

The EnCore Embedded Processor

Silicon Proven

In Fabrication

Projected

Feature	EnCore 130nm [speed opt]	ARM Cortex M3 130nm [speed opt]
Core Size [Baseline]	0.15 mm ²	0.43 mm ²
Dhrystone MIPS/MHz	1.45 [Single Issue]	1.25 [Single Issue]
EEMBC CoreMark™/MHz	2.040 [Single Issue]	1.753 [Single Issue]
Power Consumption [250 MHz]	0.070 mW/MHz [FMAX 250 MHz]	0.140 mW/MHz [FMAX 135 MHz]

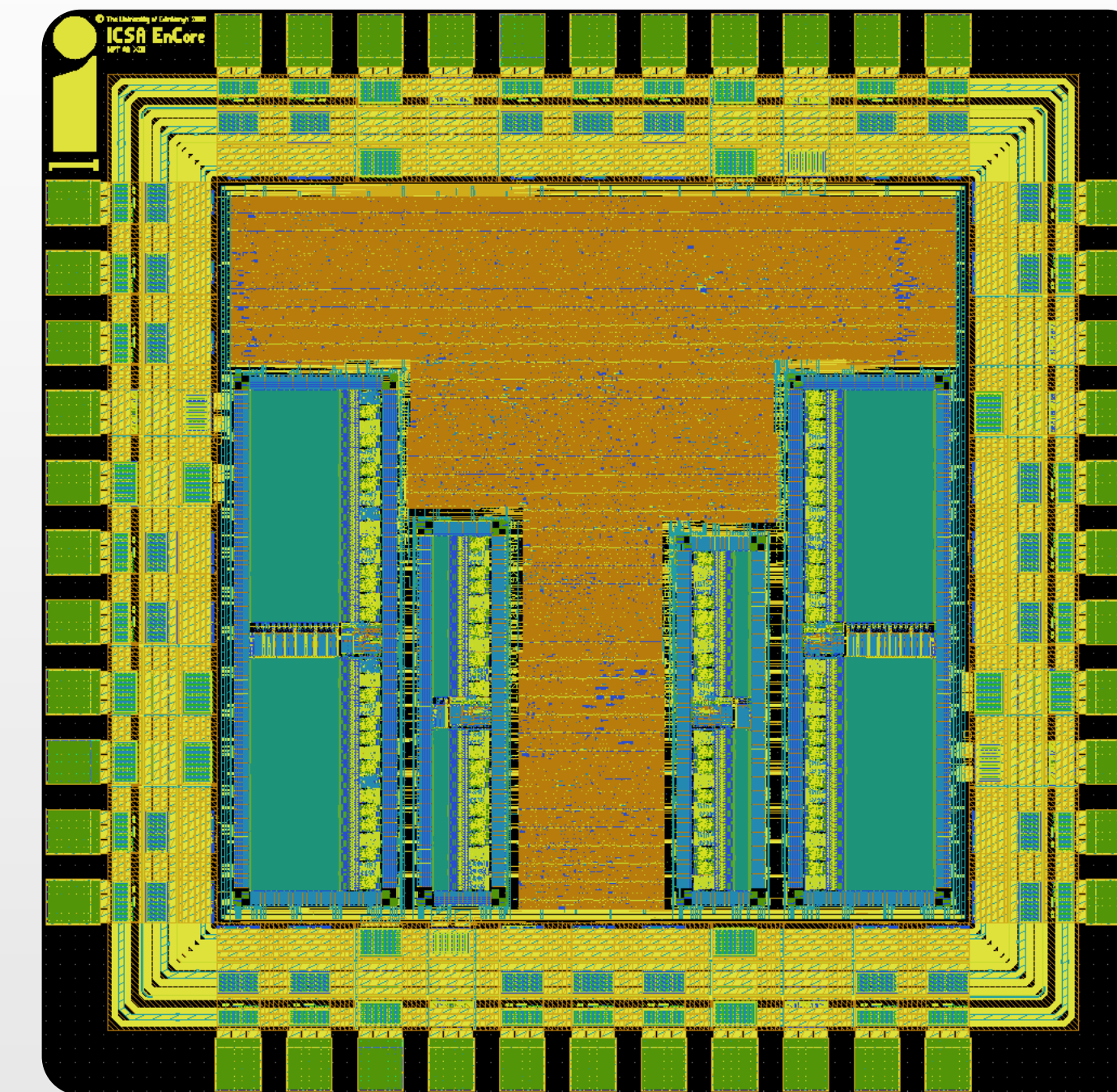
Feature	EnCore 90nm [speed opt]	ARM Cortex M3 90nm [speed opt]
Core Size [Baseline]	0.071 mm ²	0.210 mm ²
Dhrystone MIPS/MHz	1.45 [Single Issue]	1.25 [Single Issue]
EEMBC CoreMark™/MHz	2.040 [Single Issue]	1.753 [Single Issue]
Power Consumption [250 MHz]	0.024 mW/MHz [FMAX 420 MHz]	0.070 mW/MHz [FMAX 191 MHz]

