# ARM DynamIQ: The future of multi-core computing

ARM

March 20, 2017

# What is ARM Announcing?

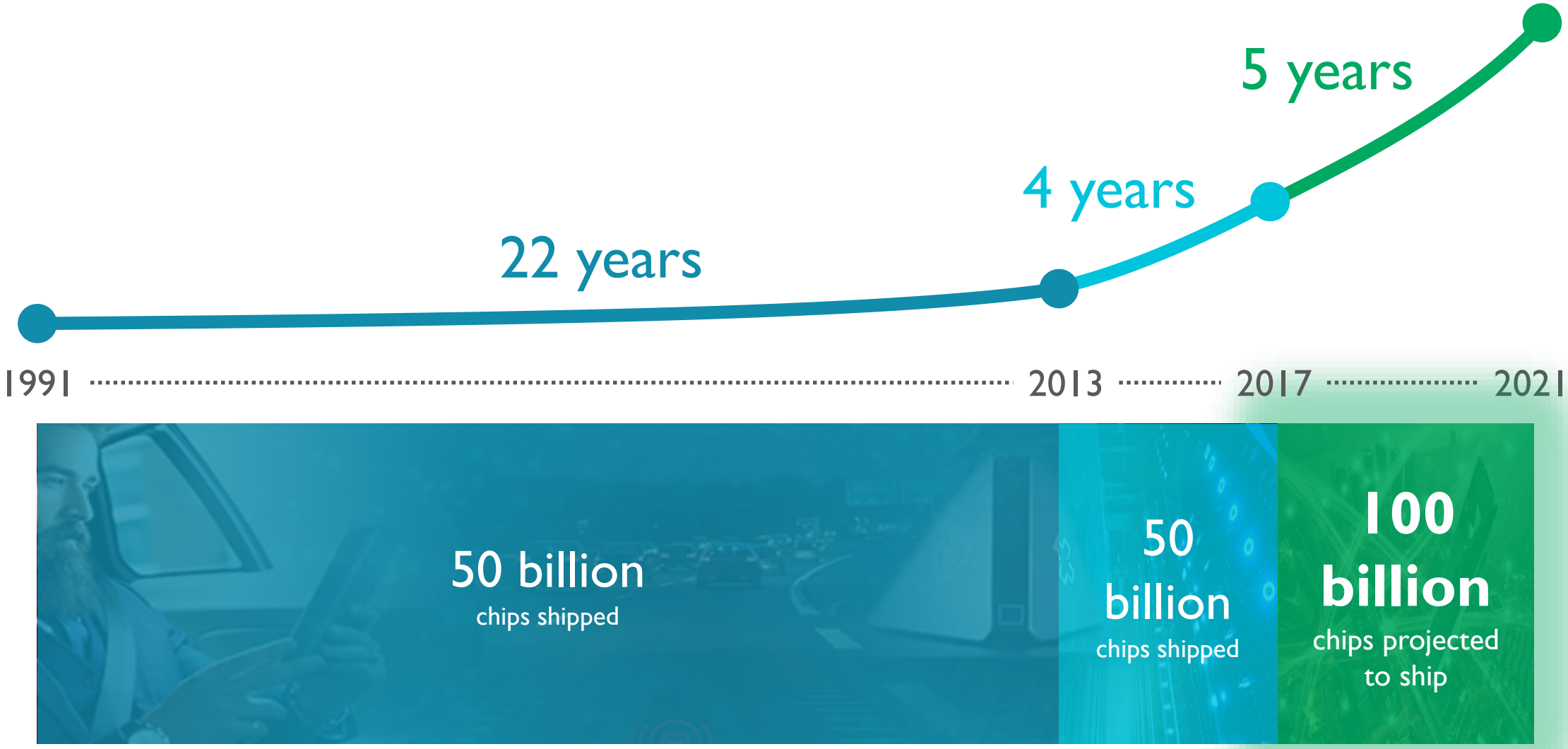
**What?** ARM DynamIQ technology: New multicore microarchitecture for all new ARM Cortex-A processors beginning this year

**Where?** Target markets: Automotive, networking, server and primary compute devices

**Why?** Redefining flexible multicore and heterogenous compute to enhance the experience of diverse, increasingly intelligent devices from chip to cloud

