Streamlining Embedded SoC Design with Low-Cost, Fast Track Path to ARM IP

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The Architecture for the Digital World® **ARM**

ARM is Accelerating Innovation

Easy access to a pre-integrated ARM® Cortex®-M0 processor system
for design, simulation and prototyping

Low-cost, simplified fast-track $40k license to design, manufacture,
and commercialise Cortex-M0 based products

Bringing together a global network of design houses to help
with custom SoC development

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New Wave of Innovation

Driving a new wave of custom SoC development

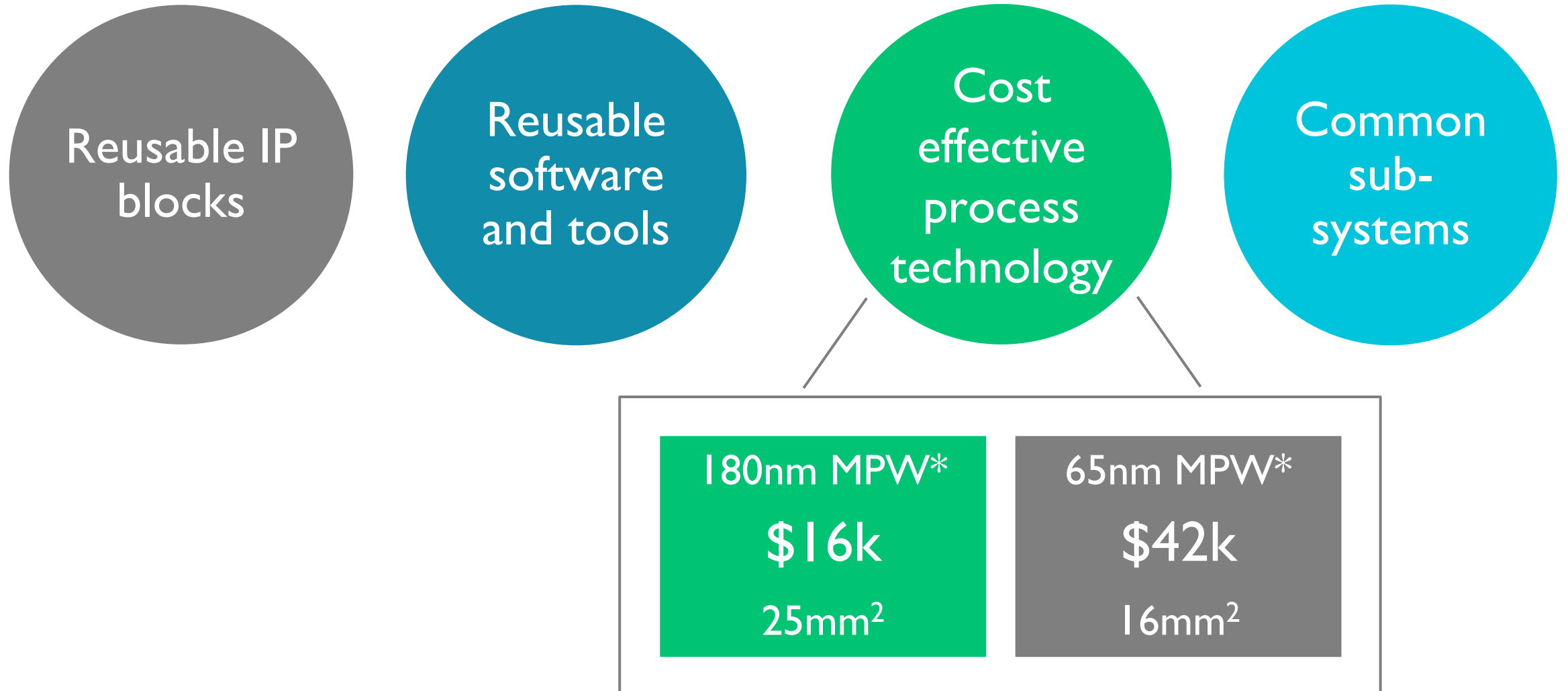| Sensor and mixed signal companies: integrated IoT solutions | Start-ups: innovative solutions | OEMs: reduce cost, reduce power, differentiate |

Retail Smart Lighting Medical Industrial Home Agriculture Building Automation

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Economics of Custom SoCs

Reusable IP blocks

Reusable software and tools

Cost effective process technology

Common sub-systems

180nm MPW*	65nm MPW*
$16k	$42k
25mm^2	16mm^2

* 45 Samples. Source: Europractice

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Example: imec IC-link

500
Tape-outs
per year

30%
Growth
rate

Driven by "sub-stream innovation"

Database Entries

350 250 180 130 90 65 40 28

Node (nm)