Feature	EnCore 65nm [low power]	ARM Cortex M3 65nm
Core Size [Baseline]	0.036 mm ²	N/A
Dhrystone MIPS/MHz	1.45 [Single Issue]	1.25 [Single Issue]
EEMBC CoreMark™/MHz	2.040 [Single Issue]	1.753 [Single Issue]
Power Consumption [250 MHz]	0.012 mW/MHz [FMAX 500 MHz]	N/A

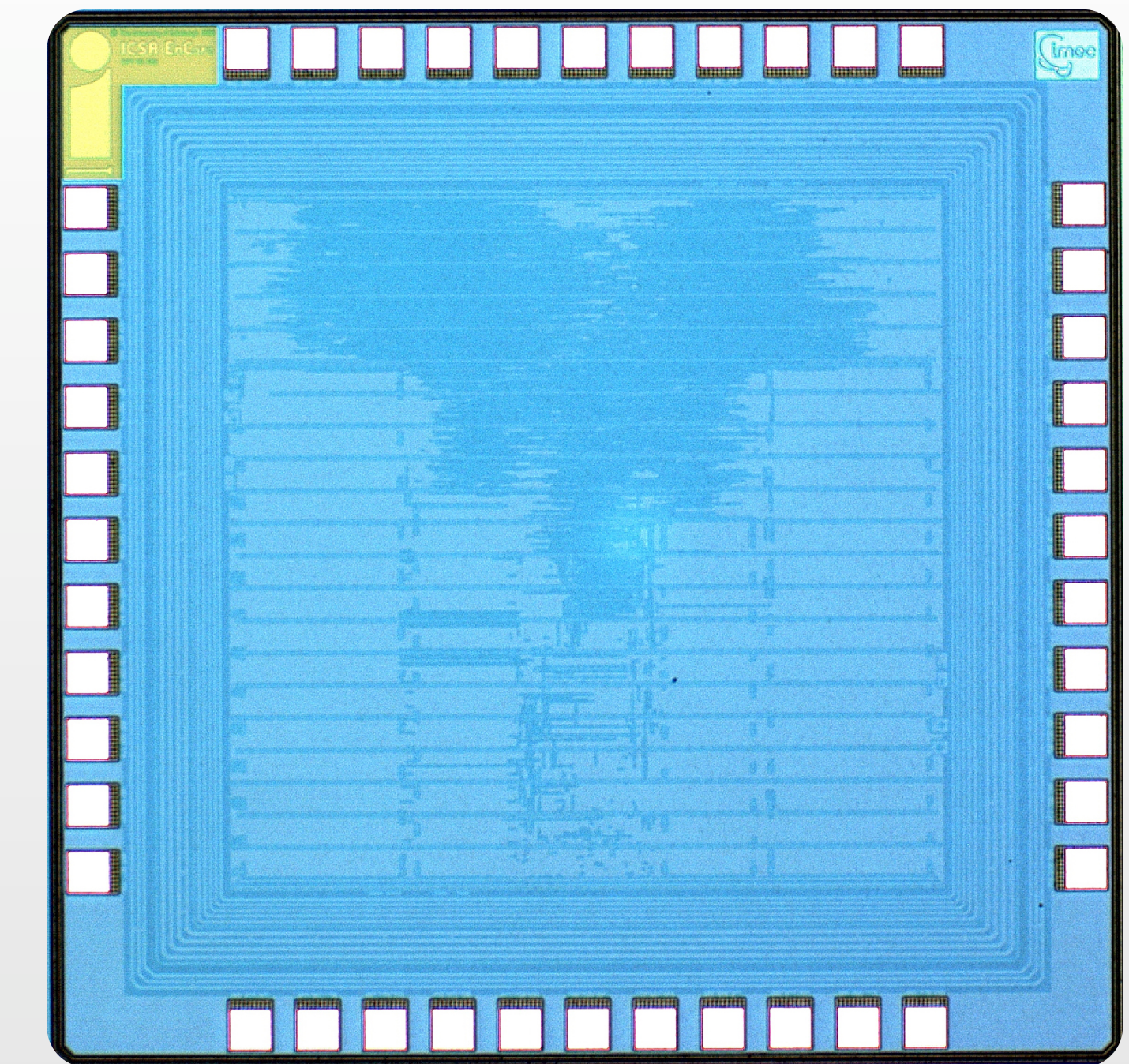
- Core sizes exclude RAM area
- EnCore power measurements include cache RAM power
- ARM data from ARM website (also believed to exclude RAM area)

