



# CASE

Center for Regional Economic Development

## RAMTEC PROPOSAL



REGIONAL AUTOMATED MANUFACTURING TECHNOLOGY AND EDUCATION CENTER

# Executive Summary

## **The emergence of the RAMTEC proposal as an alternative approach**

The Center for Regional Economic Issues (REI) at Case conducts a weekly public forum, REI Tuesdays, to explore different issues that are shaping the regional economic transformation now underway in Northeast Ohio. Some of these sessions have explored the manufacturing economy in Northeast Ohio.

As an outgrowth of these sessions, several industry participants, assisted by a teacher from Max Hayes High School, have proposed the development of a new initiative to assist small component manufacturers. The proposal is called the Regional Automated Manufacturing Technology and Education Center (RAMTEC).

RAMTEC represents a new industry consortium, not a trade association or a publicly-funded technology transfer program. The proposal includes these features:

- An industry-led collaborative of component manufacturers would share insights and expertise in developing and applying automated solutions to manufacturing.
- The collaborative (RAMTEC), would demonstrate to manufacturers how automation can be integrated into existing manufacturing operations.
- RAMTEC would also contract with component manufacturers to assist them in designing and producing parts.
- RAMTEC would act as a distributor for equipment and tooling vendors.
- RAMTEC would provide “live” training to the full range of skilled professions involved in manufacturing, from equipment operators to high level design engineers. Training would be provided to current employees of component manufacturers, as well as new entrants to manufacturing. RAMTEC could evolve to a technical college focused on manufacturing.
- The funding model for RAMTEC follows a collective or cooperative model. After start-up, it would not be dependent on outside financing for support.

# Overview

## **Our manufacturing economy matters**

Manufacturing, a core strength of our regional economy, is undergoing an enormous transformation. New technologies emerge continuously. Outsourcing to Asia and Eastern Europe undercuts the competitive position of established businesses. Large companies are accelerating the transfer of sophisticated technologies as they develop supplier bases offshore. One fact is certain: the global forces driving these shifts will continue into the foreseeable future.

Manufacturing matters to the U.S. economy. A 2004 report by the U.S. Department of Commerce makes the point,

Manufacturing spurs demand for everything from raw materials to intermediate components to software to financial, legal, health, accounting, transportation, and other services in the course of doing business. According to the Bureau of Economic Analysis, every \$1 of final demand spent for a manufactured good generates \$0.55 of GDP in the manufacturing sector and \$0.45 of GDP in non-manufacturing sectors.<sup>1</sup>

A report issued in Indiana last month concludes:

Manufacturing is a key component of the U.S. economy. Recent reports maintain that despite the continued decline in employment in the sector, “manufacturing is the principal engine for growth in the modern economy”. It is unique because of its size, and its ability to generate innovation and value.<sup>2</sup>

## **OEM Parts Suppliers in Northeast Ohio face a shifting landscape**

Our region has a large number of OEM part suppliers. Many of these companies are small manufacturers that machine precision parts for larger Original Equipment Manufacturers (OEMs)<sup>3</sup>. So for example, a large company will contract with a small company to supply a precision hydraulic coupling for a braking system.

For a number of years, Sue Helper, an economist at the Weatherhead School of Management at Case Western Reserve University, and her colleagues in Wisconsin and Michigan have been studying the competitive position of these smaller parts suppliers across the upper Midwest. They have documented how competitive pressures are changing the landscape for these firms. They observe that new approaches are needed to encourage firms to invest in additional upgrading. They specifically point to Wisconsin Manufacturers’ Development Consortium as a model.<sup>4</sup> This consortium represents a group of OEMs that have been working together on common supplier problems.<sup>5</sup>

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<sup>1</sup> U.S. Department of Commerce, Manufacturing in America: A Comprehensive Strategy to Address the Challenge to U.S. Manufacturers, January 2004, p. 14.

<sup>2</sup> Thomas P. Miller & Associates, Executive Summary: What Indiana Makes, Makes Indiana: An Analysis of Indiana Manufacturing, January 2005, p.2.

<sup>3</sup> An original equipment manufacturer (OEM) is a company that uses product components from one or more other companies to build a product that it sells under its own company name and brand.

<sup>4</sup> Susan Helper, et.al., Component Manufacturing: Creating and Advanced Manufacturing Sector: Final Report for the Alfred P. Sloan Foundation, (March 2004), p. 5.