■ Analog/MS
■ Digital

* Source: imec IC-link database

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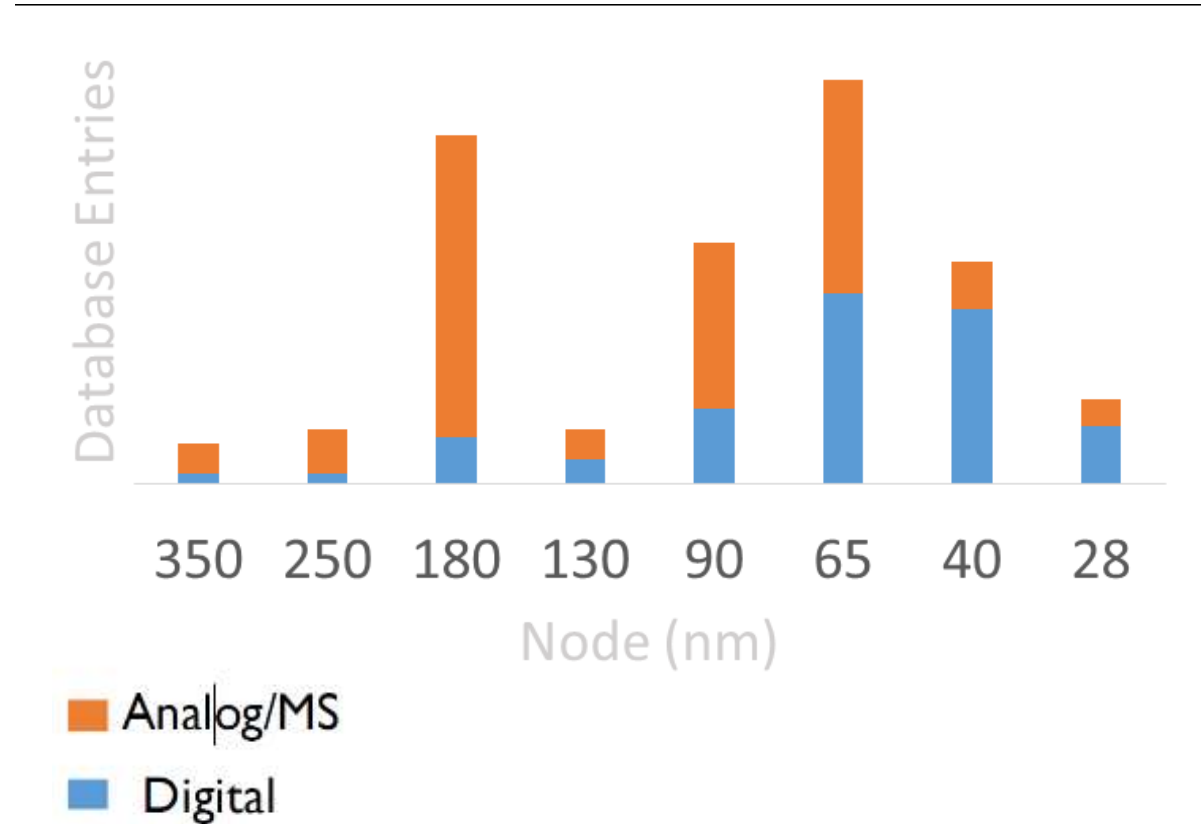
Sub-stream Innovation

"The convergence of high-growth, fragmented, wirelessly connected application domains and manufacturing sweet spots using mature technologies has led to an explosion of activity by SMEs."
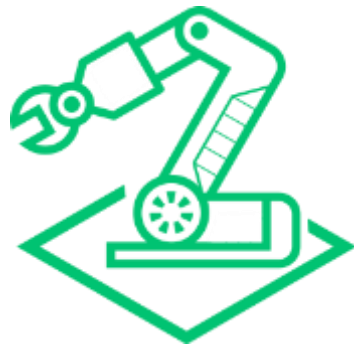
imec IClink

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Real Example Mixed Signal Custom SoC from S3 Group

Smart Industrial Sensor	Integration of discrete mixed signal components and Cortex-M processor

Pressure & temperature sensing
Diagnostics
Motor control
Communications

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Real Example Mixed Signal Custom SoC from S3 Group

90%
Reduction in BoM

Differentiation

Control of supply chain

85%
Reduction in PCB area

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ARM DesignStart: Fast Route to Production Silicon

ARMDesignStart
IP Online Access

Design		Free of charge design & simulation using Cortex-M0 and system IP
Prototype		Low-cost prototyping on FPGA board ($995)
Produce		$40k fast track, simplified commercial license
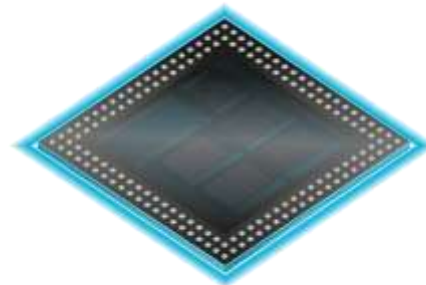
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Easy Access to ARM IP