ARM DYNAMIQ

# Extraordinary growth of compute – from chip to cloud



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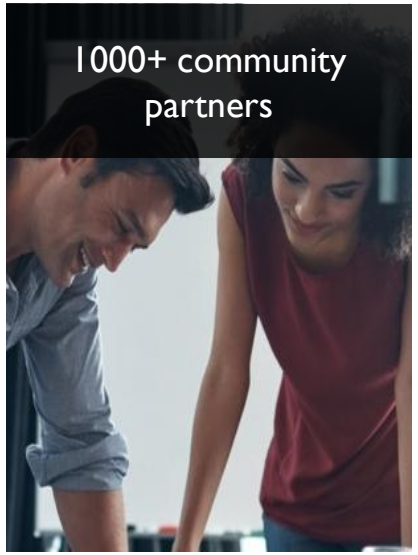
# Building the ecosystems for the next 100 billion







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# ARM

## Total Computing

Transforming solutions
everywhere compute happens.

# ARM has changed the compute landscape

- **3.5 billion** people using ARM-based primary compute devices **today**
- **More than 100x increase** in mobile CPU performance since 2009
- **Cortex-A processors** driving performance from **chip to cloud**




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# 2020: Looking ahead from chip to cloud


The future requires a new approach to CPU design…

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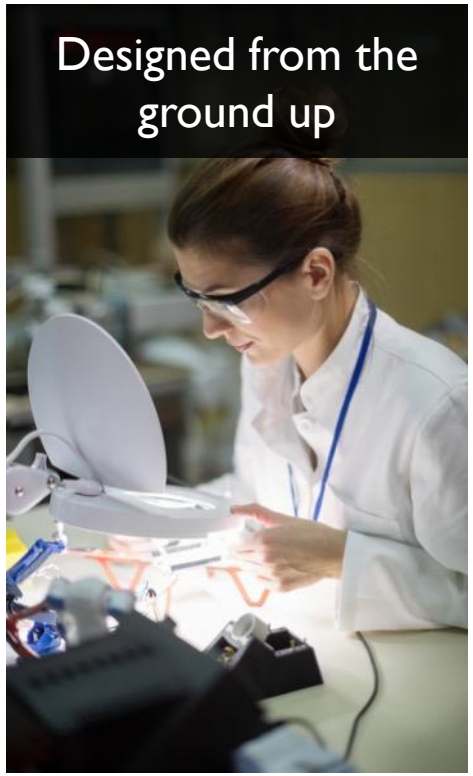


