



Michigan Garage and Basement Inventors Advancing Michigan's Economy

Revealing the Discovery to Market
Process in Michigan

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Michigan Inventors Coalition

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MSU EDA University Center for Regional Economic Innovation (REI)

MICHIGAN STATE
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Garage and Basement Inventors Advancing Michigan's Economy: Revealing the Discovery to Market Process

Michigan State University

Center for Community and Economic Development

EDA University Center for Regional Economic Innovation

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Table of Contents

INTRODUCTION	3
INTERVIEWS WITH INVENTORS	4
R. Dale Moretz, Jackson, Michigan	4
Thomas A. Grace, Jackson, Michigan	6
Orville V. Crain, Muskegon, Michigan	7
Deborah Tacoma, Zeeland, Michigan	8
David Fedewa, Haslett, Michigan	9
John D. Hopkins, Jackson, Michigan	10
Marty Sovis, Flushing, Michigan	12
Hannah Lowenthal, East Lansing, Michigan	13
Roger Cunningham, Alpena, Michigan	14
Gyhandi Hill, Ann Arbor, Michigan	15
SUMMARY	15
DISCOVERY-TO-MARKET PATHWAYS	16
Venturing vs. Licensing	16
Hobby/Serial Inventor Process	18
RECOMMENDATIONS	24
Modules and Classes	25
Inventor Help Desk	25
CONCLUSION	26
AUTHOR	27
John D. Hopkins, Author	27
CONTRIBUTORS	28
Orville Crain	28
David Fedewa	28
Ron Betzig	28
Marty Sovis	29
Tom Grace	29
Dale Moretz	30

Introduction

Michigan has done a great job of creating programs for those that are interested in becoming successful entrepreneurs, but less assistance and support has been offered to Michigan's "Garage and Basement Inventors"¹. Many of whom do not have the resources or the knowledge on how to take their ideas from inventions to the market. There are selective programs focusing on entrepreneurship and business development; however few programs are intended for inventors, especially for those inventors not associated with universities or colleges. Some of these programs include: Michigan Small Business and Technology Development Centers (MiSBTDC)², Great Lakes Entrepreneurial Quest (GLEQ)³, tech transfers at universities⁴, university/college courses⁵ and the Michigan Economic Development Corporation (MEDC)⁶, to name a few. Michigan inventors believe the reason for the lack of resources and assistance is due to a lack of understanding of how Michigan inventors function. The Michigan Inventors Coalition (MIC)⁷ is at the center of an initiative to bring inventor talent together to solve this important problem. After all, inventors create products, products create jobs, and jobs create an economy that produces more jobs, which creates economic stability for everyone.

Aspects of the research for this co-learning plan involved interviewing inventors to form a clearer picture of the many invention pathways inventors may take. It appears that many inventors never cross the line into entrepreneurship and often face a number of obstacles along the way. One of these obstacles is the lack of a point person, office, or resource for advice about inventing in Michigan. Another obstacle is the lack of classes, clinics or modules available to teach various elements of the discovery to market process.

This co-learning plan should provide some insight for those wishing to help Michigan Garage and Basement Inventors, regardless of whether the inventor would like to start a business or not. The authors of this co-learning plan conducted the following activities to learn more about the current environment for Michigan inventors:

- 1) **Interviewed** inventors to learn more about their practices and discovery to market **pathways**.
- 2) Identified possible **modules or clinics**, based on the varying pathways, on how to prototype, market and patent products or services.
- 3) Explored the feasibility and development of a **"go-to guide" or "help desk"** for inventor groups, maker space groups and economic developers in communities and regions.

