

# INDUSTRY 4.0

Technologies revolutionizing the metal casting industry!

## SHAPING THE FUTURE OF AN INDUSTRY

Digitization, rising production costs, shortage of skilled workers, and supply chain issues are common manufacturing concerns. The foundry and the metal casting industries are no exception. Foundries across the nation are under constant pressure to improve processes and overcome the challenges of this segment. The demands for accuracy and precision, as well as notable increases in the quantities, product range, and components, will continue to rise.

### Solutions & Opportunities

It is crucial to address these issues and meet the demands. The obvious solution is to incorporate Industry 4.0 technologies. By utilizing these new technologies and incorporating automation, foundries nationwide can move towards a sustainable and profitable future. Change, however, is not always easy or affordable.

### The Partnership

The Defense Logistics Agency (DLA) and the National Center for Defense Manufacturing and Machining (NCDMM), acknowledge the situation and recognize the challenges and obstacles. By joining forces with two universities, the University of Northern Iowa (UNI) and Youngstown State University (YSU), foundries will be able to increase the adoption of Industry 4.0. Our measures determine how an intelligent factory fits into core operations, finance, sales, and marketing by utilizing research, commercialization, and new workforce training solutions.

This project is sponsored by the Defense Logistics Agency Information Operations, J68, Research & Development, Ft. Belvoir, VA, and the DLA Troop Support, Philadelphia, PA.



“Our partnership offers the nation's foundry industry and its supply chain a unique blend of applied research in Industry 4.0 technologies.

Combined with direct technical assistance, participating small-medium enterprises are now positioned to be more competitive, profitable, and resilient.”

states Brian Schmidt,  
Program Manager, NCDMM

### Advantages & Results

This Industry 4.0 Foundry Partnership aims to provide American-based foundries with the competitive lead in technology while optimizing productivity, output, and product quality, catapulting American-based foundries forward. These technological innovations create opportunities that help build a dynamic digital ecosystem. Several notable advantages are cost reduction, shortened deadlines, and deploy excellence in quality and customer satisfaction for generations to come.



# UNI BCS – Revolutionizing Metal Casting

Two key institutions at the University of Northern Iowa (UNI) under the Business & Community Services (BCS) umbrella play a significant role in the Industry 4.0 Foundry Partnership. The Center for Business Growth & Innovation (CBGI) is the first. The Metal Casting and the Foundry 4.0 Centers make up the second group. Together, they give foundries the competitive lead needed to push technology, productivity, and quality forward.

## UNI Foundry 4.0 & Metal Casting Centers

The UNI MCC located on campus is a nationally recognized leader in foundry research, applied technology, and technical business assistance. For more than 30 years, the MCC has changed the metal casting industry by linking university-grade analysis, resources, and students to businesses and foundries in the private sector.

The Cedar Valley TechWorks in Waterloo, Iowa houses the UNI Foundry 4.0 Center. Experts explore additive & advanced manufacturing, automation, robotics, IoT, and Smart Manufacturing using state-of-the-art equipment, including a 3-D printer.

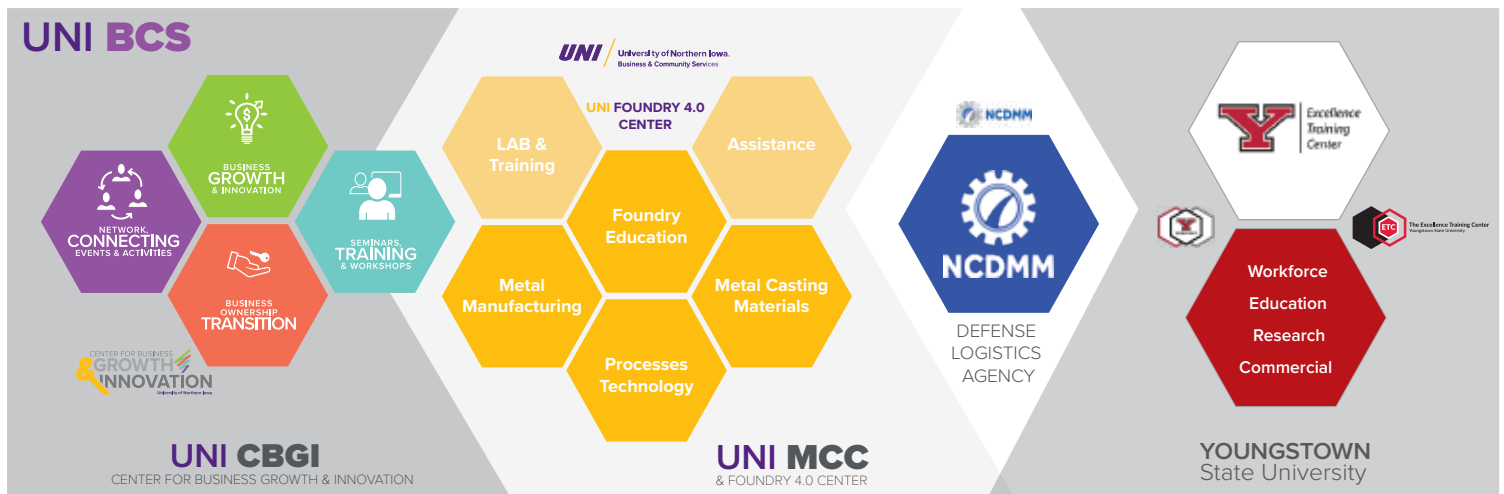
Both UNI Centers enable foundries to optimize manufacturing processes while incorporating Industry 4.0 technologies. These improvements contribute to the



# TAKING FOUNDRIES TO THE NEXT LEVEL

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sustainability and resiliency of the casting industrial supply chain by:

- Improving worker safety with automation of repetitive and potentially dangerous tasks
- Providing advanced technology to expand production capabilities
- Providing timely process information through IoT
- Decreasing the time required to produce cast parts
- Increasing speed and efficiency of casting production

## Center for Business Growth & Innovation

CBGI works to increase successful and sustainable adoptions of Industry 4.0, connecting foundries across the country to the most innovative practices. The experts strive to research, analyze and develop strategies for commercialization and create successful training solutions that impact a business and its workforce. Fitting Intelligent 4.0 factory elements into core business operations, such as finance, sales, and supply chains, will be an elemental success metric for growth.

## Youngstown State University & ETC

Youngstown State University has a long history of assisting companies within the foundry industry and its supply chain to modernize and improve their operations.

The Excellence Training Center provides advanced manufacturing education, workforce training and research that utilizes state-of-the-art equipment including an operational foundry and robotics to accelerate the adoption of Industry 4.0 technologies. Offered are unique in-demand workforce programs, a research center for advanced manufacturing along with assistance incorporating innovation into the workplace. Students, including foundry owners and their employees, receive advanced instruction in CNC machining, industrial maintenance, robotics, automation, and additive manufacturing.

The YSU Division of Workforce Education and Innovation brings together the strategic and operational alignment of the YSU Excellence Training Center, the online Skills Accelerator with its strategic workforce programs. Together their mission is to bridge the skills and opportunity gap by creating alternative learning pathways and to prepare the current and future workforce for rapidly evolving skills and industries.

