

# AGENDA



PICMG Overview

Value of open specifications

**Current Initiatives** 

PICMG Spec develop process

Next Steps

PICMG Leadership Team

- Jess Isquith, President
- Doug Sandy, Chief Technical Officer
- Dylan Lang, Treasurer/Chief Financial Officer
- Brandon Lewis, Marketing Officer
- Valerie Andrew, VP Marketing

# **PICMG\*** [PCI INDUSTRIAL COMPUTER MANUFACTURER'S GROUP]

#### Founded 1994 as a non-profit consortium

- Focus on open standards for embedded computing
- $\sim 140$  members companies

#### Deep engineering expertise in member companies:

- Electronic, mechanical, packaging, and thermal design
- High speed signaling and simulation
- Software and High Availability skills

#### **Rigorous Intellectual Property policies**

- Patent landscape known to implementers
- No PICMG standard requires a license to implement (so far)

#### Over 50 standards released to date

- More than \$10B in global revenue to date
- Wide range of technologies including small form factor, networking, high-availability architectures, rugged computing and management

## Collaboration is at the core of PICMG

Open Modular Computing Standards

#### Key Principles

- Modular
- Scalable
- Interoperable

# **OVERVIEW: 29 YEARS OF SPECIFICATIONS**



#### **Key Principles**

- Modular
- Scalable
- Interoperable

#### **Results to date**

- 100s of participating companies
- 100s of thousands of work hours
- Global organization (Members from >20 countries)
- Over 55 specifications
- Billions of dollars in PICMG compliant products

## Collaboration is at the core of PICMG

# VALUE OF OPEN STANDARDS



#### **Proprietary Solution**

- Typically developed, built, and maintained by a single vendor Little or no collaboration
- Generally expensive and rarely the latest technology
- Only the largest companies have all of the requisite skills to be experts on all elements
- Upgrades developed on vendor's timetable the vendor "owns" you

#### **Open Standard Solution**

- Generally developed by non-profit consortia with many members that have a wide range of skills
- Multiple vendors provide price and feature competition
- If customers don't like their vendor(s) they can go someplace else
- Technology and improvements developed on industry timetable

#### Open Standards encourage innovation and differentiation amongst multiple vendors – interoperability is key

# **OPEN SPECIFICATION VS. OPEN SOURCE**







# 2023 PICMG INITIATIVES

#### COM-HPC

Acromag ADLINK Advantech AMI Amphenol congatec Elma Emerson Ept Fastwel **GE** Automation HEITEC Intel Kontron MEN Avnet N.A.T nVent Samtec Seco Supermicro **TE Connectivity** Trenz Electronic University **Bielefeld** 

VersaLogic Corp

#### **COM Express**

**ADLINK** Advantech Amphenol **Avnet Integrated Bielefeld University** congatec duagon ept Eurotech FASTWEL Intel Kontron nVent, Schroff Portwell SECO Supermicro TE Connectivity

### Initiatives

ΙΙοΤ

**ADLINK** AMI Arroyo Technology Avnet Elma Electronic ept Intel Lodz University **MEN Mikro** nVent Samtec TE Connectivity Trenz Electronic GmbH **Triple Ring** Technologies

Amphenol Atom Computing\* BAE Comtel DESY Embeck ept ESS MicroLab\* N.A.T. nVent powerBridge Samtec University of Lodz VadaTech W-IE-NE-R Power

**MicroTCA** 

#### ModBlox7

ADLINK. Ci4Rail EKF Elma Electronic ELTEC Embeck ept General Micro HEITEC Hirose Intel Corporation Kontron nVent, Schroff Samtec **Sealevel Systems Tews Technologies**  Acromag, Inc. **ADLINK Airbus Defence** Amphenol EKF Elma Electronic **Embeck European Space** Agency FASTWEL Hartmann Electronic HEITEC Lodz University duagon National Instruments nVent Paul Sherrer Institut Samtec **TE Connectivity** Dolphin Trenz

CompactPCI

**Open Modular** Computing **Standards** 

#### Serial / Space InterEdge

PICMG

ADLINK Avnet Embedded EKF ept **ExxonMobil** Georgia Research Tech Institute Hirose Intel nVent, Schroff **OpenSystems Phoenix Contact** Portwell Samtec Schneider Electric Yokogawa



	COM-HPC COM Express	ModBlox7	CompactPCI Serial	HPM	MicroTCA / AMC	AdvancedTCA	SHB
Aerospace	x	X	X	X	X		
Defense	x	X	X	X	X	X	x
Drones / UAV	x	X	X	X	Х		
Energy	x	X	X	X	X		x
Gaming	X						
Industrial Automation	x	X	x		X		x
lloT	X	X	X		X		
Medical	x	X	X	X	X		
Physics	x			X	X	X	x
Railway	x	X	X	X	X		
Telecommu- nications	x			x	X	x	
Test / Measurement	x	x	x	X	x	x	

# **SPECIFICATION DEVELOPMENT**



#### Process

- 3 exec members sponsor a new initiative
- Develop initial statement of work
- CTO Review
- Call for participation
- Committee formed
- Chairperson, Editor and Secretary elections
- Committee finalizes SOW
- Specification work begins
  - Regular calls with role and IPR acknowledgements
- Draft specification reviewed by CTO
- Member review
- Necessary updates made by committee
- Ratification vote

