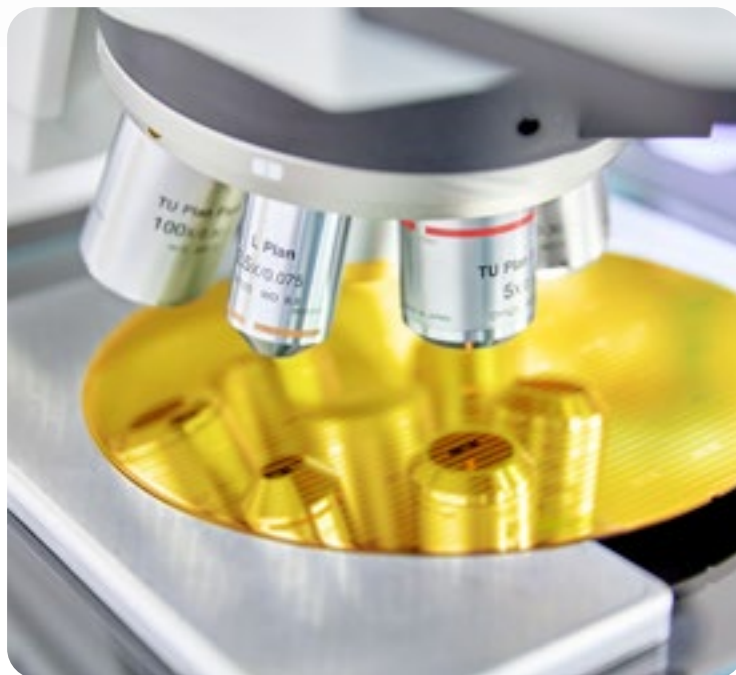


Underpinning these mass-market use cases, Pragmatic is the world's most sustainable semiconductor manufacturer. Our technology uses 100x less energy and water, and has 1000x lower carbon footprint than conventional silicon manufacturing.

Pragmatic also offers **rapid customisation** of functionality. We can deliver made-to-order chips from design to production in just a few days rather than several months. We enable designers to create their own application-specific flexible integrated circuits at a fraction of the cost and time required to develop custom silicon chips. Our foundry service uniquely allows **agile hardware design**, exponentially accelerating solution development and time-to-market. Examples include proprietary RFID protocols, time/temperature indicators, fingerprint sensors, wearable smart patches for healthcare, flexible display drivers, and novel microprocessor architectures.

We also offer a **Fab-as-a-Service** model that enables secure, dependable, localised semiconductor supply through manufacturing directly on a customer's site. This highly scalable distributed production allows cost-effective, high volume fabrication of flexible integrated circuits. Compared to conventional silicon fabs costing billions of dollars, our fabs require 100x lower capital expense and have >100x smaller physical and environmental footprint. Our self-contained modular fabs can be located anywhere in the world, delivering onsite 'just in-time' chip production that meets changing local demand whilst minimising inventory costs and ensuring continuity and security of supply at a local and national level.

Pragmatic is headquartered in Cambridge, UK, with our first fab operating in Sedgefield, and a second fab under construction at our new 15-acre Pragmatic Park site in Durham. Pragmatic has secured over \$180 million in funding from venture capital and strategic investors including Cambridge Innovation Capital, Arm (global leader in semiconductor design IP), Avery Dennison (global leader in RFID), and Amcor (global leader in consumer and healthcare packaging).



[www.pragmaticsemi.com](http://www.pragmaticsemi.com)

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