ROBOTICS COLLABORATIVE

A REPORT ON THE POTENTIAL FOR A RESEARCH AND DEVELOPMENT FACILITY FOR CROSSOVER TECHNOLOGIES.

PROPOSED PROJECT GOAL

By combining electronics, software, and coding with traditional manufacturing, a regional innovation center can spark an interest in further study, or entrepreneurial pursuits, which will lead to job creation and entice young people once again to be excited about the manufacturing sector.

In order for Southeast Michigan to compete with global centers of innovation the mind set in our education system needs to focus on software first, manufacturing second.

WHY STERLING HEIGHTS

- Infrastructure
- Workforce
- Opportunity
- Roadmap

INDUSTRY & WORKFORCE

$53,411
MEDIAN INCOME

415,000
LABOR FORCE SINCE 2018

20TH
IN SCIENCE & ENGINEERING DOCTORATES AWARDED

76,500
AUTOMOTIVE, ENGINEERING & DESIGN, SKILLED TRADES & TECHNICIANS

CONTACT

LUKE BONNER

Bonner Advisory Group
734-846-9746
Luke.Bonner@BonnerAG.com

KIM HILL

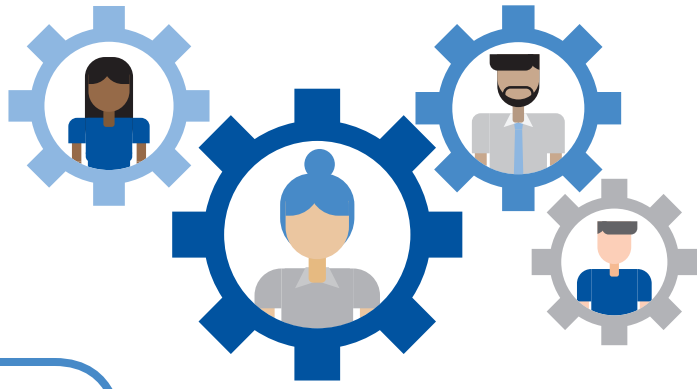
HWA Analytics
734-355-1740
kimhill@hwa-analytics.com

STERLING-HEIGHTS.NET

PUBLICATION DATE: November 2016

- Administered by the University of Michigan Institute of Research, Labor, and the Economy
- In partnership with Ohio State & Purdue University
- Funded by Department of Defense and Office of Economic Adjustment

SITUATIONAL ANALYSIS



CHINA'S APPETITE FOR AUTOMATION

China is eating up the market both as a buyer and an emerging seller. However, for Chinese companies to fully capture the robotic market within China they will have to shore up missing components that are hard to make and improve quality and precision overall.

COLLABORATIVE ROBOTS

A viable and growing segment of the robotics industry started by Universal Robots but with competition coming from Kuka, ABB, ReThink Robotics, and others.

ROBOTICS AS A SERVICE

Using drones to capture sensor and camera data and then developing software to analyze that data and translate it into actionable plans has crossed industry boundaries and is being offered not only to agriculture companies but to oil and gas companies, and NGOs and governments wishing to monitor hard-to-get-to areas.

LOGISTICS AND MATERIALS HANDLING

During the financial crisis, capital expenditures for logistics were put off, now the crisis is behind us and consumers want their products fast. A variety of companies offer enhanced material handling methods for factories, warehouses, and distribution centers.

INVESTMENTS IN ROBOTICS

Investments totaled $3.6 billion in all of 2015 and $5.0 billion for 6 months of 2016. An estimated $6 billion more announced before 2016 has even come to a close.

