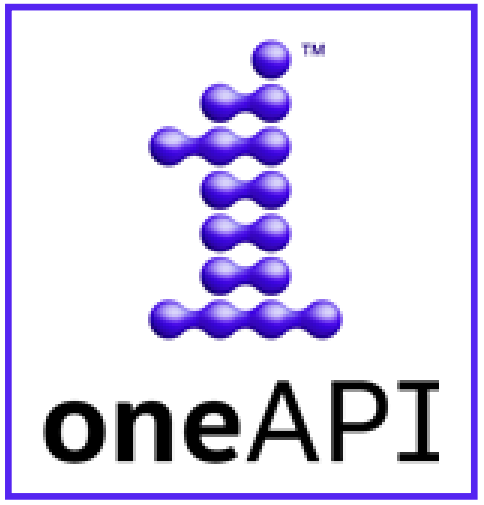


oneAPI AI Technical Advisory Board

Rules of the Road

- DO NOT share any confidential information or trade secrets with the group
- DO keep the discussion at a High Level
  - Focus on the specific Agenda topics
  - We are asking for feedback on features for the oneAPI specification (e.g. requirements for functionality and performance)
  - We are NOT asking for feedback on any implementation details
- Please submit any feedback in writing on Github in accordance with the Contribution Guidelines at spec.oneapi.com. This will allow Intel to further upstream your feedback to other standards bodies, including The Khronos Group SYCL* specification.

Agenda

Topic	Time	Presenter
Welcome, Vision, oneAPI spec update	20 min	Sanjiv Shah [Intel]
Antares for SYCL	15 min	Wei Cui [Microsoft]
TensorFlow & oneDNN in Partnership	20 min	Penporn Koanantakool [Google]
Intel Extension for TF Demo	5 min	Jian Hui Li [Intel]
Enable Deep Learning Frameworks at Scale	10 min	Dmitry Durnov [Intel]
Open Discussion	20 min	All

oneAPI AI Technical Advisory Board

oneAPI Industry Specification

Sanjiv Shah
General Manager, Developer Software Engineering

Vice President, Intel

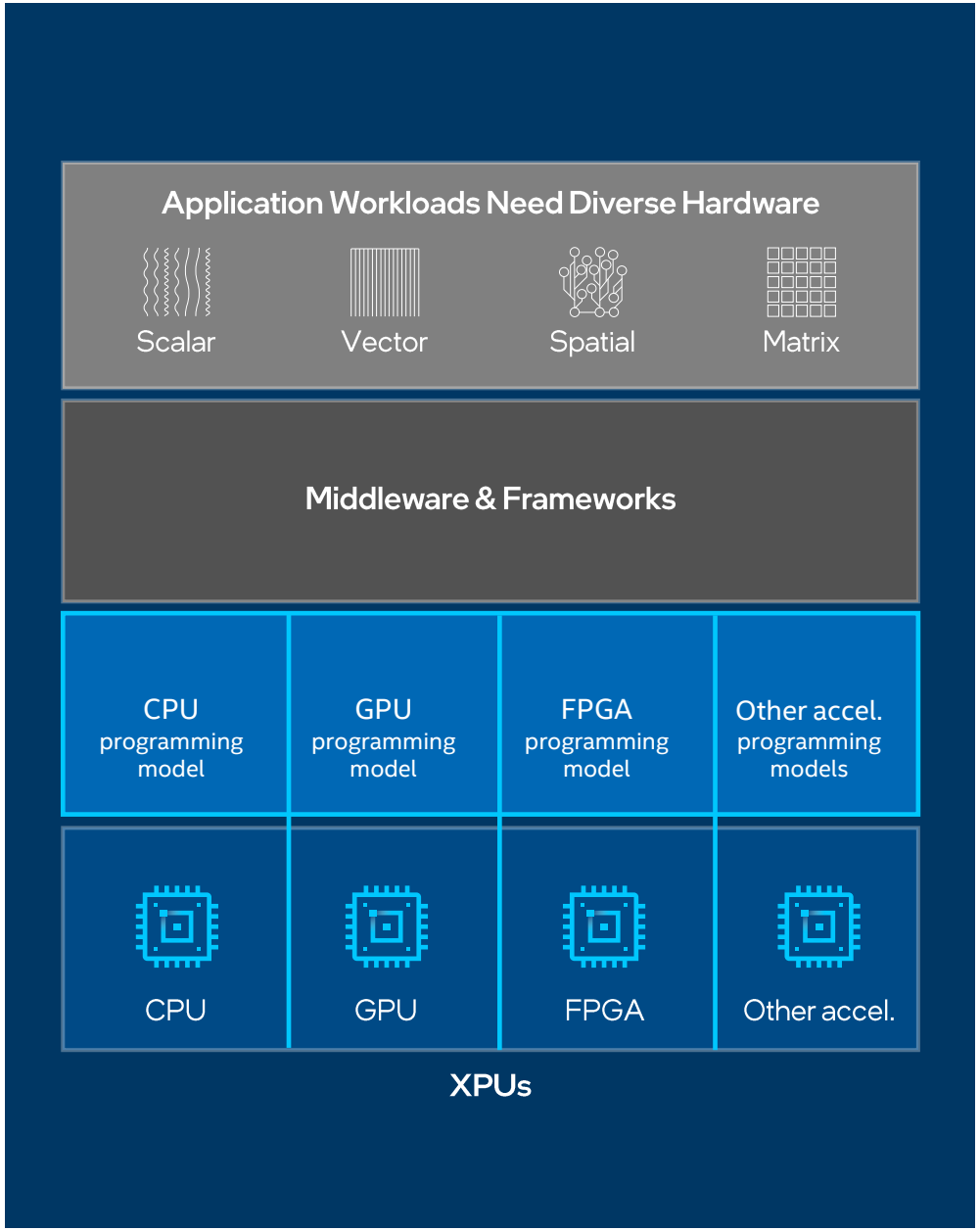
Programming Challenges
for Multiple Architectures