¹ Group of inventors from Michigan that are self-starters hoping to promote inventing and self-startups, <http://www.youtube.com/watch?v=rd6v9tA6x1U>

² Provide services to Michigan's existing, growing, technology-based and start-up companies, <http://misbtdc.org/>

³ Encourage and educate entrepreneurs on the creation, start up and early growth stages of high-growth businesses <http://gleq.org/gleq.nsf/index.html>

⁴ Transferring skills, knowledge and education about technology through universities, http://www.autm.net/Tech_Transfer.htm

⁵ University/college courses that focus on technology and inventing

⁶ The MEDC strives for partnerships that will flourish with the application of programs, incentives and innovative strategies. <http://www.michiganbusiness.org/>

⁷ Coalition of Michigan Inventors that work together to promote inventing, <http://michiganinventorscoalition.org/>

Interviews with Inventors

The inventors interviewed had several approaches to their process. There were common threads and unique differences. These interviewed inventors are considered successful in bringing products to market. Each of the inventors have been involved in a Michigan inventor networking group and were recommended by members of their groups as having some kind of notable talent in the process of taking an idea to market.

R. Dale Moretz, Jackson, Michigan

Dale has a Bachelor of Arts degree in history from the University of North Carolina, Chapel Hill where he graduated with honors in 1967. He was enrolled in one year of graduate school at the University of Michigan in Ann Arbor but was unable to finish his Master's degree due to financial constraints.

As a child, he wanted to know how everything worked. Like many kids, he took delight in taking apart a non-functioning item (like an alarm clock) and putting it back together to make it functioning. Sometimes he really irritated his family, having his recently repaired alarm clock go off several times a day just because it was so satisfying for him to have fixed it.

Dale grew up on a farm. Living on a farm, one often does not have the basic resources that are needed, however resources or not the job **MUST** be done. This requires a person to improvise, which is at the core of invention. Dale remembers repairing equipment with homemade parts, and "inventing" new ways to treat ill farm animals, even though he lacked formal veterinarian skills and the tools needed for proper repairing. Through his inventor mindset he learned to substitute methods when needed.

Dale believes that an inventor is one who sees unmet needs and develops solutions. This means having the ability to sense inefficiencies in processes that could be improved by making changes or adding components to the processes. He states, that an inventor is incessantly curious about everything, and is never satisfied with anything - especially his/her own inventions. An inventor is always looking for ways to solve problems. He believes that some of the traits of inventors are curiosity, passion for solving problems, desire for improving everything, inability to stay focused on a solved problem --- and a refusal to "grow up" in the sense of becoming satisfied with one's condition.

His ideas come from his own personal and professional challenges. He claims that his inventions come from watching his customers and their products and processes and determining the areas that need improvement. They can come from observing greater societal issues like energy and the environment, reading articles describing basic research (possibilities for application of new knowledge - for "application engineering"), listening to the problems and frustrations that others are experiencing, his personal challenges, his professional contacts and involvements, and the environment (social, political, economic and natural) in which he lives.

Dale describes his discovery to market process below and adds that it is also a result of collaboration with others:

1. See a problem or need that is not presently met, or that needs an improved solution
2. Conceive of a solution - or multiple solutions
3. Perform an initial market study to determine if there is a demand for this product/process, and estimate the value of the solution in the eyes of the market
4. Check to see if the solution(s) is/are really new
5. Estimate approximate cost of the solution or solutions, this will require a preliminary design and if more than one solution, focus on least expensive, so long as utility is not compromised
6. Make an estimation of cost/benefit - will the market be willing to pay for this solution? (NOTE: This may involve consultation with an intended customer or industry. It is essential that one avoid disclosing the idea and compromising patentability or allowing someone else an opportunity to patent the idea, especially with the change to "First to Patent")
7. Check patentability - make a preliminary patent search
8. Design it (engineering drawings)
9. Make a prototype
10. Test performance of the product or process to confirm its viability
11. File patent and confirm there are no conflicts or impediments to marketing the product
12. Find a manufacturer or determine who will manufacture the product
13. Finish market study & business plan, this should include determination whether to market under a "brand name" and application for any needed trademarks
14. Work out financing
15. Start roll-out, this might incorporate setting up manufacturing facilities, or if you have decided to manufacture yourself
16. Follow-up and service your product and your customer(s). No product will "market itself" or improve itself. This follow-up will allow a visual of the opportunities available to improve the product, introduce new problems that can result in the development solutions, allow opportunities to "obsolete" your idea before someone else does.