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EnCore Calton



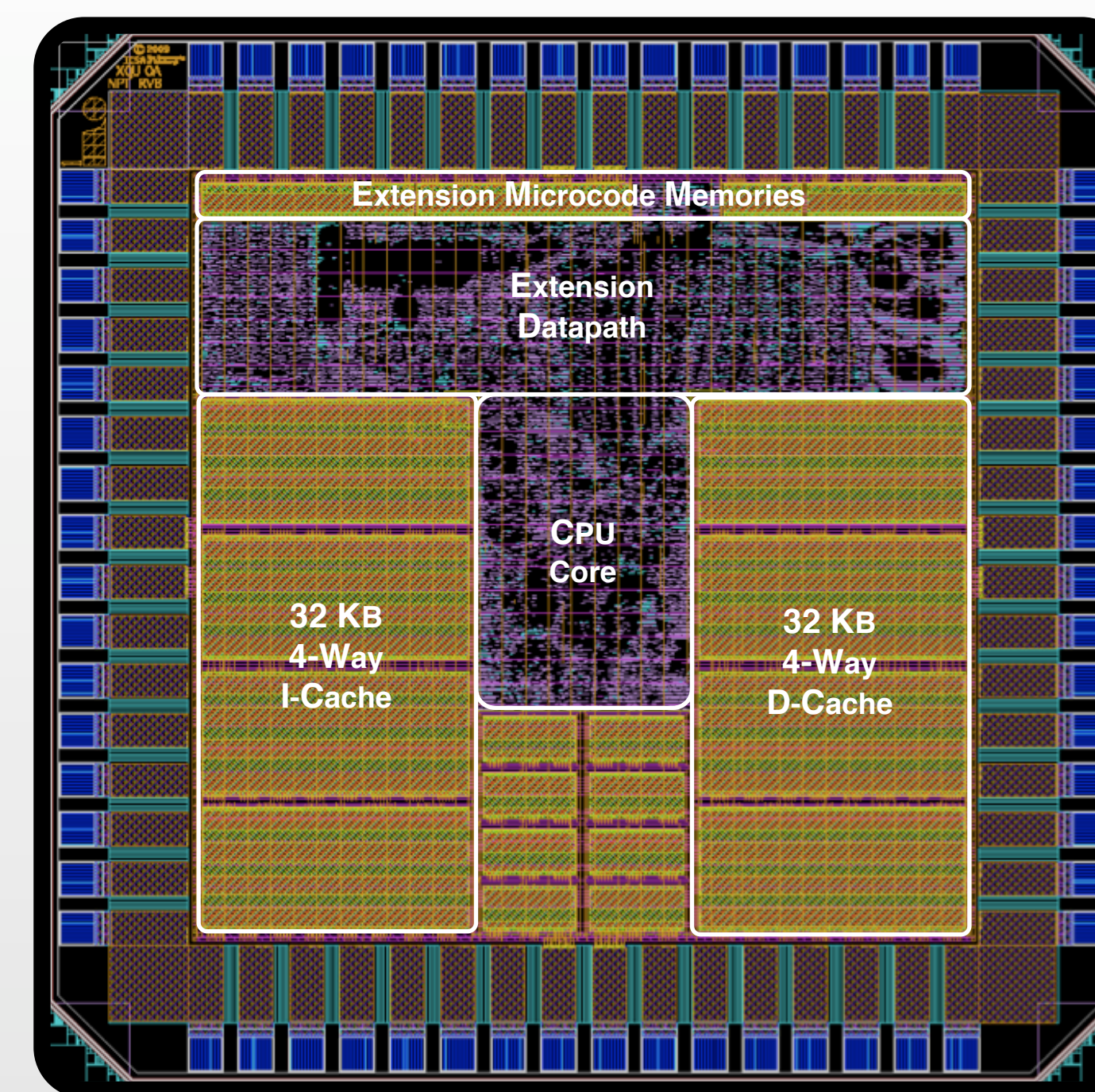
Chip Layout



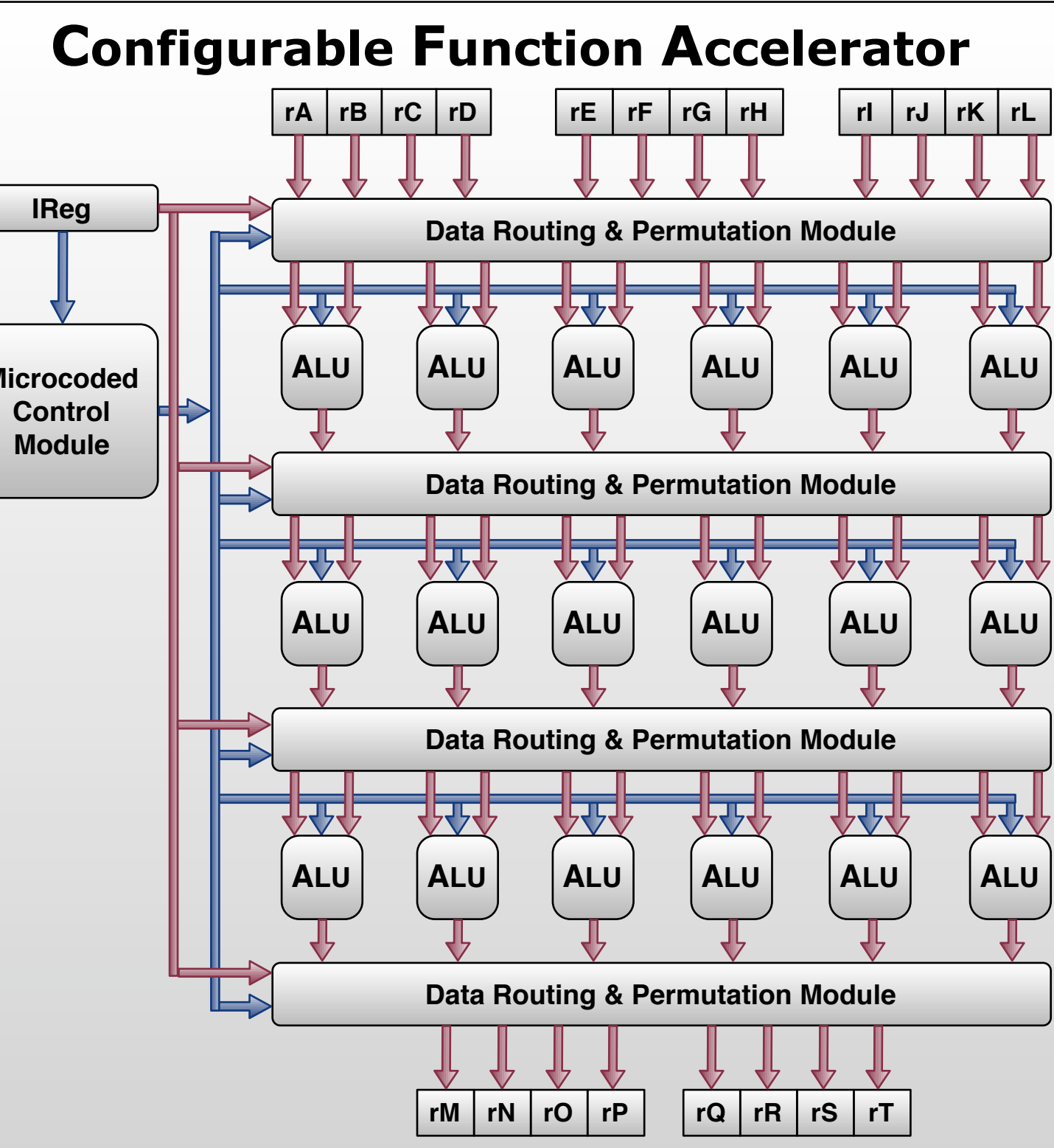