Preliminary CfP	SoW Approved SoW	Draft for I Review	Draft for Adoption Rele		
Formation	Specification Development	Member Review Ballot	Revising	Adoption Ballot	
		30 days		15 days	
Setting Goals And Leadership	Generating and Documenting Requirements	Soliciting Feedback And Processing Change Requests		Formal Approval	

# **TECHNICAL SUBCOMMITTEES**



#### PICMG SPEC RELEASE MILESTONES

		Member	Member	Feedback to technical	TC completes member review feedback and supplies	Ratificatio	Ratificatio	
		review	review	committee	e CTO with	n vote	n vote	Specificatio
Spec Family	Revision	start	complete	chair	final docs	start	complete	n published
MicroTCA	R3.0	7/3/23	8 8/2/23	8 8/3/23	8 8/12/23	8 8/15/23	8 8/31/23	9/3/23
COM-HPC	1.2	7/3/23	8 8/2/23	8 8/3/23	<b>9/12/2</b> 3	9/15/23	3 10/2/23	10/6/23
ModBlox7	1	8/4/23	9/4/23	9/5/23	3 12/3/23	3		
CompactPCI Serial	1.3							
lloT	1.2							
InterEdge (formerly FarEdge)	1	12/10/23	8					
COM Express COM-HPC Design Guide	3.1 R4					9/14/23	3 9/30/23	
AdvancedTCA 200 Gig (PICMG 3.1)	R4							

2023 Cross organization collaborations: DMTF/REDFISH, Open Group

# MICROTCA NEXT GENERATION

#### PICMG<sup>•</sup> Open Modular Computing Standards

#### Primary Goal

Address the ever-increasing demand for power and throughput in new systems.

#### Potential elements:

- 100Gb Ethernet
- PCIe GEN5
- Overcome 80 W AMC limitation
- Increase power / slot
- Backward compatibility

The leaders are here and will discuss more details over the next two days

Technical working group members Amphenol Atom Computing\* BAE Comtel DESY Embeck ept ESS MicroLab\* N.A.T. nVent powerBridge Samtec University of Lodz VadaTech W-IE-NE-R Power

# FAR EDGE: OPEN STANDARDS FOR EDGE PROCESSING INDUSTRIES

PICMG Open Modular Computing Standards

Sponsors: ExxonMobil, GTRI, Samtec, Emtec & Avnet Chair: Aaron Loggins Editor: Dylan Lang Secretary: Steve Bitar Open Group / OPAF Liaison Agreement

- PICMG team is developing an open specification in alignment with OPAS section seven.
- PICMG / OPAF task force

Goal: Develop an Open Specification for broad process industry use as an alternative to Industrial PCs (IPC), Programmable Logic Controllers (PLC), Distributed Control Systems (DCS) and their associated I/O modules. Consolidate IPC, PLC and DCS functionality into a single hardware specification.

#### It is not too late to join!

Roster **ADLINK** Avnet Embedded **EKF Elektronik** ept GmbH **ExxonMobil** Georgia Research Tech Institute Hirose Intel nVent, Schroff **OpenSystems Phoenix Contact** Portwell Samtec Schneider Electric Yokogawa

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# PICMG FAR-EDGE

- Pluggable modules: Compute, Switch, I/O, Power
- Key attributes:
  - Interoperability
  - high availability
  - Upgradeability
  - Scalable
  - Future-proofed



**Power Backplane** 



**Compute Backplane** 

# MODBLOX7

#### First open specification for box PCs

•Coplanar board-to-board connectors couple each unit to its neighbor.

•7HP width pitch

Range of device combinations in increments of 7HP
Flexible mounting for wall, din-rail, and 19" subrack installations.





# RESOURCES

#### General

- <u>www.picmg.org</u>
- Design Guides
- Shortform specifications
- Product Showcase Add your products!
- Active MicroTCA marketing group
  - Updating forms, web content, Wikipedia
  - Embedded World 2023 booth
- Specifications available for purchase on the website (We prefer you join, participate and receive the specs via membership)



#### Design Guides and more on the PICMG Web site:

Physics Design Guide for Clocks, Gates & Triggers in Instrumentation

Standard process models and APIs

Standard device models and APIs

PICMG® MTCA.4 PCI Express Hot Plug Design Guide

Standard Hardware API Design Guide

Always interested in application stories, blogs and other contributed materials

# **BENEFITS OF MEMBERSHIP**



Early access to key technology

Participate in specification development (requirements through implementation)

Leverage PICMG promotions and marketing efforts

Develop relationships with thought leaders and suppliers

Gain visibility and leads from your products and content on the PICMG Web site

Flat organization – in a good way!

Low-cost membership

## Join and participate!

# FUTURE

- Continued support for MicroTCA
- Value of Open Standards / Specifications vs. proprietary solutions remain the same
- Continued Globalization of requirements
- More diverse engineering force
- Greater collaboration
- Enhanced online community for members and nonmembers
- Suggestions?





Membership and Participation are the foundation of all successful open specifications

# THANK YOU





Jess Isquith PICMG, President jess@picmg.org

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