Growth in specialized workloads

Variety of data-centric hardware required

Separate programming models and toolchains for each architecture are required today

Software development complexity limits freedom of architectural choice



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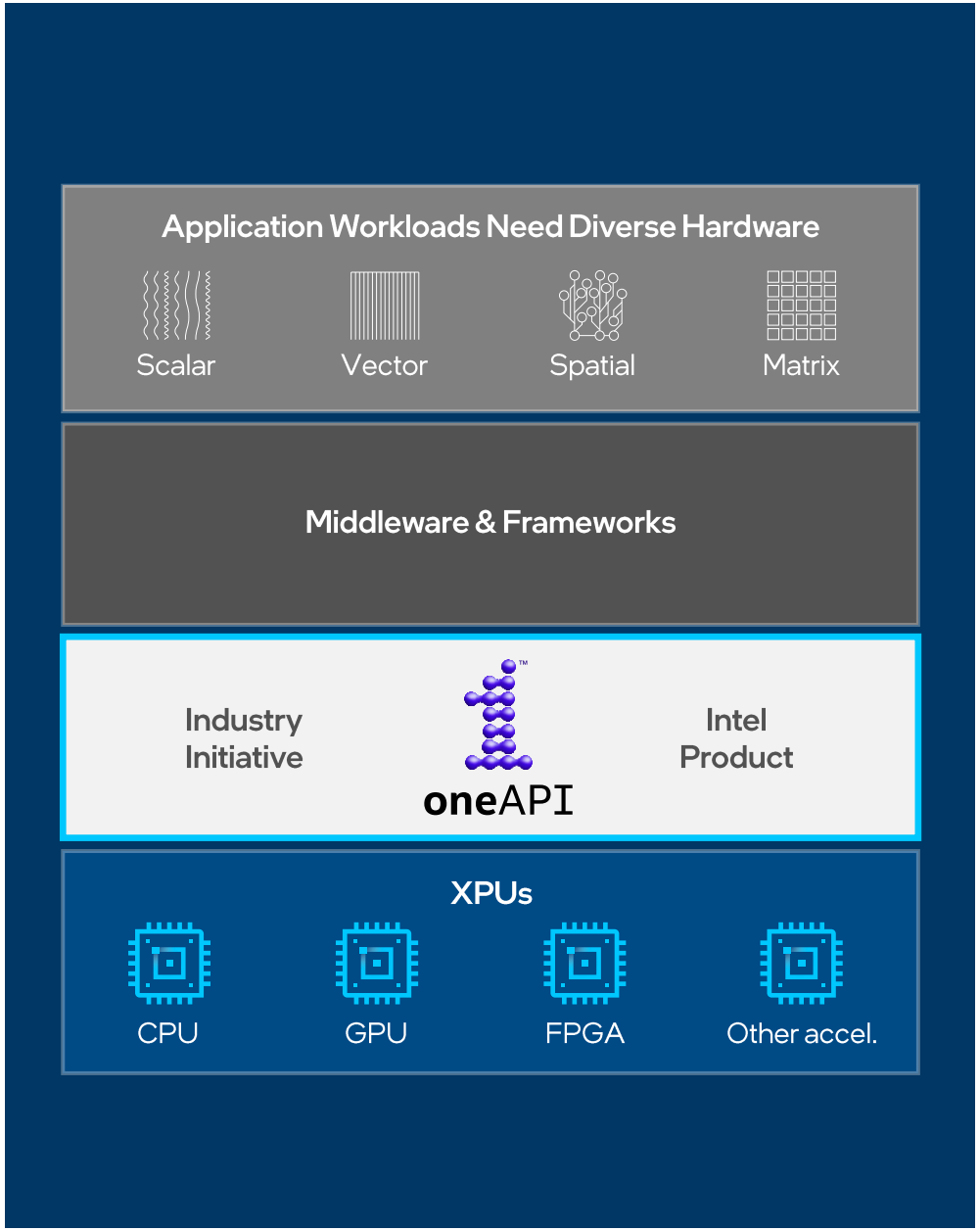
oneAPI Industry Standard
Alternative to Single-Vendor Solution

