

INTRODUCING ONEAPI

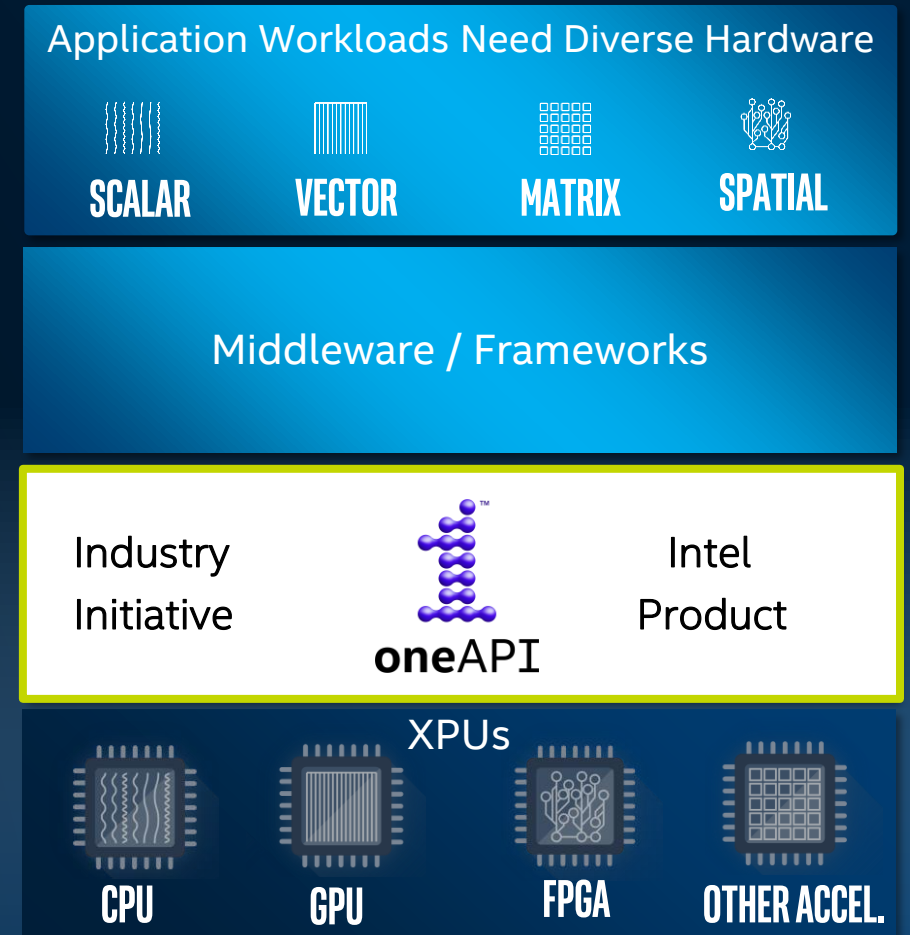
Unified programming model to simplify development across diverse architectures