Dale believes that, "the best patent protection is to have the obsoleting technology developed while you are selling the product." If someone or a company 'steals' your idea, he suggests inventors should allow the 'thief' time to invest in putting it into production, and then introduce the technology that obsoletes it (and don't forget to have the next obsoleting technology well along). There is an advantage here, in that you developed the idea to begin with, and if you avoid "falling in love" with your own idea, you can move faster to develop it to the next level. On the other hand the "thief" will likely be focused on trying to figure out your original idea.

Dale believes his father was the closest person to a role model in his life, although his father was not an inventive sort. He was an independent business person (farming and timbering) who frequently improvised his methods of loading and hauling logs, long before there were skidders and timber handling machines. Some of his improvisations were quite simple, and others rather complex. He believes his inventive thought process was inspired by his father. During his inventive thought process many of his ideas are significantly processed before he discusses them with others. When he is trying to solve a customer problem, he asks a lot of questions, including the "what if" questions.

The largest hurdles come about with his most radical ideas; the valve lifter guide was such an idea. He found he had broken almost all the "rules" powertrain engineers were accustomed to following when designing the guide. He suggested his team use a polymer inside an engine (plastic is for toys) for the guide. He used one part where several had always been used, and he employed an intentional interference fit where everyone knew there had to be clearance between parts moving relative to one another. He spent over five years finding a release engineer willing to give it a try. After that application, the idea sold itself.

He thinks everyone gets rejected occasionally, but rejection is not his problem. The issue regards maintaining focus while finding many other things that equally draw his interest. Dale suggests that inventors should try to remember the joy in learning something new, or developing a new skill, similar to when they were children. He recommends to not become too "grown up" which would take the joy of inventing away, but to remember that having all this fun is expensive, so sufficient focus on the marketability of an idea, following the process needed to make the idea a financial success, and maintain protection of your individual control of it. Inventors must keep reminding themselves how much fun the process is and avoid becoming too stable and be open to a little confusion and conflict.

Thomas A. Grace, Jackson, Michigan

Tom has an Associate's Degree in Industrial Technology; a Bachelor of Arts degree in Industrial Design and he completed some graduate studies through General Motors Institute⁸ at Wayne State and Lawrence Tech. He worked for the General Motors Corporation for 41 Years and owned Maverick Industries in Jackson Michigan.

Growing up, Tom caught the eye of his junior high school math and industrial arts teacher, a catholic nun, who noticed his "doodling" in the classroom. Impressed with his ability to draw and design airplanes and automobiles, she took it upon herself to become a mentor to him. She taught him science and helped him with various projects, including a sled he wanted to run on model airplane engines. Among many of his projects growing up, was a redesign of a Plymouth Fury and a remodeled Cadillac, both of which were entered into a competition.

His career started early (while in high school) as an intern during the summers at GM-Frigidaire. He still recalls the first time they showed him his workroom. It was filled with "everything you would possibly need or desire"; the supplies were endless – colored pencils, instruments, clay, and paper, whatever was needed to help with the designing of products. 41 years as a corporate engineer and designer and 26 patents later, he is still involved in inventing.

When asked how he would define an inventor, Tom stated: "An inventor is a visionary...he sees problems where others would never see them. He thinks in terms of mechanical, electrical or fluid in nature where he can create needed solutions in his mind and then apply them in a form of communication to a designer. Tom believes, "inventors have a certain tenacity to not accept judgments from others, regarding the outcome of the ideas usefulness, until they see for themselves that the Pass/Failure report has been made after testing."

⁸ University in Flint, formerly GMI, currently called Kettering University, <http://www.kettering.edu/>

Tom's list of patents is extensive, and all done within General Motors (sole property of GM). This extensive list includes everything from a Bose sound system, a keyless entry locking system, fuel filler door systems, to a power seat control format design and seat belt buckling designs. Tom mentioned how most of these came about from management needs, and then it was up to the designers and engineers to figure it out. Sometimes they would tear down their competitors' cars and figure out a better more economical way of building it.