Open Industry Specification
- Open standard to promote community and industry support
- Specifies Language, APIs, Low level Hardware Interface
- Enables code reuse across architectures and vendors

Open-Source Implementations
- Base oneAPI software stack
- Easily port to new platforms

Technical Advisory Boards & community input
- Technical Advisory Boards (TABs) comprised of 30+ leading industry experts
- Open call for community input



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Vision for oneAPI

SW Contract: Open, Free, Everywhere, Forever

	Option	API	Source	Contributions	Development	Governance
Open Source	Community Governed	Open	Open	Yes	Open	Community
	Open Development	Open	Open	Yes	Open	Vendor Proprietary
	Open Contribution	Open	Open	Yes	Closed	Vendor Proprietary
	Source Available	Open	Open	No	Closed	Vendor Proprietary
Closed Source	Open API	Open	Closed	No	Closed	Vendor Proprietary
	Closed	Closed	Closed	No	Closed	Vendor Proprietary

Want to be here

We are here

Applies to both specification & open-source implementations

Legend: Open Source | Open API | Closed Source

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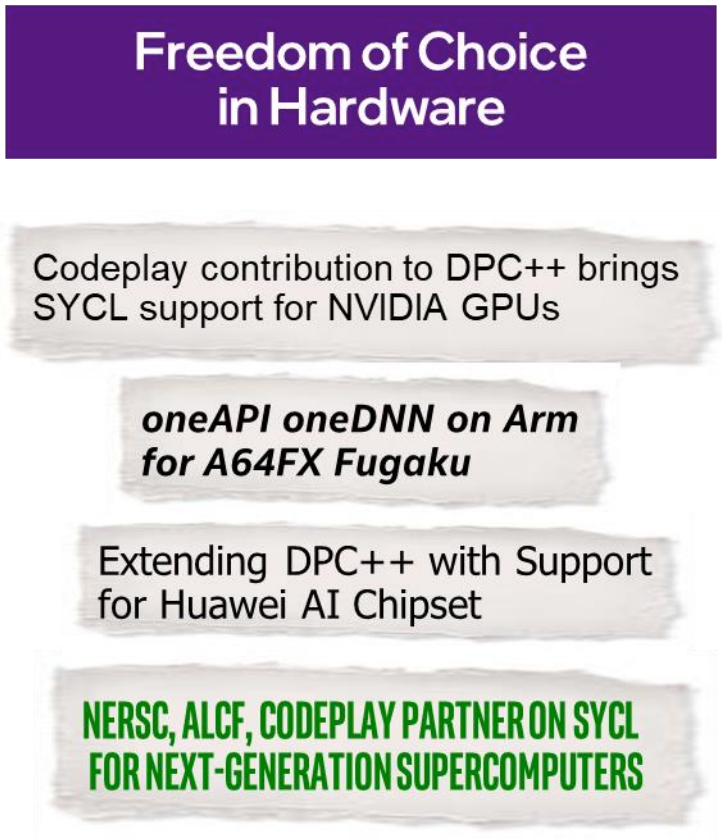
oneAPI Specification
9 Elements