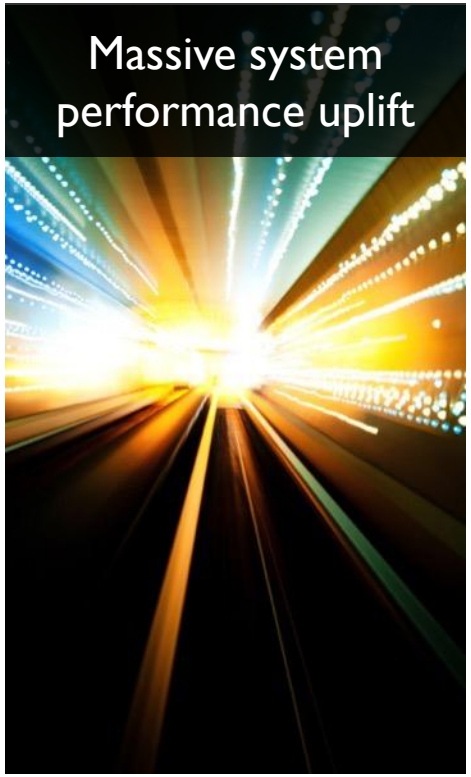



## Technology for the next era of compute

# ARM DynamIQ: Multicore redefined

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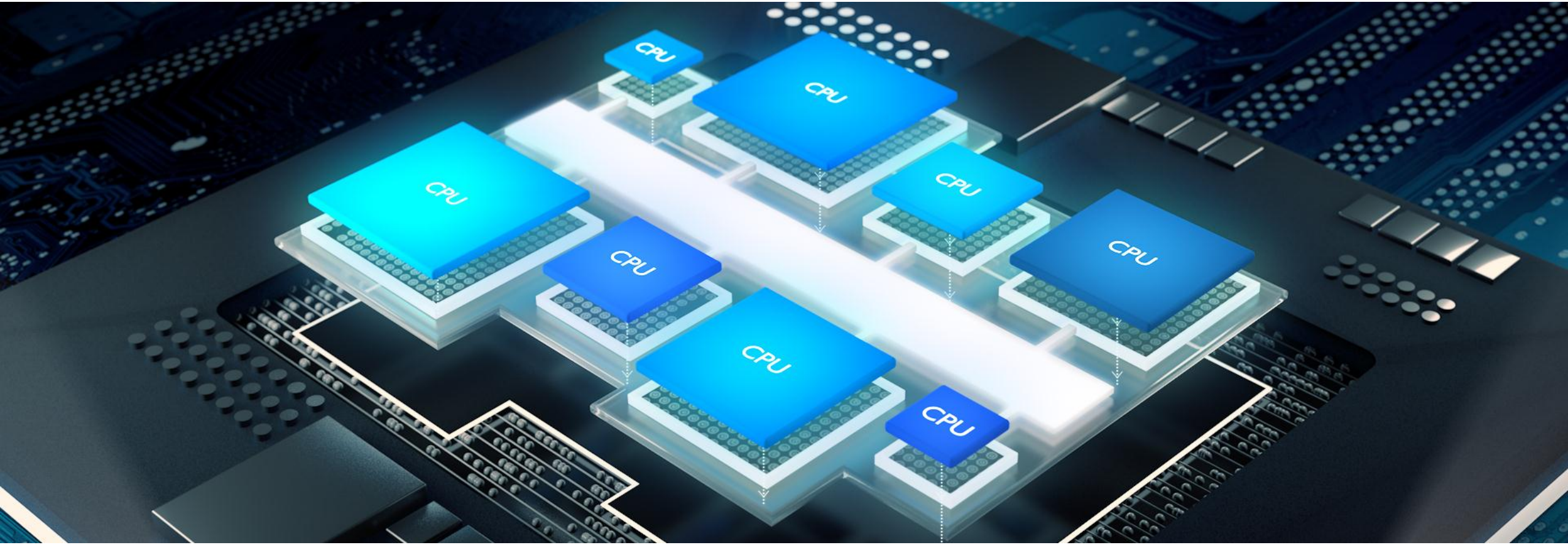


New single cluster design

Greater flexibility with or without big.LITTLE

Redesigned memory sub-system

Advanced compute capabilities




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# Accelerating AI adoption everywhere

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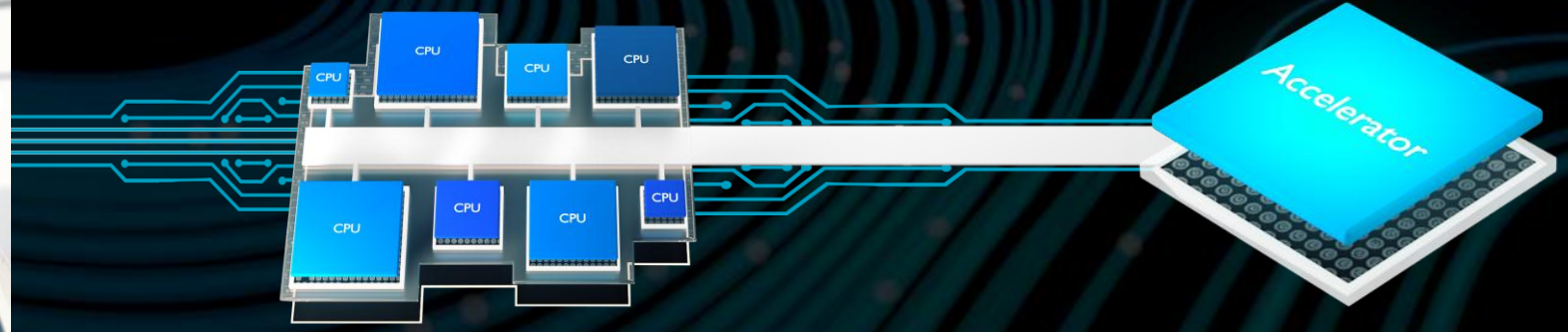
## DynamIQ boosting AI/ML performance both on CPU and in system


