

CENTER FOR ADVANCED AND EMERGING TECHNOLOGIES [CAET]

A PROSPECTUS

MCC's Center for Advanced and Emerging Technologies provides the physical and instructional resources expediting development of the greater Omaha area's workforce to meet the needs of leading-edge industries. CAET's foundation is built upon four pillars:

- (1) Synergy created employing IT as an enabling profession with areas commonly known as "the trades."
- (2) Collaboration and co-location with specific Omaha industries
- (3) Transformative instructional design employing new work-embedded methodologies producing significantly more effective and efficient training.
- (4) Fully Engaged Learning Spaces (FELS) leveraging tomorrow's technologies today.

SYNERGY: We live in a world of exponential change. Information Technology in this world is no longer so much its own industry as an enabler and expeditor of the core business. At the same time in this rapidly changing space, workers in the Trades now must, in effect, "carry a computer in their tool belts." In this new world, businesses are finding value in dynamic interaction of fields formerly operating in silos. Robotics clubs in the Omaha area have exploded in popularity drawing hundreds of high school students intrigued by the lure of competitions based on engineering, mathematics and information technologies. Data Centers seek workers who are proficient not just in HVAC and electrical service as the interrelationship with the IT infrastructure they

"For every one
engineer graduating
from a 4-year school
any industry will need
7 or 8 technicians.

The community
college is best
positioned to train
these technicians."

Dean, North Dakota
College of Science

support. It is our position that to train new workers effectively and efficiently these skills are best learned simultaneously.

COLLABORATION AND CO-LOCATION: To succeed, MCC must be responsive to the needs of individual businesses. Effective collaboration begins with an understanding of the industries' requirements for skilled workers and continues with the College's development and deployment of effective programs. Toward that end, we envision designing a series of spaces from whole cloth, as it were, bringing together specific equipment with specific talent from our trades and IT areas. Co-locating at our Omaha Fort Campus provides readily available support services to students including educational and administrative support. Our vision is spaces within spaces sponsored by and for local industries.

TRANSFORMATIVE INSTRUCTIONAL DESIGN: MCC's success with alternative instructional approaches drives our belief that, to succeed, we cannot do the business of education as it has been for 200 years. For example, MCC recently graduated a class of students from underrepresented and disadvantaged populations who never took a single traditional class in the content area. Instead, they worked as action teams on real problems and earned course credit upon successful completion of competencies. MCC's welding program for many years has been rooted on the premise, "the weld needs to hold." Here students work on projects at their own pace while receiving individualized assistance from instructors. By bringing in instructors from other areas such as math and English, students may even complete their general education requirements while training. We envision that the majority of instruction would be blended/hybrid with students on site for specific, strategic work experience while working online for concept introduction and reinforcement.

We believe to get the results industry needs, new instructional approaches are required.

FULLY ENGAGED LEARNING SPACES (FELS): MCC has engaged the services of a nationally recognized consulting group to completely re-design learning spaces. Traditional classes where the instructor as expert stands at the front of a classroom are effectively gone. Instead, students work on projects individually and in teams with slate (e.g. iPad) in hand accessing their individualized desktop via the MCC cloud and sharing results on displays around the room. Off-site work continues on concept development and reinforcement through virtual simulation. We believe, when used correctly, technology can transform training.

Possible Scenarios

To help communicate our programming vision, possible scenarios are presented. Combined, these scenarios show the range of possibilities for creative synergy emphasizing rapid industry response.

Data Center Facilities Management:

The first degree under CAET is already in development. The Data Center Facilities Management degree is in direct response to local data centers requesting workforce development. The current Data Center Management program in the Information Technology (INFO) area is quite strong on the IT side of the house. However, modern data center facility management requires a good working knowledge of a broad range of content including HVAC, electrical, and process controls. These skills cannot easily be learned in isolation. That is electricians need to know how their field dynamically impacts the entire



operation. To address this need, we envision a relatively small laboratory made up primarily of donated equipment from local data centers. In this lab, students learn hands on the operation of a data center under simulated loads. Study continues during the week online both to introduce and to reinforce concepts. This scenario is already becoming a reality thanks to donations of equipment from Yahoo!.

Corporate Rollout:

In this scenario, companies such as John Deere need a space to demonstrate new equipment to customers and to potential customers. Company technicians might provide on-site training. CAET faculty from both INFO and the trades are invited to participate. Ideas for future collaboration are generated including potential development of both credit and non-credit courses. At the very least, aspects of the latest technology are infused across courses in several areas. Possible online simulations are developed representing real world cases.

Think Tank Incubation

Small startup companies seeking to develop prototypes for proof of concept need both office and production space. They draw upon both faculty and student resources in both paid and non-paid work experiences. Training components for technical support could be co-developed.

New North Omaha Industry Development

New businesses from out of area and/or out of state considering locating in North Omaha need to develop a workforce. Working with the Economic Development branch of the Greater Omaha Area Chamber of Commerce, CAET works with the companies Human Resources department to recruit potential student/employees for training about the time the first shovel hits the ground. By the time the doors open, the company has the beginnings of a technical workforce.

Vertical Collaboration

The AIM Institute has a pilot program joining together the strengths of UNO's College of IS&T engineering and computer science students with community college students. Local small businesses wishing to upgrade their technology (e.g. deploy into the Cloud) first have an analysis provided by UNO students. CAET students, then, carry out the implementation. The space supporting this initiative would be collaborative in nature with ability to pull in teams to work both on-site and remotely (e.g. Cisco's TelePresence) with students and customers.

Grant Funded Initiatives

MCC has been able to provide success experiences to many students under a wide variety of grant funding from sources including the U.S. Departments of Labor and Energy and the National Science Foundation. Under this scenario, the CAET physical facility becomes leverage for additional competitive grants which typically fund resources for students but rarely equipment and never capitol/building needs.