Of interest to oneAPI AI TAB

Name		Description	Spec	Tests	Source	
					Available	Community Contributions For
oneAPI Data Parallel C++	DPC++	Standards-based cross-architecture language based on C++ and SYCL	Y	Y	Y	Intel, NVIDIA
oneAPI DPC++ Library	oneDPL	Algorithms and functions to speed DPC++ kernel programming	Y	Y	Y	Intel, NVIDIA
oneAPI Math Kernel Library	oneMKL	Math routines including matrix algebra, FFT, and vector math	Y	Y	Partial	Intel, NVIDIA
oneAPI Data Analytics Library	oneDAL	Machine learning and data analytics functions	Y	Y	Y	Intel
oneAPI Deep Neural Network Library	oneDNN	Neural networks functions for deep learning training and inference	Y	Y	Y	Intel, NVIDIA, ARM CPU
oneAPI Collective Communications Library	oneCCL	Communication patterns for distributed deep learning	Y	Y	Y	Intel
oneAPI Threading Building Blocks	oneTBB	Threading and memory management template library	Y	Y	Y	Intel, ARM CPU
oneAPI Video Processing Library	oneVPL	Real-time video encode, decode, transcode, and processing	Y	Y	Y	Intel, ARM CPU
oneAPI Level Zero	Level Zero	Low-level hardware interface to provide a hardware abstraction layer	Y	Y	Y	Intel

