

FlexLogIC

™

FlexLogIC™ Manufacturing innovation by PragmatIC

www.flexlogic.systems



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 726029

13 December 2017

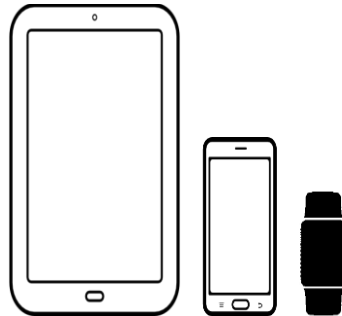
The evolution of electronics

FlexLogIC™

VOLUME 300 million p.a. → 50 billion p.a. → >1 trillion p.a.



Computers



Smart devices



COST

\$100 per IC → \$1-10 per IC → <1-10¢ per IC

Beyond silicon...

FlexLogICTM

Flexible integrated circuits (FlexICs) enable trillions of smart objects

- ✧ Thinner than a human hair
- ✧ Flexible and conformable
- ✧ Sub-cent electronic solutions



13 December 2017

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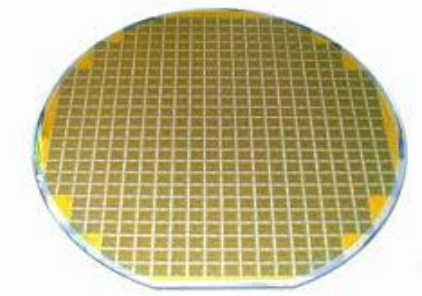
Electronics in everyday objects

Reinventing RFID and NFC

FlexLogIC

Over 90% lower IC cost

Silicon IC wafer

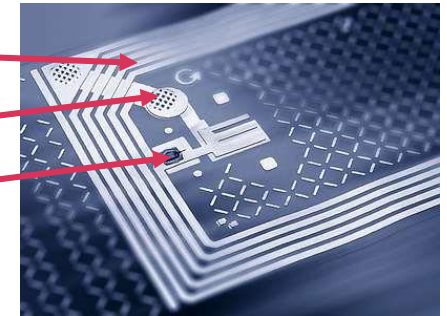


FlexIC sheet

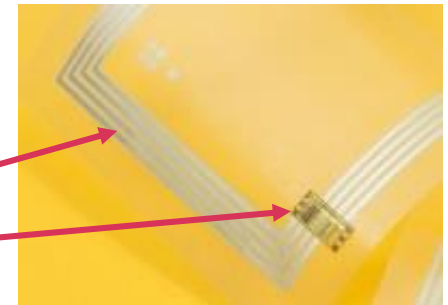


Up to 80% lower tag cost

Two layer antenna
Crimped crossover
Silicon IC



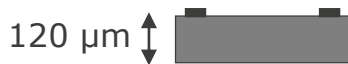
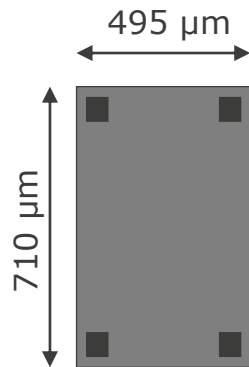
Single layer antenna
FlexIC as crossover



Reinventing usability

FlexLogIC™

Imperceptibly thin and simple to integrate



Typical Silicon IC



Typical FlexIC

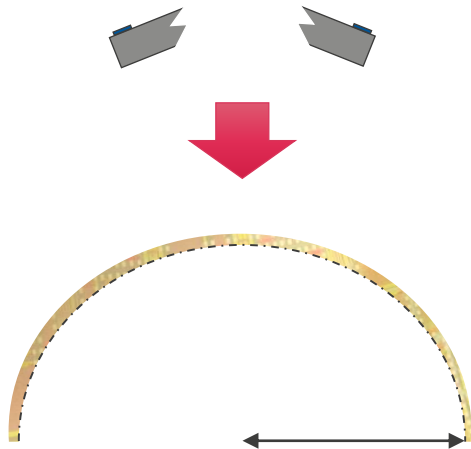
Reinventing usability

FlexLogIC

Inherently flexible

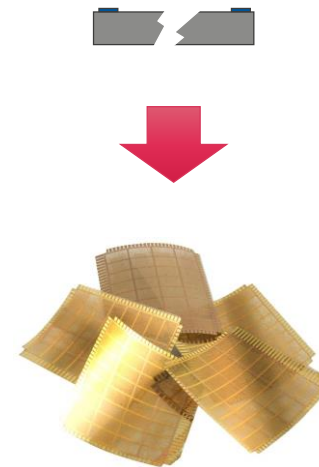
Robust & shock resistant

Silicon IC – doesn't bend...



FlexIC – bend radius \ll 5mm

Silicon IC – fragile...