Photomicrograph

In Fabrication

EnCore Castle

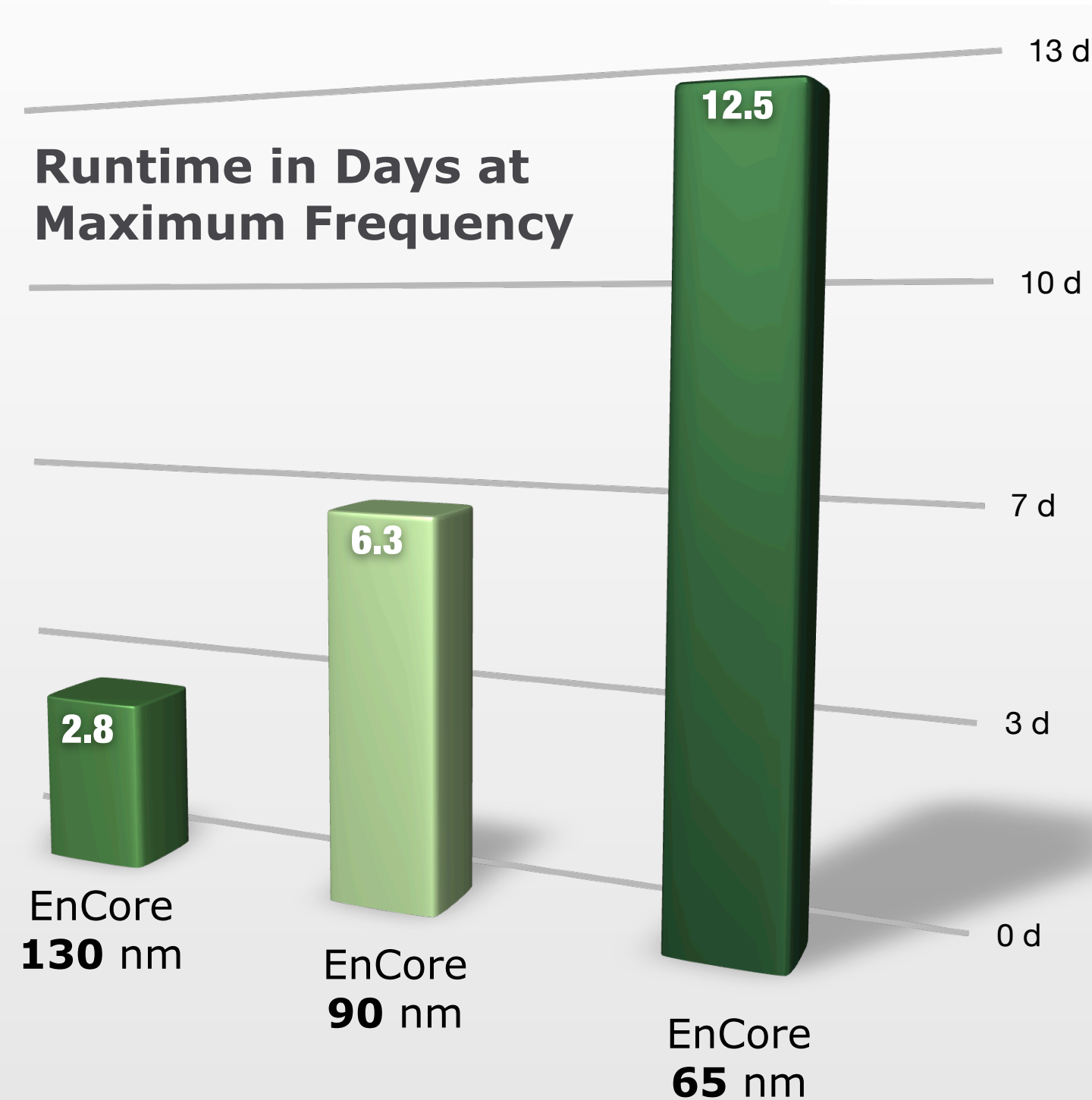


Chip Layout



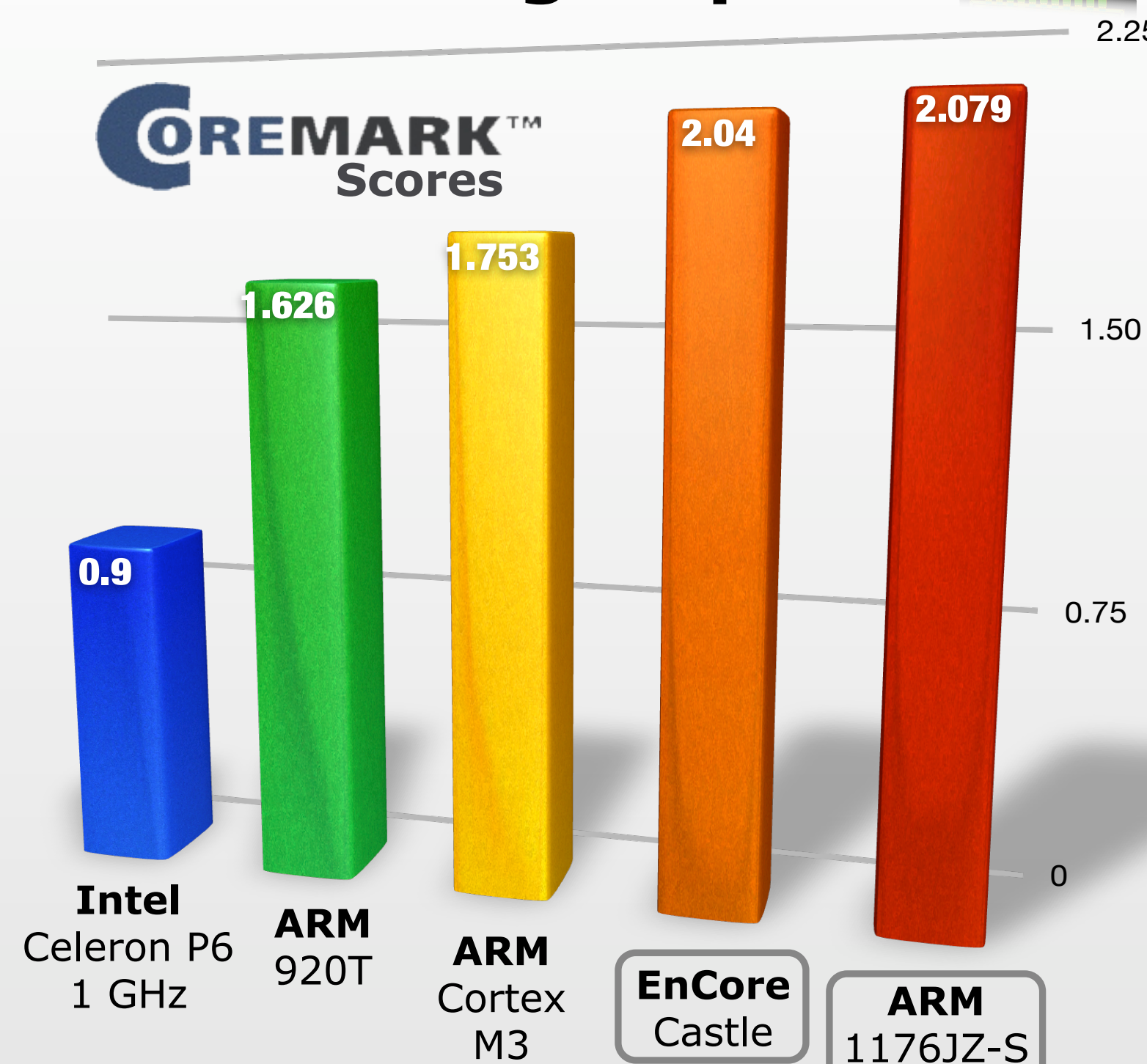