HIGHER EDUCATION WITH ROBOTICS PROGRAMMING

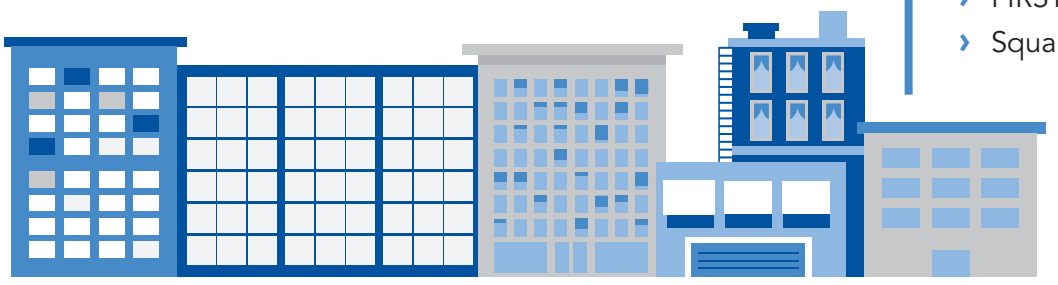
- University of Michigan
- University of Detroit Mercy
- Lawrence Tech University
- Oakland University

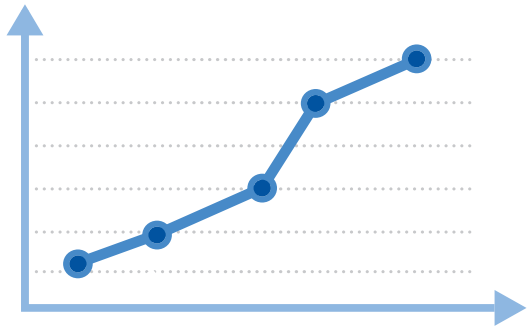
STEM INITIATIVES

- FIRST Lego League
- Robofest: Lawrence Technological University
- FIRST High School Robotics
- Oakland County Competitive Robotics Association
- Square One Educational Network
- IGVC: Intelligent Ground Vehicle Competition

BENCHMARKING

- The Robotics Institute at Carnegie Mellon
- Wilson Student Team Project Center at University of Michigan
- SRI International
- Bolt
- Automation Alley Innovation Lab
- TechShop Detroit
- FIRST Robotics
- Square One Education Network