He believes, "The invention process can start anywhere, anytime and for any reason. It might come as a solution to a problem; or to make something easier...as a result of developing new technology. A good inventor reads up on the various new technologies, learns about them and then tries to apply them to something he has listed as a problem."

Tom considers himself an artist, designer and engineer. For relaxation, he likes to work with paint (oils and acrylics), sculpt in clay as well as photography. He claims that he is a compass and T-square man and has never been trained in CAD⁹. In his role as a corporate engineer or designer he is directed to design/invent/create something that suits the styling, packaging, or what is believed to be the desire of the customer. Many times it requires revisions on the run in marketing or styling. Discovering that they have missed something puts turmoil into the product timing plan to get to production dates and final cost targets. In essence, you need to be a generalist engineer with a good support group of experienced people for specific areas. You have to be the visionary and the sub-contractor to get everything done.

Orville V. Crain, Muskegon, Michigan

Orville graduated in 1972 from Western Michigan University with a Bachelor's of Science degree. He has attended hundreds of seminars and other learning experiences. He owned the Quick Stop Party Store and Car Wash and a real estate agency. He was a builder for Superior Builders¹⁰; owned White Lake Skateland and Bingo Hall¹¹ and was the Principal in a GH marketing company. He is on the Board of Directors for the United Inventors Association¹² (national) and he is the founder and president of the Muskegon Inventors Network¹³. He is also a Member of the Muskegon Chamber of Commerce¹⁴. He sits on the Advisory Council for Baker College¹⁵ and Muskegon Community College¹⁶ and is an adjunct instructor at Muskegon Community College teaching a self-designed patenting class. He is the Co-owner of Klever Innovations¹⁷ and has

⁹ Computer Aided Design, a program used for the creation, modification, and analysis of a product, <http://www.webopedia.com/TERM/C/CAD.html>

¹⁰ Roofing Contract Company in Tawas City, Michigan, <http://www.yellowpages.com/tawas-city-mi/mip/superior-builders-7283403>

¹¹ Skate Park and Bingo Hall in White Lake, Michigan

¹² Non-profit organization that empowers inventors through education, access and advocacy, <http://www.uiausa.org/>

¹³ Non-profit support group helping inventors, marketers and creative people to find a platform to learn and network, <http://www.muskegoninventorsnetwork.org/>

¹⁴ Chamber of Commerce in Muskegon, Michigan, <http://www.muskegon.org/>

¹⁵ Largest independent college in Michigan focused on education and training, <http://www.baker.edu/>

¹⁶ College that provides Associate Degrees and Certificates in Muskegon, Michigan <http://www.muskegoncc.edu/pages/1.asp>

¹⁷ Committed to the development of products for the safety and utility cutting markets, <http://www.kleverinnovations.net/>

won several awards: Muskegon Chamber- ‘Agents of Change’ Award¹⁸; Finalist in Entrepreneur of the year – ’12¹⁹ in Grand Rapids and ‘Leaders of Thought’ Business Review Magazine ’11²⁰.

One of Orville’s first inventions came when he was 17 years old while driving to Detroit to see his girlfriend. He almost fell asleep, so he invented the ‘Drive Alive’, a reverse switch that one would hold down or the alarm would go off (if you nodded off). He actually built a prototype that worked and used it, but it had no further development.

Orville’s advice to new inventors is to not ask for your mother’s advice or any friend/family member. Do not fall in love with your invention until it is fully vetted. Do not believe it is a million dollar idea or that “everyone will want one”. First, get help from others and do the hard work and the steps to see if it really is profitable. Inventors should use their gut-feeling, rely more on the gut-feeling than the capability of your brain. Next, he advises inventors to ask for help. The quality of being realistic is also to be critical and understand that the process usually takes years to get to the big money, if you ever actually do.

First look at prior art – what is out there like yours. If there is nothing too close, do a patent search for prior art. If there are no patents then build a prototype to prove it can be done and then estimate the cost, both to tool up and make one. Know that the final selling price should be five times the cost to build. Then shop around for your prototype using agreements to protect it. This process should let you know that there is a market and where to start the sales process. Apply for a patent if you can. Build a few and sell them (even if you lose money so you know they sell and at what price). If all of this works, then run like hell with it!