Open-Source Implementations
Bringing the specification to life

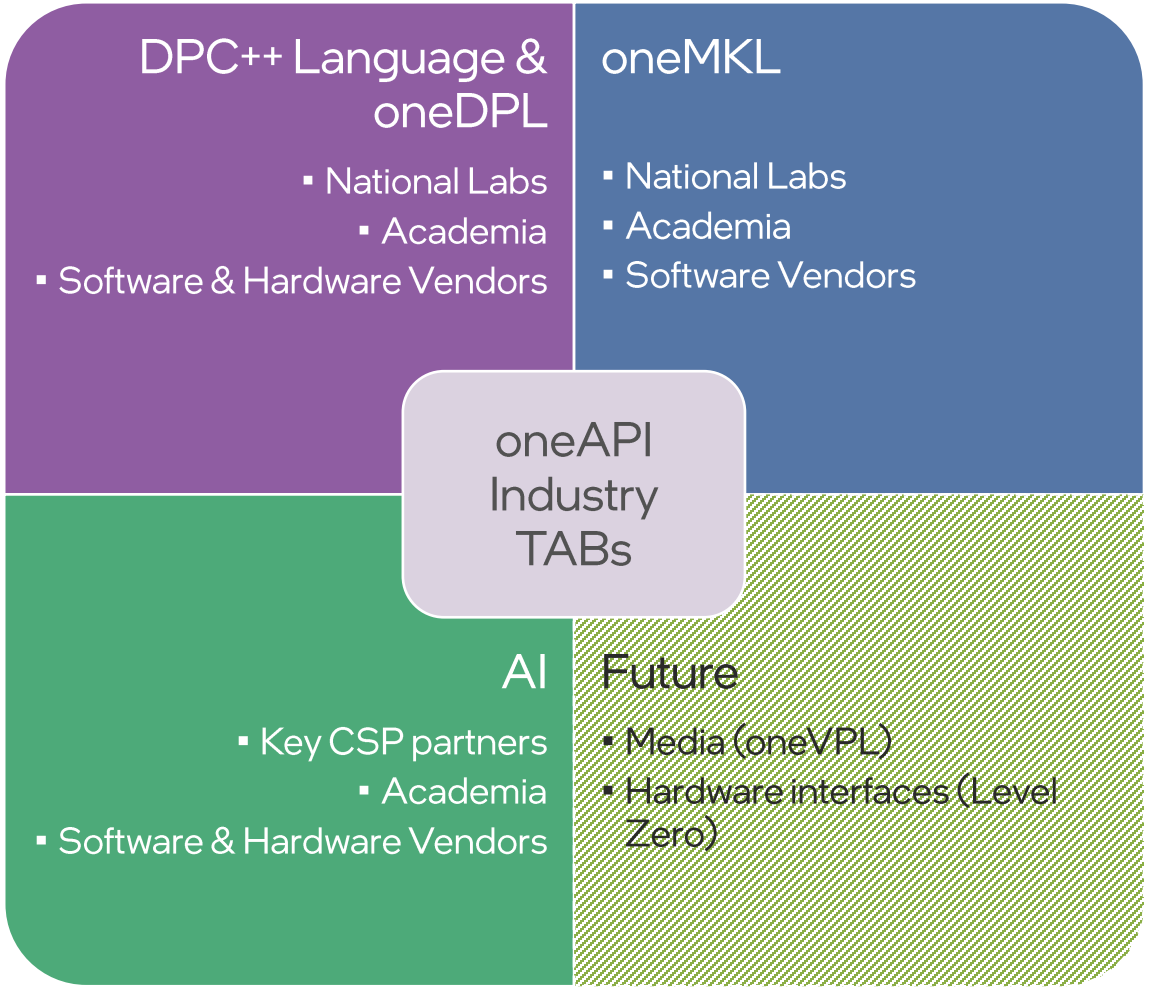


- Establish a base oneAPI software stack to use immediately
  - All 9 elements have open-source projects
- Contributions follow well-known open-source methods & governance (GitHub)
- Allows for port to new platforms with minimum uplift
  - Already have contributions targeting Intel XPUs, NVIDIA GPUs, ARM CPUs, etc.

oneAPI Technical Advisory Boards

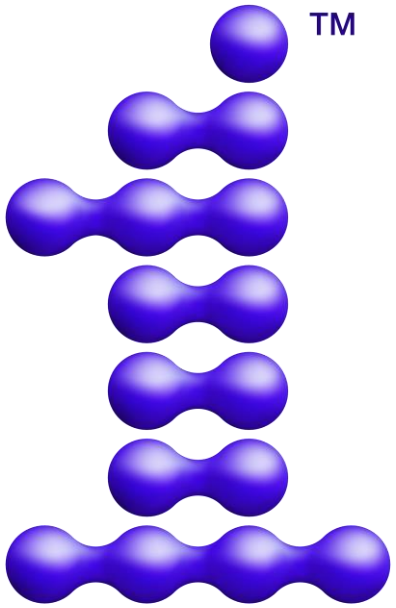
Moving the specification forward

- Gather industry experts to serve as a sounding board for oneAPI spec
  - Solidify long-term direction
  - Understand concerns
  - Kick-start adoption of element
- Open access to information
  - Minutes & discussions posted on GitHub



Call to action

- Help us meet the oneAPI SW contract
  - Standard, cross-architecture programming
  - Open, Free, Everywhere, Forever
- Engage through:
  - Active contributions
  - Ports to enable more architectures



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Next Steps for oneAPI AI TAB

- Focuses for next meeting(s):
  - Any topics from oneAPI AI TAB members?

- If anyone has content that they would like posted on oneAPI.com, please let us know

- Will any of you be attending SC '21 in St. Louis?

Resources

- oneAPI Main Page: https://www.oneapi.com/
- GitHub for oneAPI Spec: https://github.com/oneapi-src/oneAPI-spec
- GitHub for oneAPI TAB: https://github.com/oneapi-src/oneAPI-tab