EnCore Microprocessor Ultra Low Power

Runtime in Days at Maximum Frequency



EnCore Microprocessor High Speed

COREMARK Scores



PASTA

<http://groups.inf.ed.ac.uk/pasta/>



Research

News

Publications

Processors

Compilers

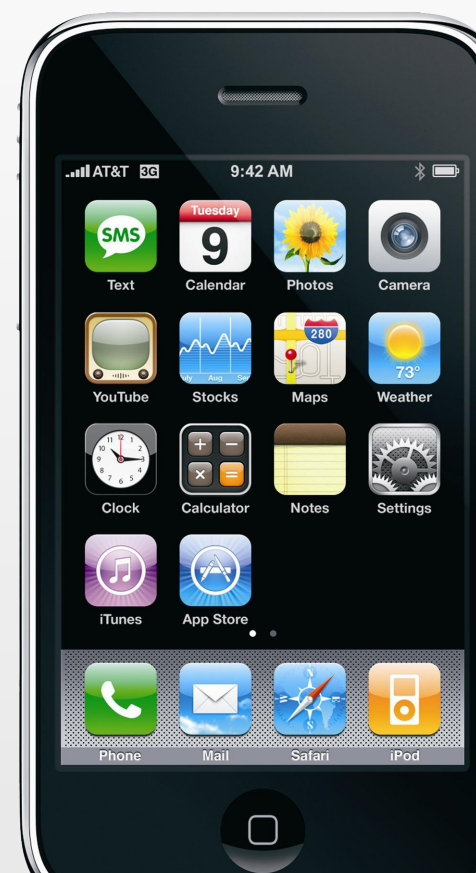
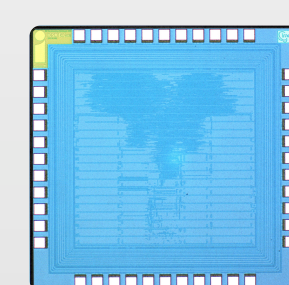
Simulators