Dedicated processor instructions for AI




Improved access to acceleration

More than **50x AI performance** boost on the CPU in the next 3-5 years

Up to **10x quicker** response to accelerators

# Safer autonomous systems

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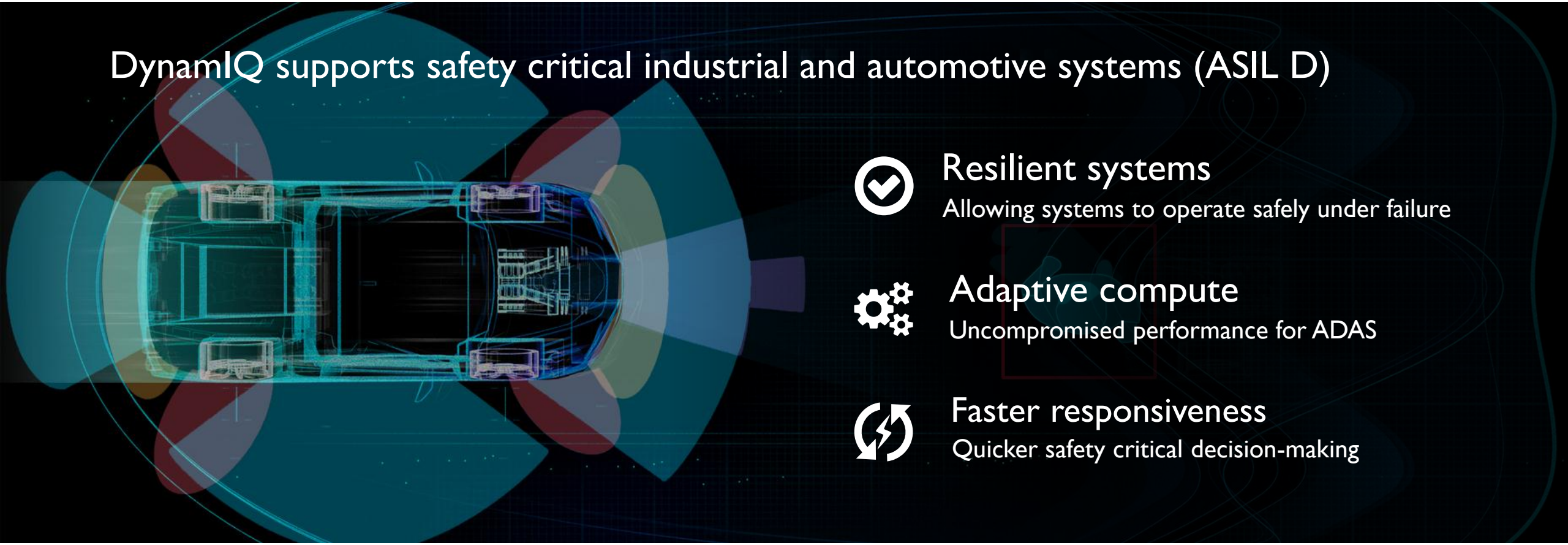

DynamIQ supports safety critical industrial and automotive systems (ASIL D)