Design

Prototype

- ARM Cortex-M0 processor is now available for download from ARM's DesignStart portal (designstart.arm.com)

- Includes system IP and tools to simplify system design:
  - Cortex-M0 processor*
  - Cortex-M0 System Design Kit (key components of SDK including system IP, peripherals, test bench and software)
  - ARM Keil MDK development tool for software development – 3 month license
  - Prototyping option on ARM supplied FPGA board ($995)

* Supplied as obfuscated, fixed configuration, fully synthesizable RTL

Easy and Low-cost Path to Commercialisation

Produce

- New fast track $40k simplified licensing package
  - Makes it easy to move to next stage of product development

- Package includes system IP and tools to simplify system design:
  - Cortex-M0 processor
  - Cortex-M0 System Design Kit (including system IP, peripherals, test bench and software)
  - ARM Keil MDK development tool for software development
  - 1 year support and maintenance

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Technology License Agreement ("TLA")

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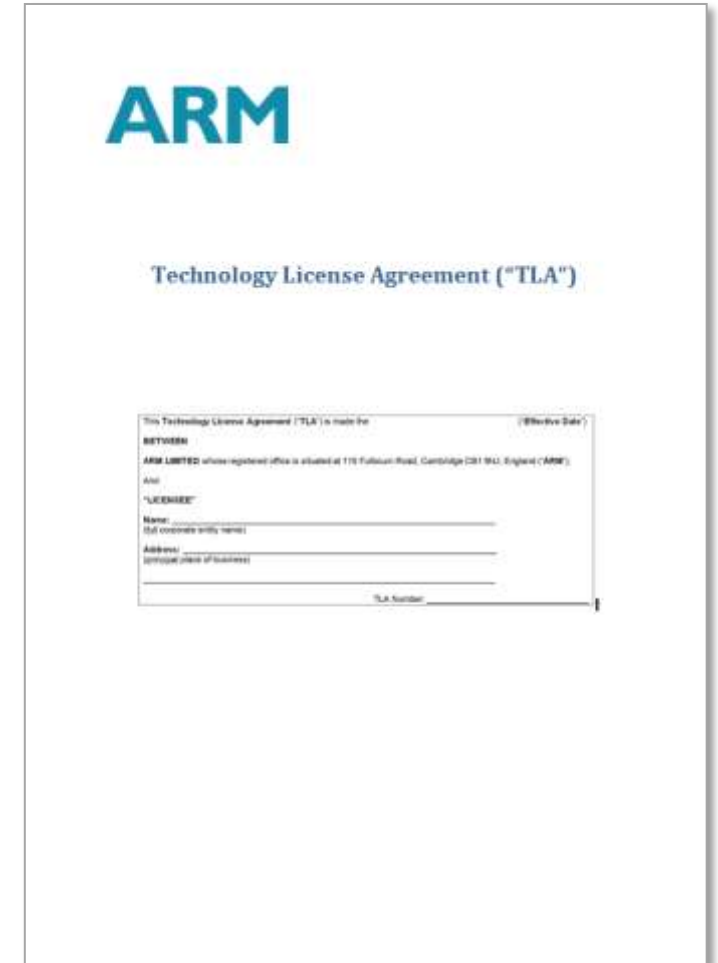
Physical IP on DesignStart Portal

- Offering the broadest foundation physical IP foundry solutions
    - Over 15 foundries represented
    - Over 85 process node technologies supported
    - From 250nm to 16nm /14nm FinFET
    - Download front end views to design
- Foundry sponsored physical IP = $0 licensing fees
    - Many choices of foundries and process technologies

Custom SoCs Open to All

- ARM's Design House partners bring chip development expertise
  - From turn-key chip development to consultancy and help
  - Assisting those customers with less SoC design experience
  - Providing additional resource to smaller teams

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ARM Cortex-M0 Processor Package

Cortex-M0

ARM's most widely licensed Cortex processor

Ideal for smart embedded and mixed signal applications

- Smallest 32-bit ARM processor – exceptionally low gate count

- Broad ecosystem

- Upwards compatibility with the Cortex-M series

Cortex-M0 SDK

System Design Kit for design acceleration

Reference design makes it easy to create Cortex-M0 based systems.

- Essential system IP to simplify integration

- AMBA interconnects and peripherals

- Firmware & test bench software

Keil MDK

Comprehensive software development solution for Cortex-M processors.

Optimised for deeply embedded processors

- IDE
- C/C++ compiler
- Debugger & trace
- Software package management
- Extensive Middleware

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Accelerating Innovation

By streamlining access to ARM Cortex-M0

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Thank You

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