People

Application Scenario High Speed Low Power SmartPhone

EnCore Calton

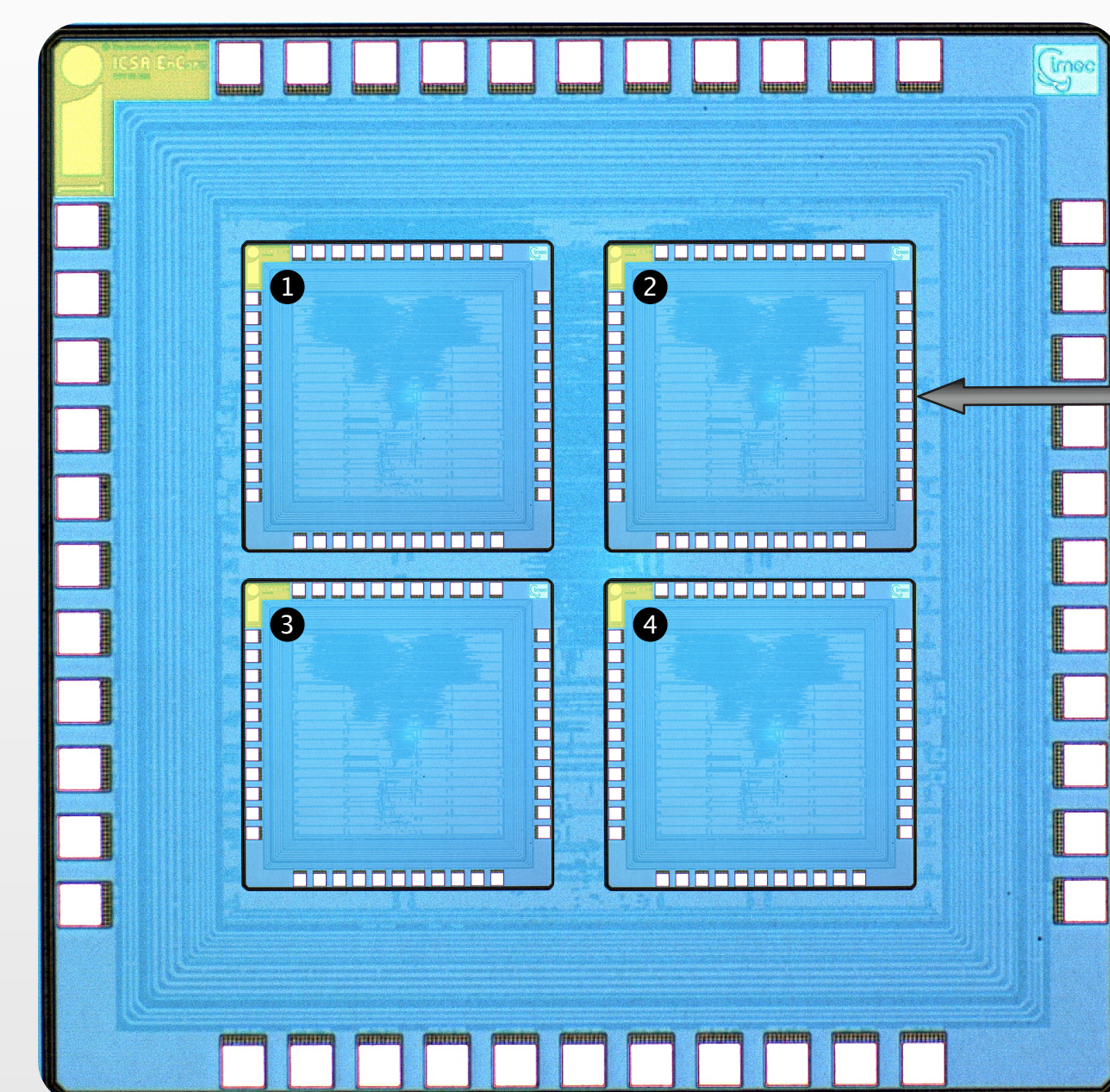
Delivers same performance while dissipating significantly less power and utilising a much smaller area than ARM 1176JZ-S processor that is integrated into the iPhone 3G.