**Resilient systems**
Allowing systems to operate safely under failure

**Adaptive compute**
Uncompromised performance for ADAS

**Faster responsiveness**
Quicker safety critical decision-making

# Scalable compute, tailored solutions

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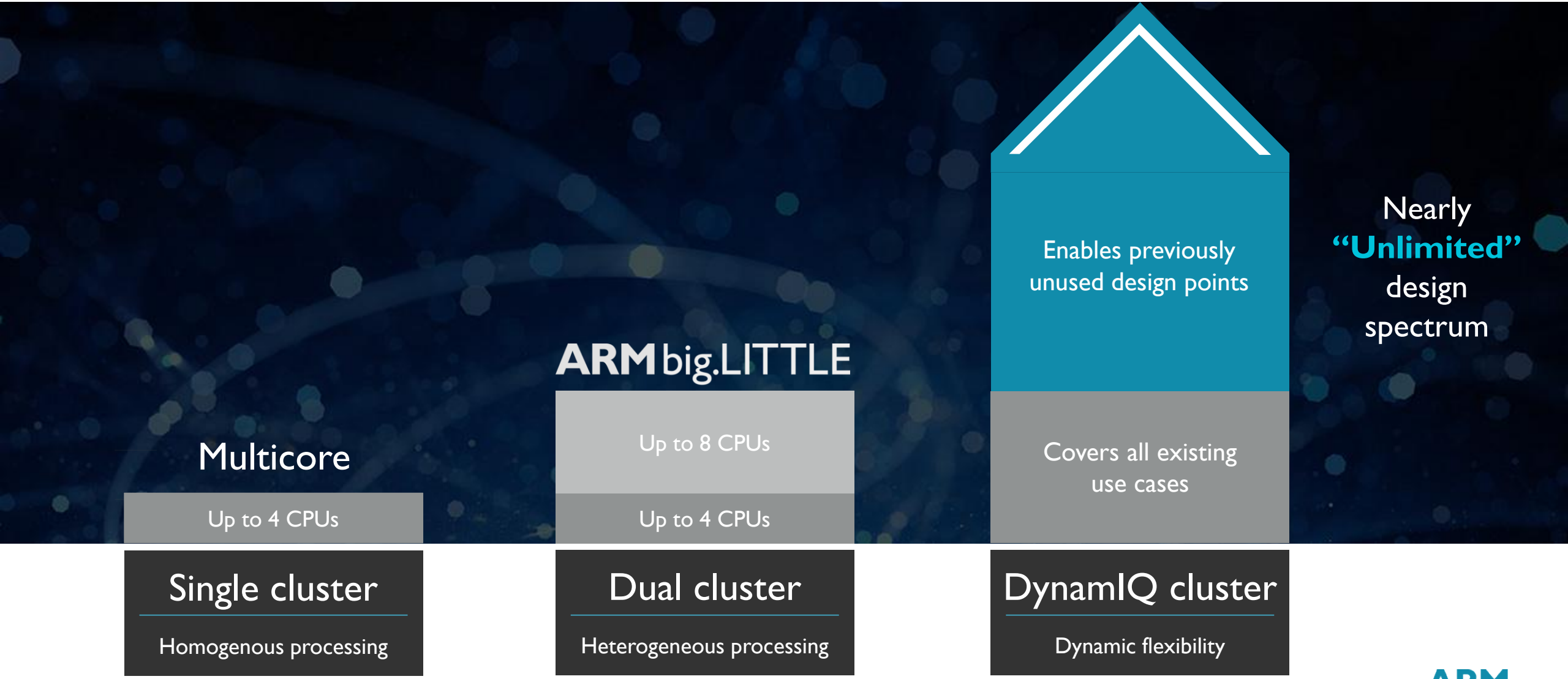





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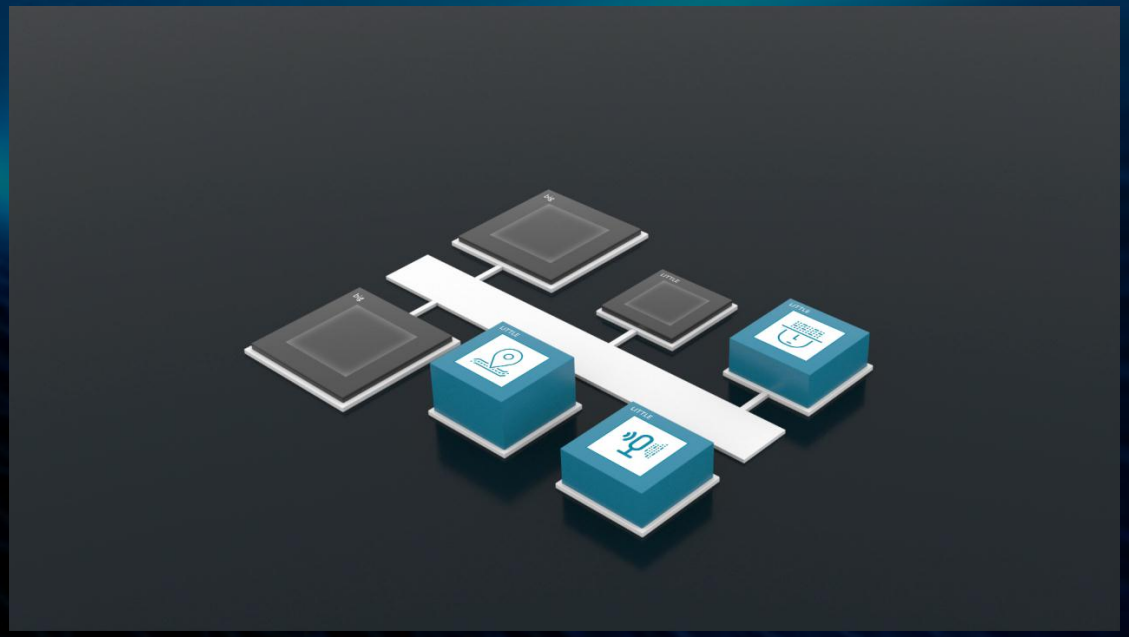
# Efficient compute, Fast responsiveness

