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Accelerating Innovation: Low-Cost Access to Arm IP

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The Architects of Global Possibilities

The global leader in the development of licensable technology

- R&D outsourcing for semiconductor companies

Focused on freedom and flexibility to innovate

- Technology reused across multiple applications

With a partnership based culture & business model

- Licensees take advantage of learnings from a uniquely collaborative ecosystem

1,690+
licenses, growing by >100 every year

150+bn
Arm-based chips shipped to-date

6.5bn
Arm-based chips shipped in Q3 FY2019

70%
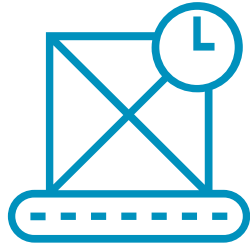of the world's population uses Arm technology

530+ Licensees
Industry leaders and high-growth start-ups; chip companies and OEMs

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Three Biggest Hurdles with Custom Silicon Designs

- What prevents SoCs from commercial success?

Time to market

Time is money and a competitive advantage
Early product release means higher margins & more sales

Return on investment

Custom silicon is often low in production volumes, so it's key to keep upfront costs as low as possible
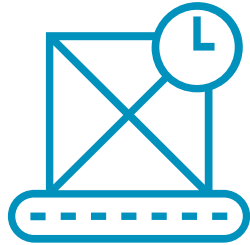
Development risk

Custom silicon design is a complex process, which can add development risk when not managed properly

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Working with Arm Alleviates these Hurdles

- Proven, verified and diverse IP portfolio

Time to market

Accelerate development with fast and easy access to a comprehensive IP package of CPU IP, system IP and reference designs

Return on investment

Options to license IP at low or no upfront cost to minimize initial investment and reduce overall costs

Development risk

Proven and pre-integrated reference designs with out-of-box software support, substantially reducing development risk

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Introducing Arm Flexible Access

- A new way to access Arm IP, tools and support

What?

Arm Flexible Access

- Freedom to innovate, evaluate and fully design with Arm IP before committing to production or licensing

- Access to a range of mature and proven IP including Cortex-A, Cortex-R, Cortex-M cores, security IP, system IP, physical IP and tools

- Design before you buy, pay only for what is used

Why?

Greater agility & innovation

- More agility to respond to market needs

- More freedom to select IP to meet your needs

- Faster time to market

- Greater opportunities to create new SoCs and build new solutions

How?

Simpler & improved lifecycle

- Pause, change, stop projects, without license payment

- Simple, straight forward business terms

- Annual fee covering design rights, tools and standard support

- Download any or all of the IP package, at any time

Launched July 2019

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Arm Flexible Access
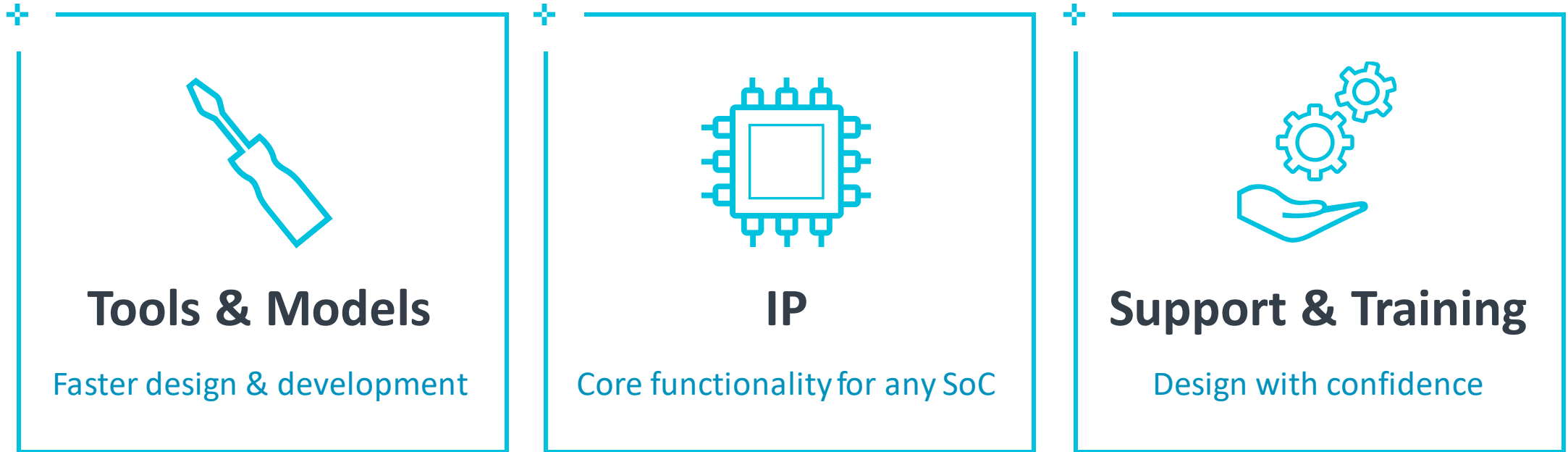
– a new customer engagement model