Orville states that his partner is the artist and he is the networker and/or “the ask for help/sales guy”. Some of Orville’s interests include: reading, writing- a novel, gardening and family stuff on the side when he is not inventing.

He claims that many inventors are on the edge of weird. They think differently, narrowly, and this makes it difficult for them to become a marketer which is the most important skill required to take the idea to the marketplace. Many should either get a partner who is a marketer or license the idea to a company that does market.

Deborah Tacoma, Zeeland, Michigan

Deborah graduated from high school and worked for A J Plumbing Inc. from 1994 to 2012 and AJ Properties Inc. from 1984 to 2012. She has been with Freedom Creators Inc.²¹ since 2007 and currently serves as Office Manager, Property Manager and President. She earned the 2010 GROW – Excellence in Innovation Award; 2010 Med Trade – New Product of the Year Award²² and she was a 2013 da Vinci Award Finalist²³. In August 2006 Deborah approached an

¹⁸ Individuals or projects that have made a positive contribution to the Muskegon Lakeshore, <http://www.muskegon.org/whats-happening/372-meet-the-2012-agents-of-change>

¹⁹ Award given by the Grand Rapids Chamber of Commerce, <http://www.grandrapids.org/epic-awards#.Uo0gGVceprA>

²⁰ Business Review article in West Michigan, <http://www.mlive.com/businessreview/>

²¹ Company that creates the invention called the, ‘Freedom Wand’, <http://www.freedomwand.com/home>

²² Award for a new, innovative product awarded by Med Trade that holds tradeshow on home medical equipment <http://www.medtrade.com/>

inventor friend with a drawing and very crude prototype for the [Freedom Wand](#)²⁴. She found an injection molding company to help with the engineering and design. She next found a patent attorney and filed for the patent. She was denied after two years, but she did some market research and cashed in, paying for it all with her own funds. She did all of the packaging, marketing, building and creation of the website with her own funds. Her business was a legal LLC in July 2007 and she started shipping on May 13, 2008. The testimonies from those who use the Freedom Wand often state how the product helped to change their life.

David Fedewa, Haslett, Michigan

David earned his Bachelors of Science degree in Business Administration and Economics. He owns Think Tank Innovation LLC²⁵. He has two forms of idea development. First, is through everyday living and the problems he faces throughout the day. The second is directed idea development, where he will take a specific problem or an existing product and try to figure out the problem. Then once he has an idea of how the problem could be solved he proves the concept as fast as possible with a prototype. Even if he has to make it out of paper or draw pictures of the invention. He usually does preliminary research before he bounces his ideas off people. If he gets a positive response then he will move forward from there. He typically works by himself during idea development claiming that others just slow him down. He claims that the most helpful advice he has received is when someone told him to call 50 companies a week to sell products instead of five and that's when he started to find success. The worst advice he received was to "quit now."

David Fedewa Idea to Licensing process

- I. Research
 - a. Online
 - i. Google
 - ii. Google Images
 - iii. Google Shopping
 - iv. Google Patents
 - b. In Store
 - i. Go to locations to find the companies in the same market
 - c. Is there products like it and who is the competition
- II. Market
 - a. Build marketing/ advertising
 - i. Video
 - ii. Sell Sheet
- III. Protect
 - a. Get as far along as you can without a patent attorney and bring them in when you have done as much as you can
 - b. Protect using a Provisional Patent Application (PPA)
- IV. Sell

²³ Da Vinci Awards recognize the most innovative developments from around the world, <http://www.davinciawards.org/>

²⁴ The freedom wand is a multi-use, multi-length tool, <http://www.freedomwand.com/>

²⁵ Internet marketing with an emphasis on affiliate marketing and utilization of CPA networks, <http://thinktankinnovations.net/>

- a. Pitch to companies that fit in the market of your product
- V. Finish and start over with a new product

John D. Hopkins, Jackson, Michigan

John graduated with a Bachelor of Science degree in Architecture from Lawrence Technical University. He owns Cedar Pine Construction²⁶ and is a Michigan licensed builder primarily in historic development. He worked with Warren Holmes Architects,²⁷ the City of Lansing Building Code Department²⁸ and Prime Power.