<sup>5</sup> Center on Wisconsin Strategy, Challenges and Options for Wisconsin Component Manufacturing (2003), p. ii.  
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In a separate paper, Sue Helper and Marcus Stanley demonstrate that component suppliers that work together in clusters are more productive and less likely to lose work to foreign competitors in lower wage regions.<sup>6</sup>

#### **Federal support for assistance to smaller manufacturers is shrinking**

While the competitive pressures on parts manufacturers are growing, the Federal government is reducing support for its major program to assist smaller manufacturers. The Manufacturing Extension Partnership (MEP) program provides funds to organizations like the Cleveland Advanced Manufacturing Partnership (CAMP). Under the Bush Administration's pending budget proposal, the funding for the MEP program will decline from the current level of \$117 million to \$47 million.<sup>7</sup>

## RAMTEC Proposal

The focus of RAMTEC is to accelerate innovation among component suppliers in Northeast Ohio. These manufacturers face a number of obstacles in applying the technology to their operations effectively:

- Manufacturing managers may not understand the value of investments in upgrading.<sup>8</sup>
- Investments in automation and integration can be complex and beyond the technical scope of smaller firms.
- Equipment vendors find that it is too expensive or difficult to address the small manufacturer segment effectively.
- The lack of skilled technicians and operators makes the application of automation solutions difficult and risky.

RAMTEC would operate as a cooperative among component suppliers to focus in three areas.

#### **Automation solutions for smaller manufacturers**

RAMTEC will provide contract manufacturing services to smaller manufacturers to assist them in upgrading. So, for example, a smaller manufacturer will be able to contract with RAMTEC to meet the production requirements of a contract.

#### **Education in automation skills at all levels**

RAMTEC will provide a "transparent environment" in which people at all levels of the manufacturing firm -- from machine operators to applications engineers and manufacturing managers -- can learn about the application of automation to component manufacturing.

#### **Lean automation research, development and product design**

RAMTEC will provide a cooperative laboratory for research and development into new automation solutions. RAMTEC will conduct cooperative research projects with university and industry partners to develop and apply automation technology to smaller manufacturing operations.

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<sup>6</sup> Sue Helper and Marcus Stanley, "Industrial Clusters, Social Capital and International Competition in the U.S. Component Manufacturing Industry" (August 2003).

<sup>7</sup> "Bush cuts manufacturing aid", Industry Week, February 5, 2005, available at <http://www.industryweek.com/CurrentArticles/Asp/articles.asp?ArticleId=1750>

<sup>8</sup> One industry observer estimates that 40% of small component manufacturers do not have relatively inexpensive CAD-CAM systems. They rely instead on manual programming of their machining controllers.

RAMTEC would operate as a cooperative and generate funds from the following revenue streams:

- Commissions on the sale of automation cells and tooling to smaller manufacturers
- Contract manufacturing
- Education and consulting services
- Research and development contracts

RAMTEC will generate the cash to upgrade its own equipment continuously. RAMTEC will be generating value as it operates as an open and transparent node in a network of component manufacturers. RAMTEC must also tie together the interests of the smaller manufacturers with the interests of the equipment and training vendors.

### **Professional manufacturing education**

RAMTEC will be a learning and production center dedicated to the advancement of manufacturing innovation in Northeast Ohio. It will be a facility to demonstrate how available automation technologies can be applied and integrated into flexible and practical solutions. Students at all levels will receive practical training in the application of automation -- from machining to assembly and material handling.

Other professions -- law, business, accounting, medicine -- have well established (and in some cases mandatory) continuing education offerings. No similar continuing education system serves manufacturers. In association with its training partners, RAMTEC will provide professional manufacturing education and certifications.

### **Design integration**

The future of manufacturing in Northeast Ohio will depend largely on the effective integration of innovative product design and advanced manufacturing automation. RAMTEC will provide the "learning space" for this integration to occur.

### **Clean, green and efficient**

RAMTEC will be dedicated to developing a new image of manufacturing innovation in Northeast Ohio. To accomplish this vision, RAMTEC will occupy a showcase manufacturing facility. The building design should reflect RAMTEC's philosophy of sharing automation solutions. The architectural design will be clean and open with the integration of high level design and green building technology. The RAMTEC facility will include 55,000 square feet of factory floor and 20,000 square feet of educational space, labs and offices. When fully built-out, the RAMTEC facility will employ between 30 to 50 people, including administrative staff.