ARM DYNAMIQ

- A new single cluster design for big.LITTLE
- Increased efficiency from shared memory between CPUs
- Higher performance through faster task migration

DynamIQ big.LITTLE



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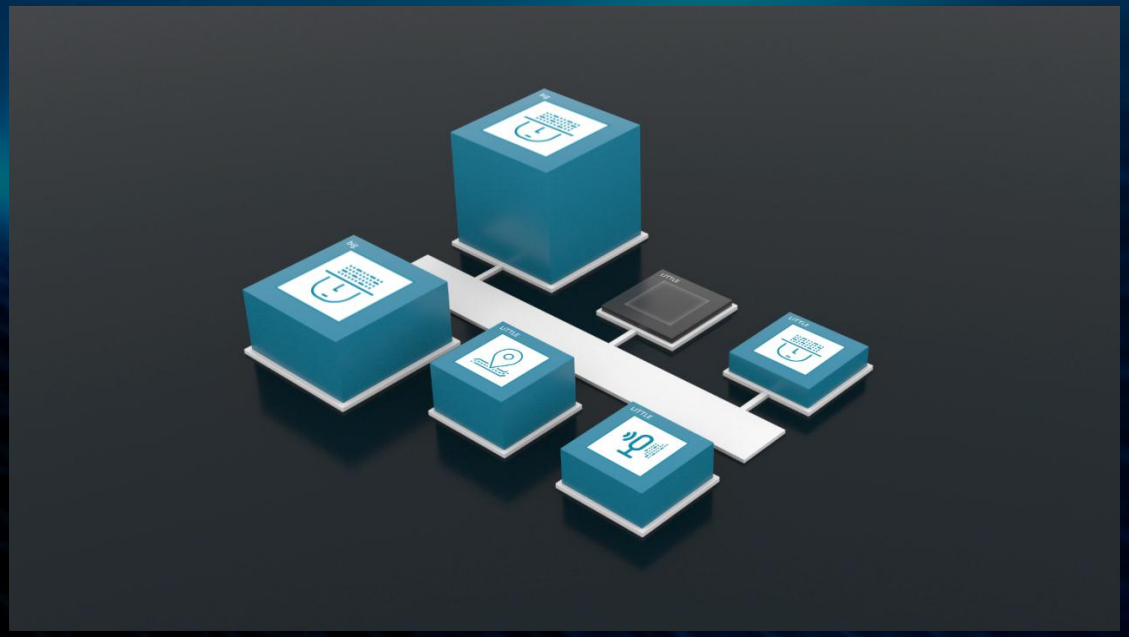

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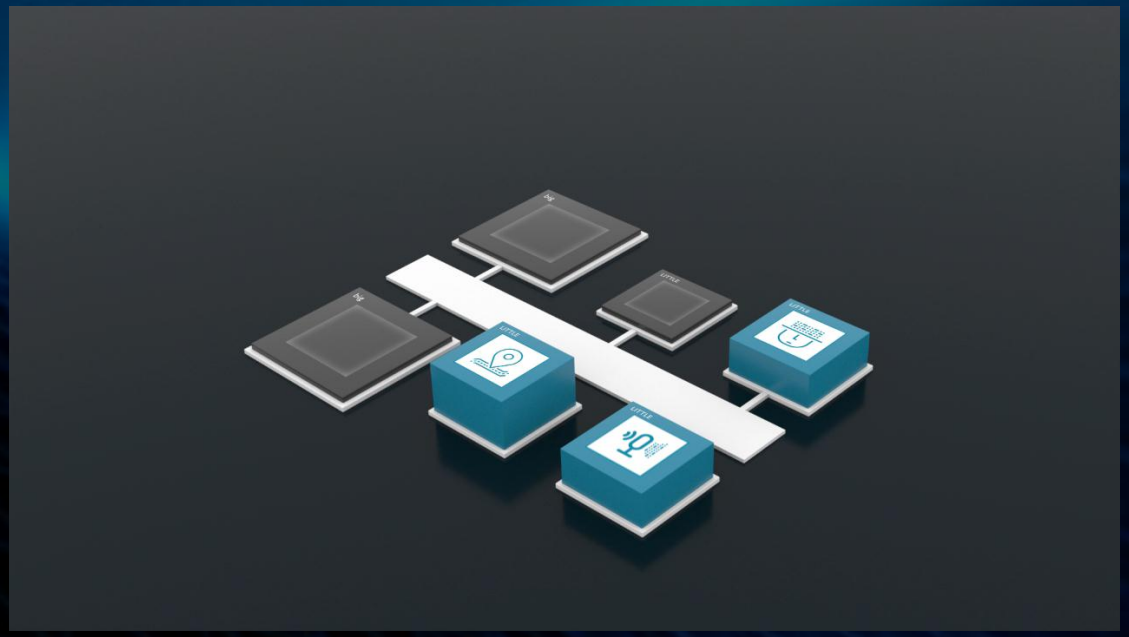
DynamIQ big.LITTLE