He has spent time working with the Agricultural Building Corporation, building and designing 500 to 7,000 cow dairy farm barns and parlors.

Recently, he worked with Beaumont Hospital²⁹ to design surgery rooms, nursing units, and all levels of medical facilities. John also worked with MidBrook³⁰ to design, develop and patent medical equipment, including surgical instrument cleaning systems. He now owns Health Care Concepts and Medical Innovative Products. With a background in architecture and engineering, John has had many different and varied engineering and designing work experiences.

He works with wood working tools, wood CNC³¹, all construction tools, back hoe, dump truck, machine shop tools, welders, AutoCAD³², SolidWorks³³, all office programs, farming tools and he has put in 25 hours towards an airplane pilots license. He is also a certified scuba diver. John earned the Entrepreneurial Vision Award in 2012, from the Jackson County Chamber of Commerce.

He belongs to the following associations:

Jackson Inventors Network,³⁴ *Chairman of the Board, President*
Michigan Inventors Coalition (MIC),³⁵ *Chairman of Executive Committee*
American Institute of Architects³⁶
Michigan Society of Healthcare Central Sterile Processing Associates³⁷
International Association of Healthcare Central Sterile Processing Material Management³⁸
Michigan Society for Healthcare Engineers³⁹

²⁶ Construction Company located in Rives Junction, Michigan

²⁷ Specializes in the design of educational buildings, <http://michiganmodern.org/designers/warren-holmes-company>

²⁸ Protects the built environment through regulation of new and existing buildings in East Lansing, Michigan, <http://www.cityofeastlansing.com/Home/Departments/BuildingCodeEnforcement/>

²⁹ Hospitals located in Grosse Point, Royal Oak and Troy, Michigan, <http://www.beaumont.edu/>

³⁰ Corporation that designs medical machinery, <http://www.midbrook.com/MidbrookLandingPage/index.html>

³¹ Computer Numerical Control, machinery that creates objects from wood

³² Software used to design and shape, <http://www.autodesk.com/products/autodesk-autocad/overview>

³³ 3-D CAD products and software, <http://www.solidworks.com/>

³⁴ Non-profit support group for inventors, marketers and creative people to network and learn, <http://jacksoninventors.org/wp/>

³⁵ Coalition of Michigan Inventors that work together to promote inventing, <http://michiganinventorscoalition.org/>

³⁶ National Institute for Architects to network and learn, <http://www.aia.org/>

³⁷ Advances in innovative medical services and products, <http://www.iahcsmm.org/Chapters/Michigan/index.html>

³⁸ Educational opportunities and support services for members to discover innovative medical developments, <http://www.iahcsmm.org/>

Association for Professionals in Infection Control and Epidemiology⁴⁰
Association of Peri-Operative Registered Nurses⁴¹
Association for the Advancement of Medical Instrumentation⁴²
American Society for Healthcare Environmental Services⁴³
Jackson Area Manufacturing Association⁴⁴
Jackson County Chamber of Commerce⁴⁵
Jackson Citizens for Economic Growth⁴⁶
MichBio member of the medical device committee⁴⁷
Boy Scouts of America⁴⁸
Microenterprise Network of Michigan steering committee⁴⁹

When asked about his earliest recollection in inventing, he talked about a few inventions he produced in grade school. “. . . . Battery powered heaters in socks and gloves, fuel made from peat moss for one of the first energy crises back in the early ‘60s.” Most of his support came from his mom and dad. “Dad taught me how to fix anything with anything – to be curious.” His father worked for Bell Telephone and would bring broken phones home to take apart and fix with his brother. “My mother kept me in the library reading, she would stay up at night helping me with homework. . . . she always believed in me, never accepted failure and pushed me to go farther to succeed.”