SUSTAINABLE PROGRAMMING

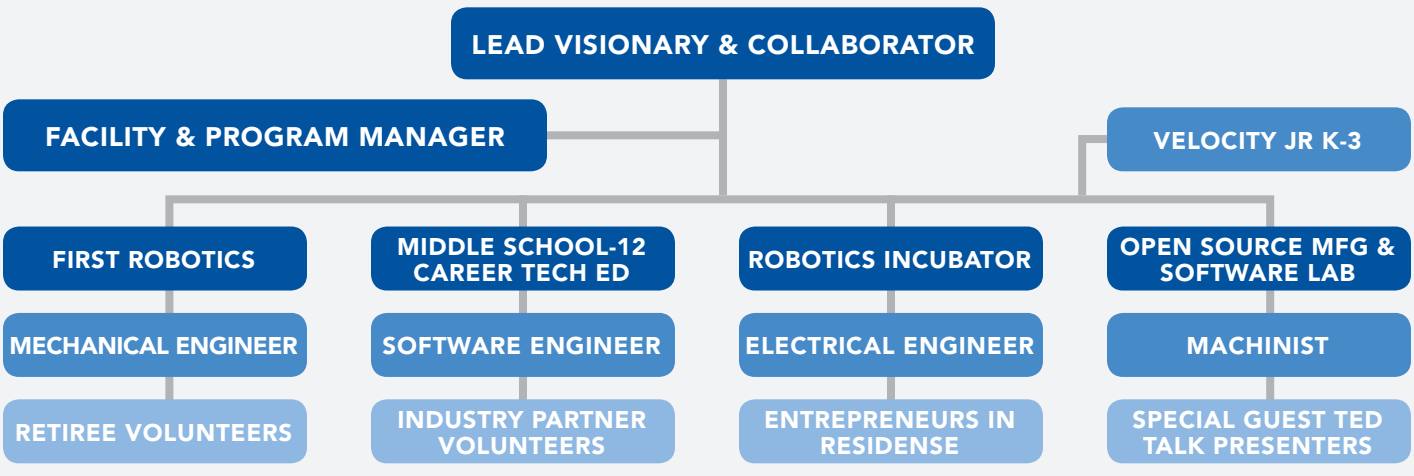
PROPOSED BUSINESS MODEL

- Sustainability
  - Membership Dues
  - Corporate Partners
  - Grants
  - Sponsored Research
  - Licensing
  - Spin Offs and Sales
- Private Membership model (pay to play)
  - Corporate or Individual
    - Hourly
    - Weekly
    - Monthly
    - Full-year partnership (corporate partners)
- Public memberships
  - Subsidy support from Corporate partners
    - State, Country, or Local Government
    - University
    - Community College (hold classes onsite)
    - K-12 (First Robotics, STEM)

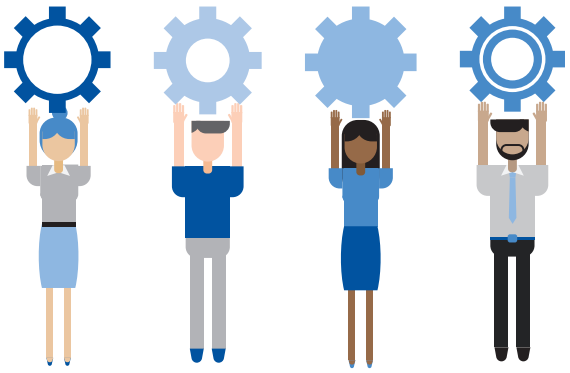
SAMPLE FUNDING STRATEGY

- Raise money
- Solicit funding from companies—rather than just funding one school's program, fund a center where many school programs could have access
- Solicit funding from public sector entities—local, county and state funding sources.
- Government can donate space
- Seed Funding – Government and Corporate Partners
  - Department of Defense
  - National Science Foundation
  - Department of Education
  - The New Economy Initiative
  - The Ralph Wilson Foundation

PROPOSED ORGANIZATIONAL STRUCTURE



COLLABORATIVE INNOVATION



ASSETS

- Manufacturing tools
  - Fabrication machinery and tools—lathes, 3D printers, laser cutters, metal bending equipment, etc.
- Software
- Electronic tools and equipment
  - Soldering, printed circuit board design and manufacturing, software tools, computer aided design equipment, etc.
  - Laptops and desktop machines
  - Data storage/cloud
  - IoT capabilities
  - Software packages
  - Engineering program packages
  - VR simulation
  - Modeling capability
  - Purchase 3-4 Rethink robots—Baxter, Sawyer

A SUPPORTIVE ECONOMY

(Source: Automation Alley Tech Report)

Southeast Michigan technology leaders are optimistic about 2016 growth. In 2016, project revenue grew 99 percent. 83 percent expect an increase in their company's R&D spending and 82 plan to hire more talent in 2016.

It's a better place for technology companies to do business than Silicon Valley for the purposes of retaining talent, have a greater return on investment, and benefiting from lower cost of capital. It's also a better place for technology professionals to build their careers because of the comparatively lower cost of living, more networking opportunities than other metro areas and leading academic institutions for self-advancement.

RESOURCES

The benefits of a collaborative working environment are many. For instance, users would not be limited strictly to FIRST schools, but could by any person in high school or beyond with a project to build. It could be moderated by making pitches, having business plans, and showing a proof of concept.

Grants in the range of $5K to help a qualified individual or team explore and develop an idea. With a collaborative environment, teams will have access to experts and companies and see first-hand the work done on innovative projects.

- What is the secret sauce?
  - Devoted leader/visionary—Facility needs a strong dynamic leader who can create the vision and work closely with industry and users to enable center to reach its highest, most beneficial use
  - Small grants
  - Innovation fund
  - Culture is important
  - Solicit volunteers from companies—current employees, or retirees, who can lend their expertise to help people develop their product
  - Recruit entrepreneurial mentors to help with formation of a business, scale to volume, etc.