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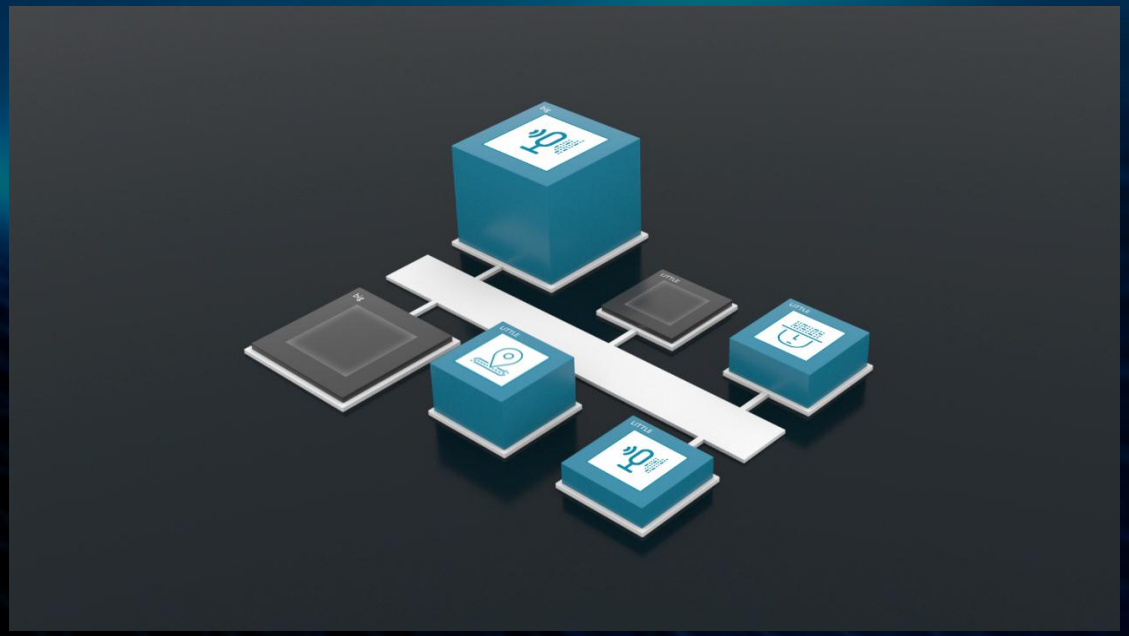