Unified and simplified language and libraries for expressing parallelism

Uncompromised native high-level language performance

Based on industry standards and open specifications

Interoperable with existing HPC programming models



ONEAPI INDUSTRY INITIATIVE

ALTERNATIVE TO SINGLE-VENDOR SOLUTION

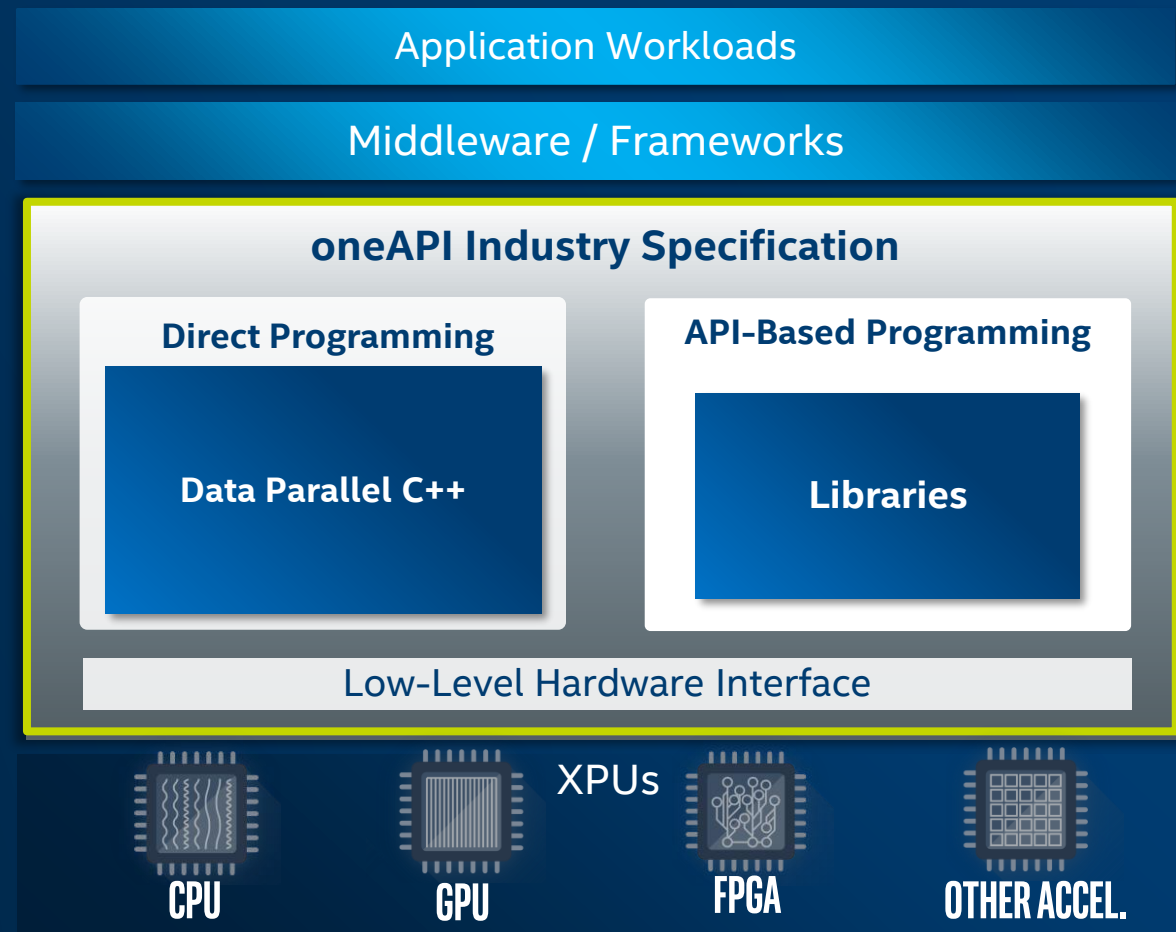
A standards based cross-architecture language, DPC++, based on C++ and SYCL

Powerful APIs designed for acceleration of key domain-specific functions

Low-level hardware interface to provide a hardware abstraction layer to vendors

Open standard to promote community and industry support

Enables code reuse across architectures and vendors



Visit oneapi.com for more details

Some capabilities may differ per architecture and custom-tuning will still be required.

Refer to software.intel.com/articles/optimization-notice for more information regarding performance & optimization choices in Intel software products.

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DATA PARALLEL C++

STANDARDS-BASED, CROSS-ARCHITECTURE LANGUAGE

Parallelism, productivity and performance for CPUs and Accelerators

Allows code reuse across hardware targets, while permitting custom tuning for a specific accelerator

Open, cross-industry alternative to single architecture proprietary language

Based on ISO C++ and Khronos SYCL

Delivers C++ productivity benefits, using common and familiar C and C++ constructs
Incorporates SYCL from the Khronos Group to support data parallelism and heterogeneous programming

Community Project to drive language enhancements

Extensions to simplify data parallel programming
Open and cooperative development for continued evolution

Direct Programming: Data Parallel C++

Community Extensions

Khronos SYCL

ISO C++

The open source and Intel beta DPC++ compiler currently supports hardware including Intel CPUs, GPUs, and FPGAs.
Codeplay announced a [DPC++ compiler that targets Nvidia GPUs](#).

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POWERFUL API LIBRARIES

Designed for acceleration of key domain-focused functions

Each can be custom-coded for any platform to deliver uncompromised performance

API-based Programming: Libraries

Math

Threading

**DPC++
Library**

**Analytics/
ML**

DNN

ML Comm

**Video
Processing**

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ONEAPI INITIATIVE – ECOSYSTEM SUPPORT

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We adapt. You succeed.


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 HCL

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COMPUTING

Tech
Mahindra

UNIVERSITY OF
CAMBRIDGE

ANSYS®




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ZUSE
INSTITUTE
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These organizations support the oneAPI initiative 'concept' for a single, unified programming model for cross-architecture development. It does not indicate any agreement to purchase or use of Intel's products.

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