Standard Arm licensing

Per product license

Per unit royalty

Select IP → Access *Licensed* IP → Develop SoC → Tape out & manufacture → Ship

Arm Flexible Access

Per product license

Per unit royalty

Access *Package* IP → Select, evaluate, experiment, design → Develop SoC → Tape out & manufacture → Ship

Experiment, Start, pause, parallel path

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Arm Flexible Access

- Everything you need for an SoC

Tools & Models

Faster design & development

IP

Core functionality for any SoC

Support & Training

Design with confidence

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Use Case: Complex Application System

Quad core Cortex-A53

Quad core Cortex-A53

Interrupt Control

Debug & Trace

Mali-G52 GPU

Network Interconnect

Coherent Interconnect

TrustZone controller

MMU

Peripherals

CryptoCell-712

Customer-sourced IP

Cortex-M4 x4
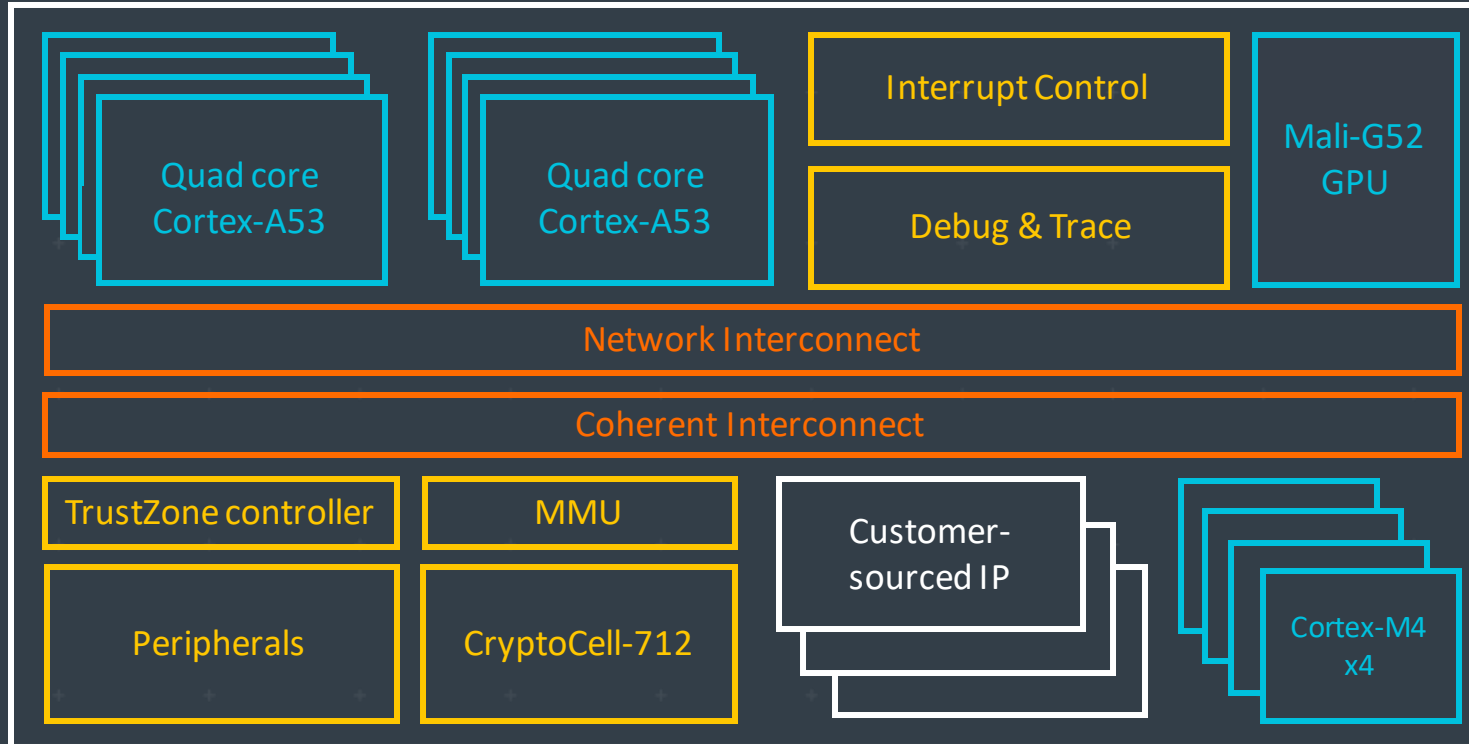
Complex, secure heterogenous compute system