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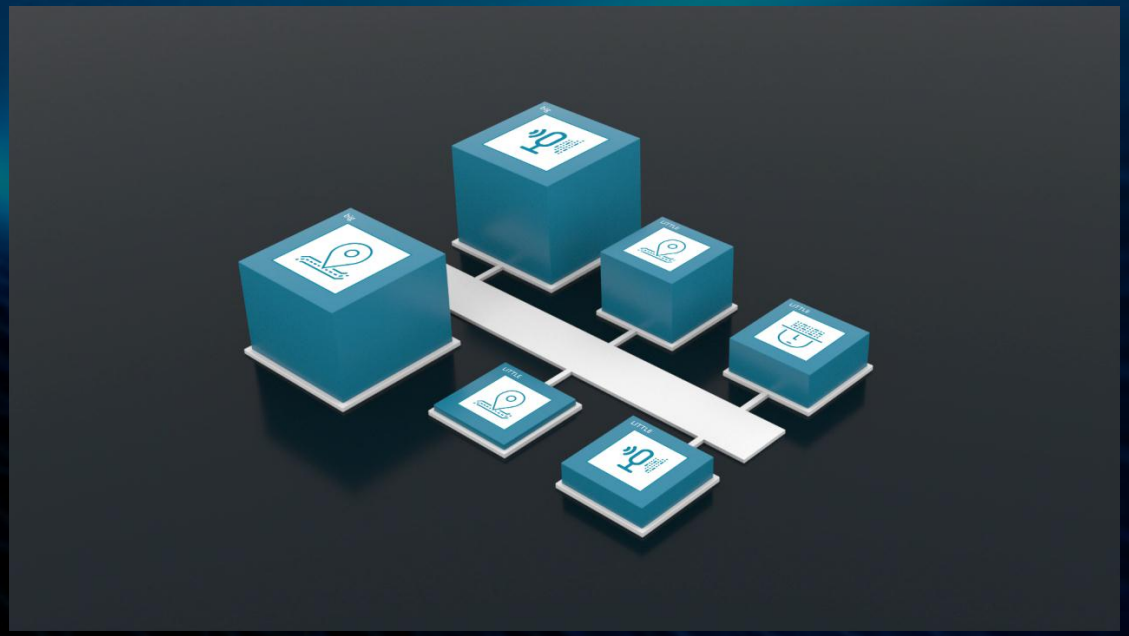

# Intelligent power savings

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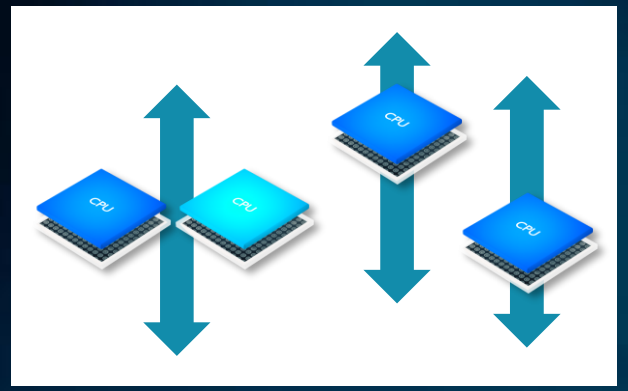
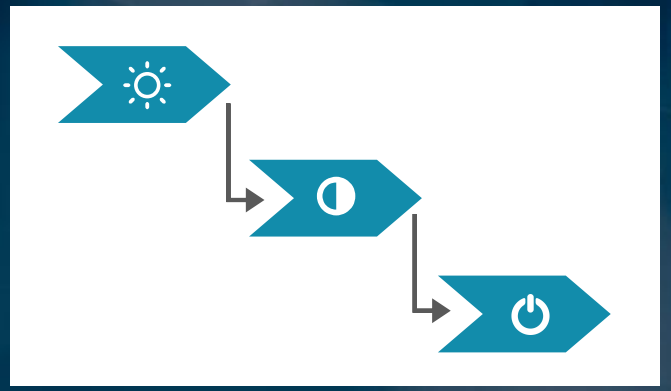



## CPU

Finer-grained speed control



## Power States

Faster on/sleep/off

## CPU memory

Autonomous power management

# ARM DynamIQ technology

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- **Most versatile** compute technology
- **For all markets**, all devices
- **Higher performance** and **efficiency** levels
- **Smarter capabilities** for AI/ML


Faster responsiveness


Intelligent power management

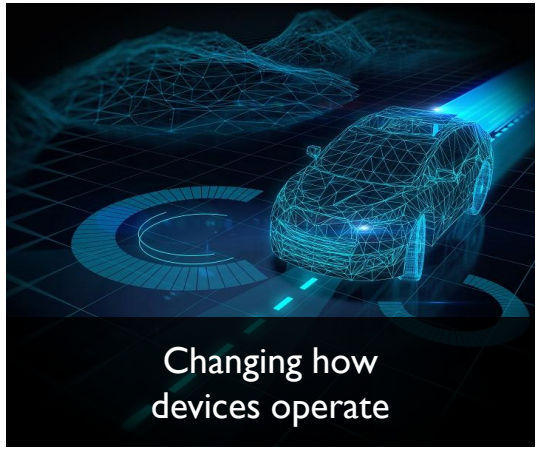

Accelerating AI


Increased scalability


Improved big.LITTLE


Advanced safety

# ARM DYNAMIQ




helping to power the next **100 billion** chips

ARM