FlexIC – plastic construction

Reinventing scalability

FlexLogIC

Fully integrated FlexIC production line

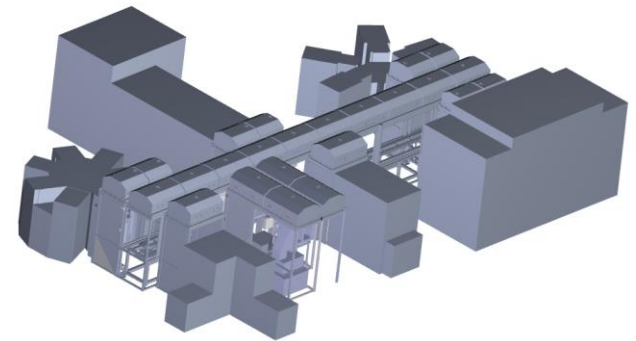
- ✧ Automated materials handling and process control
- ✧ Self-contained clean environment

Enables rapid expansion of FlexIC manufacturing

- ✧ Capacity for billions of FlexICs per annum
- ✧ Modular scalability

Compelling financials

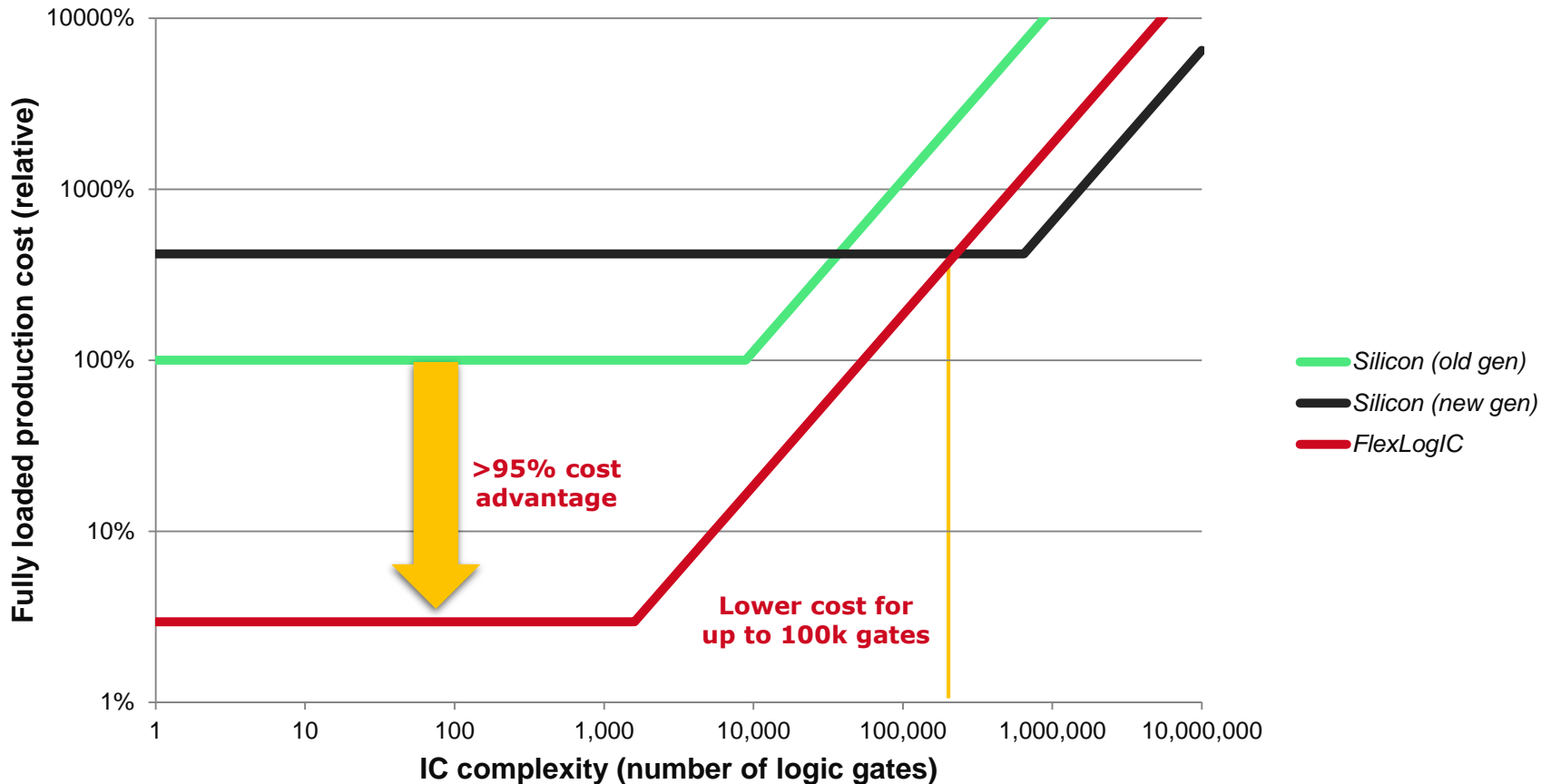
- ✧ Capex 100–1000x less than Silicon IC fab
- ✧ Pricing <1¢ per FlexIC in volume



FlexLogIC™ fab-in-a-box

FlexLogIC production costs

FlexLogIC™



NB: analysis assumes footprint is limited by complexity not I/O pads (more pads would increase inflection & crossover point)

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Electronics in everyday objects

FlexLogIC™ production ready



Design and specification finalised

- ✧ 60% higher capacity within original capex target
- ✧ 30% lower marginal production cost per FlexIC

Lease secured at UK's National Printable Electronics Centre

- ✧ Collocated with existing PragmatIC pilot production



Implementation of first system on track

- ✧ All equipment on site by December 2017
- ✧ Production ramp and optimisation through 2018

Implementation of additional systems already in planning

13 December 2017

A detailed, high-magnification photograph of a microchip, showing a complex grid of gold-colored circuitry and various colored components (red, green, yellow) on a dark substrate. The chip is curved, suggesting it's part of a flexible or curved device.

FlexLogicTM

Thank you
www.flexlogic.systems

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Electronics in everyday objects