



## ALLIANCE FOR THE DEVELOPMENT OF ADDITIVE PROCESSING TECHNOLOGIES

ADAPT is driving additive manufacturing into the future

## WHAT IS ADAPT?

The Alliance for the Development of Additive Processing Technologies (ADAPT) is a membership-based organization that solves challenges in metal additive manufacturing (AM) using data informatics driven approaches. ADAPT members have unique opportunities to realize the full potential of AM, respond quickly to market demands, and compete more effectively to become global AM leaders. Launched in December 2015 as a public/private partnership, ADAPT is headquartered at Colorado School of Mines.

## ADDITIVE MANUFACTURING CHALLENGES

Additive manufacturing has been acclaimed as the next industrial revolution. With regard to metals, AM creates a tremendous shift in paradigm, as now the materials and parts are made simultaneously in the same machine. As with any paradigm shift, the exciting new opportunities that arise are equally met with new challenges to overcome. To date, companies adopting metal AM need more knowledge about:

- How to design parts for additive manufacturing
- How to control, certify, and optimize AM processes and parts
- How to achieve consistent performance from their machines

ADAPT is closing these knowledge gaps to help its member companies gain a competitive edge in the global manufacturing marketplace. ADAPT's machine-learning approaches rapidly improve a company's AM capabilities to optimize processes and materials and improve quality, consistency and predictability across all aspects of AM.

## CAPABILITIES

This work is facilitated by ADAPT's advanced characterization center, which includes:

- Intelligent materials database
- 3D X-ray tomography and grain mapping
- Phase and structure analysis
- Residual stress and texture mapping
- Thermomechanical testing
- Metallography
- Optical metrology
- Particle analysis
- Powder research and development

...A variety of selective laser melting and directed energy deposition machines owned by our members complement these characterization resources.





“ADAPT is consistent with Colorado’s collaborative culture. It provides our entrepreneurial manufacturers the ability to work closely with university researchers to develop the next generation of technologies.” —Gov. John Hickenlooper

## MEMBERSHIP

Your organization can benefit today from the world-class expertise and cutting-edge research now underway to advance knowledge and understanding of AM.

Contact ADAPT today for details on current membership investment levels. Colorado businesses and institutions receive a 15% discount.

## MEMBER BENEFITS

- A state-of-the-art AM data storage, visualization, and machine learning platform
- Focused R&D to individual members
- Collaborative work on issues of interest across the organization
- Access to pooled data and resources otherwise out of reach to individual companies
- Collaboration opportunities with the ADAPT community
- Guidance to develop rapid prototyping and low-volume manufacturing techniques
- Secondary process knowledge and research for AM parts
- Accelerated characterization efforts to qualify metal additive processes
- Efficient qualification of machines

## MEMBER SUCCESSES

ADAPT has leveraged over \$17,000,000 in federally funded programs for its members.

- Ball Aerospace is using ADAPT's machine learning framework for accelerated Design of Experiments to reduce the time and money needed to qualify new AM parts.
- Reaction Systems was awarded a \$750,000 two-year SBIR contract based on prototypes and data ADAPT developed with them in less than two months time.
- Confluent Medical Technologies is leading the market in developing better materials for 3D printing of metallic biomedical implants through their partnership with ADAPT.
- Faustson's early adoption of an emerging selective laser melting technology is advancing rapidly thanks to ADAPT's machine learning models.

## FOUNDING MEMBERS

- Lockheed Martin
- Ball Aerospace
- Faustson Tool
- Citrine Informatics
- Manufacturer's Edge
- Colorado School of Mines
- State of Colorado (OEDIT)

## MEMBERS (AS OF 3/1/17)

- Reaction Systems Inc.
- Elementum 3D
- Confluent Medical Technologies
- Concept Laser
- Big Metal Additive
- Spatial Corporation



ADAPTCenter



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“Through ADAPT, manufacturers of all sizes will have access to cutting-edge research and will help shape the future of the 3D metal printing industry.”

—Heidi Hostetter, Vice-President at Faustson Tool.

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