John states, “I live and sleep thinking of ideas. Ideas develop in my thought process and come to me any time of day, or night. Sometimes a better way of producing something comes as an idea. I live to ideate, and hang around others who inspire ideas. I spend time in my mind when I am not with others. I enjoy interaction and bouncing ideas (theirs /mine) to get feedback. When I over think, I lose perspective.”

When asked about some of the hurdles and challenges for inventors, John claims– “Thieves stealing my product; lack of money; lack of time, tools and a place to work. He encourages inventors with “Keep going! Keep on thinking – you are surrounded by possibilities! I believe that every one of us is exposed to the next greatest idea every day. It is what you do with it that counts. Stick with it!”

³⁹ Association involved in healthcare maintenance, facilities management and engineering and supervision, <http://www.mishe.org/>

⁴⁰ Education and practices towards infection control and epidemiology, <http://www.apic.org/>

⁴¹ Association for nurses related to education and practices, <http://www.aorn.org/>

⁴² Association for the advancement of safety in medical technology, <http://www.aami.org/>

⁴³ Society that focuses on public health education and implementation, <http://www.infectioncontroltoday.com/topics/american-society-for-healthcare-environmental-services-ashes.aspx>

⁴⁴ Non-profit organization for manufacturers in the Jackson County area, <http://www.jacksonjama.org/>

⁴⁵ Non-profit organization for the advancement of businesses and non-profits in the Jackson area, <http://www.jacksonchamber.org/>

⁴⁶ Community group that focuses on economic change in the Jackson area, http://www.mlive.com/news/jackson/index.ssf/2009/04/jackson_citizens_for_economic_1.html

⁴⁷ Non-profit organization dedicated to advancing Michigan’s bioscience industry, <http://michbio.org/displaycommon.cfm?an=1&subarticlenbr=29>

⁴⁸ Program for youth that focuses on growth and personal development, <http://www.scouting.org/About.aspx>

⁴⁹ State-wide association for microbusiness development, <http://microenterprise.cedam.info/>

John says his idea to market process starts with observing a problem, designing a solution to a problem, making a prototype of the solution, and testing it to see if it solves the problem. His friends say he is an inventor on steroids. He has about 100 products in some stage of development and dozens of prototypes. He is an artist in watercolor, pen and ink sketching, wood carving, and wood burning art, wood working, sketching and sculpting. Some of his outdoor hobbies include: swimming, scuba, flying, hiking, rock collecting, mining, canoeing and socializing,

Marty Sovis, Flushing, Michigan

Marty is a Journeyman machine repair machinist with an Associate's Degree in Industrial Technology from Mott Community College⁵⁰. He has been in farming, worked for General Motors⁵¹, Venture Industries, ASC, and Cadence Innovation and currently owns Sovilok Mfg. He has been a client of Michigan Small Business and Technology Development Centers (MiSBTDC)⁵², Procurement Technical Assistance Centers (PTAC)⁵³, Mid-Michigan Innovation Center⁵⁴ and a past participant in GLEQ⁵⁵. He is the winner of the Mid-Michigan Innovation Center (MMIC) 2012 Pitch Competition⁵⁶ and placed in the top five at the 2013 Great Lakes Entrepreneurs Quest (GLEQ) ACE-13 VOS Challenge⁵⁷. He is the winner of the Mid-Michigan Innovation Center (MMIC) Best Shot presentation⁵⁴ and the Kettering University Tech Works 2012 Pitch Competition⁵⁸. In addition, he won the ThumbWorks 2011 Pitch competition⁵⁹ and earned the Society of Professional Locksmiths "Product of Value" award⁶⁰. He is a member of the Inventors Council of Mid-Michigan⁶¹; Genesee County Regional Chamber Entrepreneurial Team⁶² and the Mid-Michigan Innovation Center⁶³.

He was raised on a farm. Growing up, his dad always came up with something to patch-up, whether equipment or to make the farm operation easier. He always had the problem solving mentality. The first idea he had was putting a clothespin on a potato chip bag to keep the chips fresh. His mom had mentioned how they get stale really quickly. She told him he should get a patent on that idea (he was probably twelve at the time) and just a few years ago, he had the inventor of the Chip Clip⁶⁴ speak to the Michigan Inventors Council (MIC).