- Multi core coherent application & GPU processing
- Leverage comprehensive Arm software ecosystem, including Arm NN for AI, Linux and Trusted Firmware
- Multiple microcontrollers for dedicated deeply embedded control
- Advanced security features

Drone

Industrial control

IP Camera

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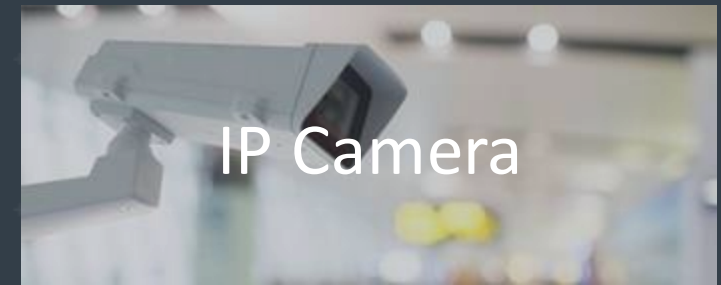
What is Included?

- Mature and proven IP

Mainstream package

Processors

- Cortex-A53
- Cortex-A35
- Cortex-A34
- Cortex-A32
- Cortex-A7
- Cortex-A5 (UP and MP)

- Cortex-R52
- Cortex-R8
- Cortex-R5

- Cortex-M33
- Cortex-M23
- Cortex-M7
- Cortex-M4
- Cortex-M3
- Cortex-M0+
- Cortex-M0

Graphics Processors

- Mali-G52
- Mali-G31

Also includes Mali DDKs

CoreLink Interconnect

- CoreLink NIC-450
- CoreLink NIC-400
- CoreLink CCI-400
- CoreLink CCI-500
- CoreLink CCI-550
- ADB-400 AMBA domain bridge
- XHB-400 AXI-AHB bridge

System Controllers

- CoreLink GIC-500
- CoreLink GIC-400
- PL192 VIC
- CoreLink TZC-400
- CoreLink L2C-310
- CoreLink MMU-500
- BP140 Mem. Intf
- BP141 TrustZone Mem. Wrapper

Security IP

- CryptoCell-312
- CryptoCell-712
- True Random Number Generator

Peripheral Controllers

- PL011 UART
- PL022 SPI
- PL031 RTC
- CoreLink DMA-230
- CoreLink DMA-330

CoreSight Debug & Trace

- CoreSight SoC-400
- CoreSight SDC-600
- CoreSight STM-500
- CoreSight System Trace Macrocell
- CoreSight Trace Memory Controller