iPhone 3G

Projected

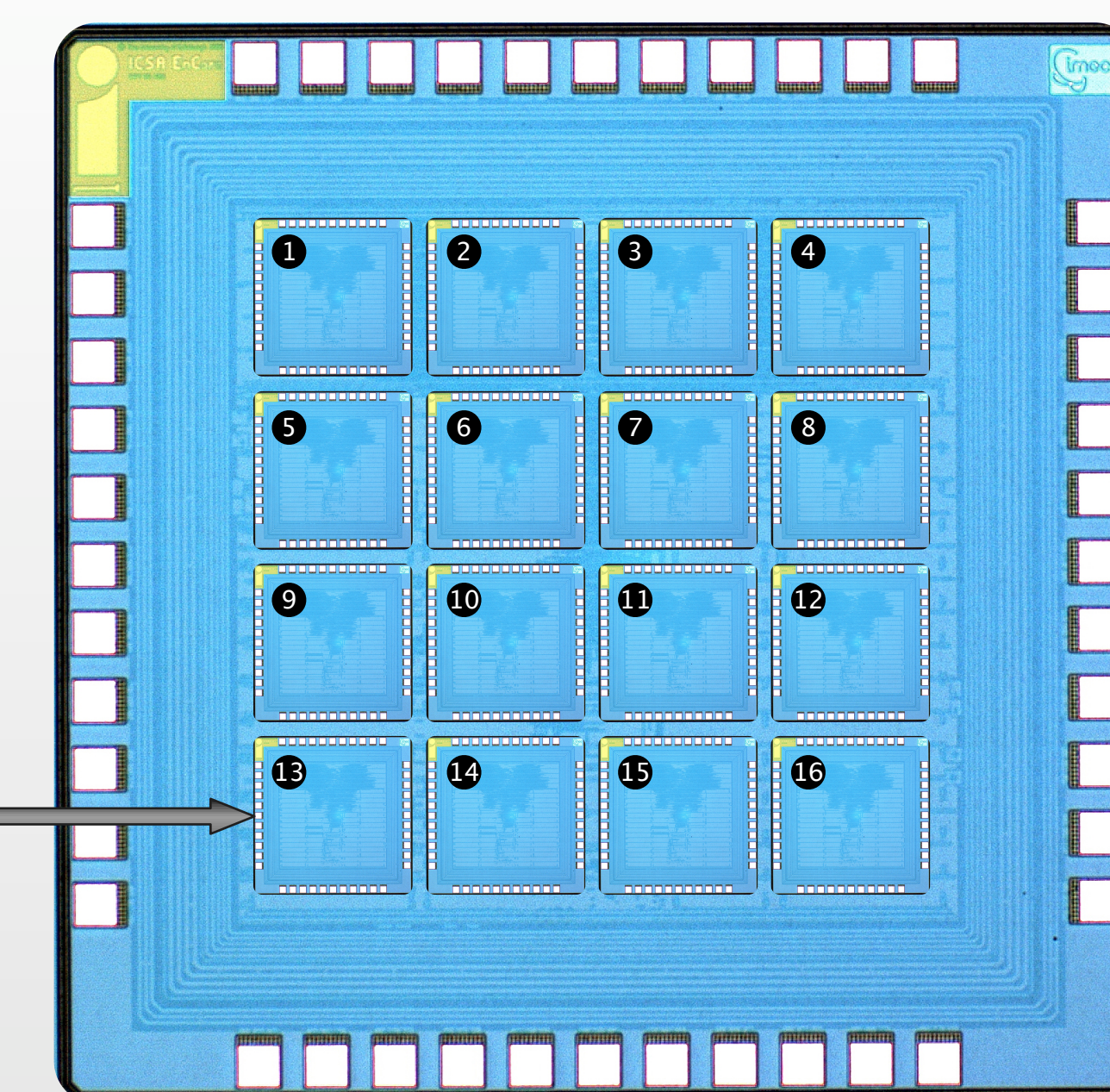
EnCore Projections - 65 nm and beyond



Quad Core EnCore - Size 0.15 mm²

65 nm

32 nm



16 Core EnCore - Size 0.15 mm²

PASTA
Team



Nigel



Björn



Marcela



Richard



Alastair



Oscar



Georgios



Freddie



Igor



Karthik