Physical IP*

- Artisan physical IP platform, TSMC
- Artisan PIK for Cortex-M33, TSMC 22ULL

Corstone Foundation IP

- Corstone-101
- Corstone-201

Tools & Models

- Socrates IP Tooling
- Arm DS-Gold
- Virtual system models (fast & cycle accurate)

75% of Arm Cortex licenses over past 2 years

Legend: IP Products Tools & Models

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Annual Access Fee - Mainstream Package Tiers

	Academia / Research	Entry	Standard
Access to IP	✔ (Except Crypto)	✔	✔
Technical support	Community based	✔	✔
Onboarding session	✔	✔	✔
Evaluation, exploration and design	✔	✔	✔
Number of tape-outs per year	Unlimited	1	Unlimited
Online training seats	5	5	25
Arm Development Studio (Arm DS Gold)	1 seat	1 seat	3 seats
Arm configuration tool - Socrates	1 seat	1 seat	1 seat
Arm virtual system models	1 seat	1 seat	2 seats
Arm Service Tokens (training/support/...)	No	Purchased separately	15 Service Tokens
	$0k per annum	**$75k per annum**	**$200k per annum**

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Transparent and Predictable Pricing

- Consistent and fixed pricing for all members

Annual access fee

Includes

- Access to IP, tools & models
- Design and dev rights (including FPGA proto)
- Support and maintenance for registered projects

Product licence fees

- Per-product manufacture licence fee at tape-out
- Transparent pricing
  - Simple
  - Full price list upfront
- Discount for multiple Arm IP
- Only pay for what you need

Royalties

- Per-product royalty rate
- Known upfront
- Rate applies perpetually for product configuration
- Simple flat %ASP rate
- Discount for multiple Arm IP
- Royalty calculator available

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Successes and Reach

Initial engagement target exceeded > 40 Customers signed up

- 1/3 = Silicon Start ups

- 1/3 = ASIC design houses

- 1/3 = Established Silicon

Arms success is aligned with our customers' success

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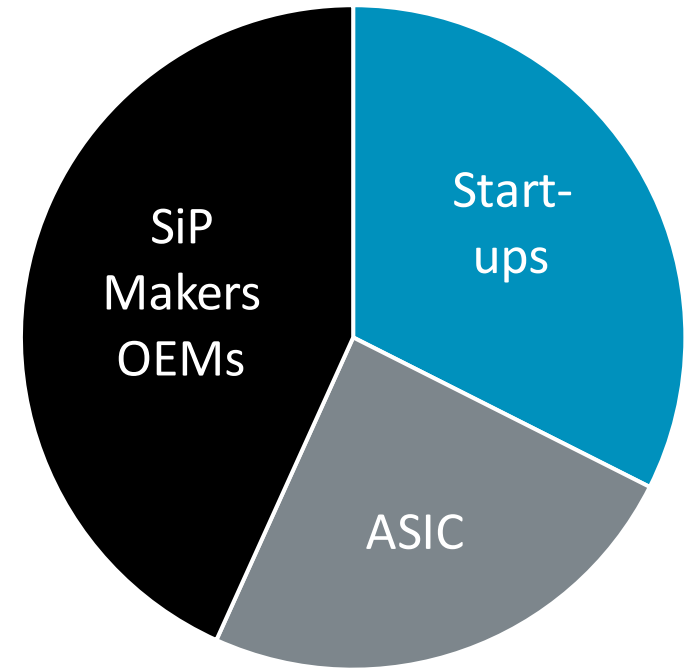
Where Next for Arm Flexible Access

- A live program evolving with its customer needs

More IP added every quarter – e.g.

- Functional safety packs

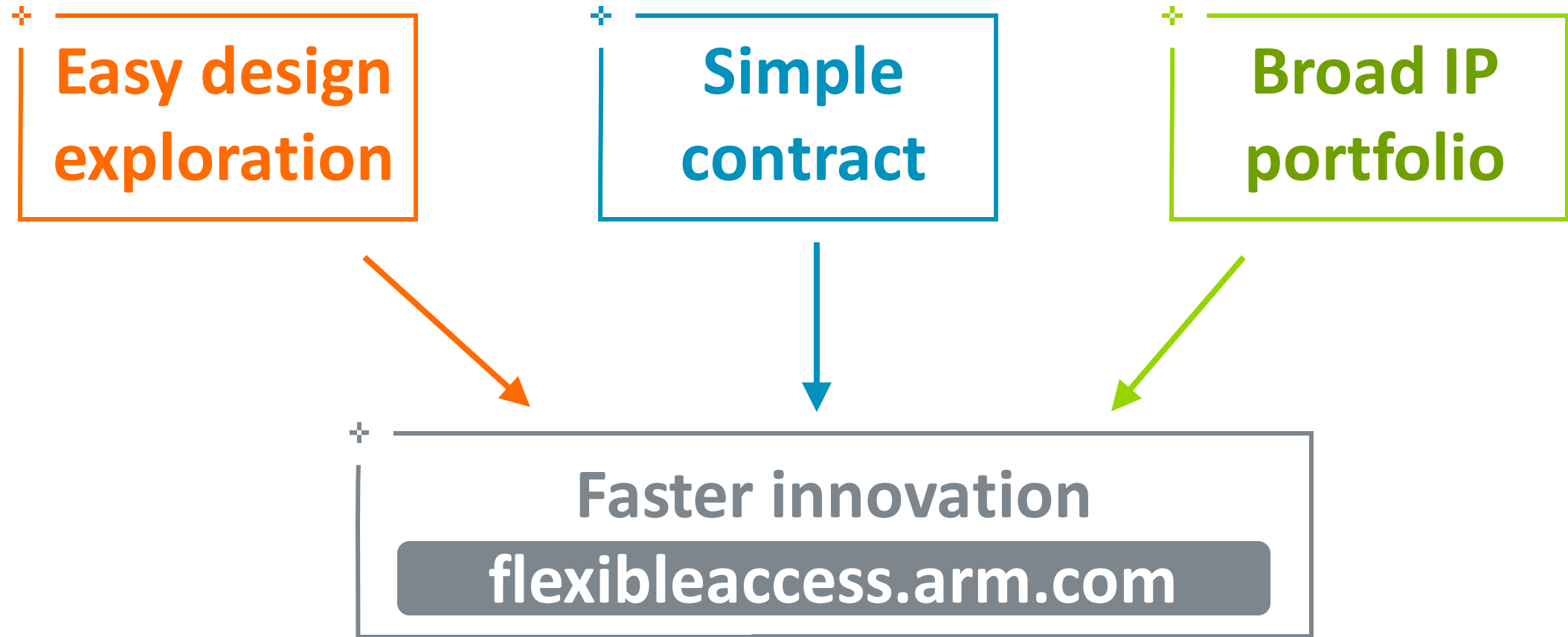- Arm Cortex-M CPUs with Arm Custom Instructions

- More physical IP

Wider industry reach:

- Interest from governmental institutions

- Collaboration with Incubators

- Other organisations who are promoting semiconductor innovation

Wave of program enhancements and extensions through next 18 months

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Arm Flexible Access

- Unleashing innovation

Easy design exploration

Simple contract

Broad IP portfolio

Faster innovation

flexibleaccess.arm.com

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More Ways to Access Arm Technology

Arm DesignStart

Fast, lowest-cost access to a **select mix of IP**

Arm Flexible Access

New!

Explore a **wide range of IP** before licensing

Standard Licensing

Range of licensing terms across the **full Arm portfolio**

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Get Started with Arm IP – Talk to Us and Explore More Online

Arm DesignStart

DesignStart.arm.com

Arm Flexible Access

https://www.arm.com/products/flexible-access/

Flexible Access for Academia

https://www.arm.com/company/news/2019/09/arm-flexible-access-for-research-to-accelerate-innovation-for-academia-and-research

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Thank You!
Merci!
Danke!
谢谢!
ありがとう!
Gracias!
Kiitos!
감사합니다
धन्यवाद

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