⁵⁰ Community college located in Flint, Michigan, <http://www.mcc.edu/>

⁵¹ General Motors vehicle manufacturers, <http://www.gm.com/>

⁵² Provide services to Michigan's existing, growing, technology-based and start-up companies, <http://misbtcd.org/>

⁵³ Michigan businesses successfully obtain contracts, <http://www.ptacsofmichigan.org/>

⁵⁴ Fosters and nurtures new businesses in Michigan, <http://www.mmic.us/>

⁵⁵ Encourage and educate entrepreneurs on the creation, start up and early growth stages of high-growth businesses <http://gleq.org/gleq.nsf/index.html>

⁵⁶ Competition for Inventors to boost inventions, <http://www.mmic.us/boost-pitch-competition/>

⁵⁷ Elevator Pitch Competition, <http://gleq.org/gleq.nsf/index.html>

⁵⁸ Pitch Competition held by Kettering University, <http://www.kettering.edu/news/kettering-swarms-ace>

⁵⁹ Competition held by ThumbWorks, <http://www.thumbworks.org/>

⁶⁰ Award given for products that demonstrate efficient design, purpose and problem solving, <http://www.sopl.us/4/post/2013/03/1.html>

⁶¹ Non-profit that brings new and innovative products to the inventor network/market, <http://www.inventorscouncil.org/>

⁶² Entrepreneurial team in Genesee County, <http://www.flintandgenesee.org/>

⁶³ Fosters and nurtures new businesses in Michigan, <http://www.mmic.us/>

⁶⁴ Invention that clips on to bags to keep foods like potato chips from getting stale

Marty is a musician who plays the guitar, accordion, and sings. He played in a band for 33 years and he is currently restoring a 56' Chevy. He believes that music helps him in selling his products. He has invented many items in the automotive industry where we did not apply for patents. He claims that these inventions improved quality, decreased cycle time, or automated a production process. Currently, he sells through locksmiths, on his website, and most recently on Amazon.com⁶⁵. He believes everyone has an idea but it's being able to see how to make a product or design a process to correct a problem that makes one an inventor. Then you have to be able to build a proto-type and a working model; be able to test it if it needs to meet certain criteria, and make it suitable for selling. If no one wants it, what's the reason to build? Being a machine repair machinist, automation designer and builder, he has had a lot of experience in designing things to correct a problem. He did this many times at General Motors.

Marty's discovery to market process involves the following:

1. Identifying that a significant problem exists
2. Searching to see if there is something out there that addresses the situation
3. If not, design and build a proto-type so one can visualize how a correction can be made
4. Move to a working model
5. Go to testing with a product that is as close to or the actual production part
6. Apply for a provisional application to go to manufacturers
7. Apply for a patent if you will need the protection
8. Manufacture and sell your own products by drawing up CAD⁶⁶ drawings go out for RFQ's⁶⁷.

He started his own company, put together a business plan, designed his own packaging and bought standard clam shell packages. He built a website and advertised and installed his products in his area. He eventually moved to selling through PayPal, he was in business and totally self-funded.

His observation is that there are all kinds of inventors. Some are good business people; some have good ideas and implement them in the products. Others are really wacky; he has not seen a trait in inventors that is similar across the board.

Hannah Lowenthal, East Lansing, Michigan

Hannah has a Bachelor of Arts degree in Communication Arts, a Master's degree of Business Administration and a Master's degree of Arts in Innovative Leadership. She has a CA Real Estate License⁶⁸ and used to work for University of Phoenix in International Operations⁶⁹ and International Admissions. She currently works for Michigan State University in International Admissions. She sees herself as a person that is always looking to improve something; someone

⁶⁵ Website to buy and sell most goods and products, www.amazon.com

⁶⁶ Computer Aided Design, a program used for the creation, modification, and analysis of a product, <http://www.webopedia.com/TERM/C/CAD.html>

⁶⁷ Request for quotation

⁶⁸ California Real Estate License, <http://www.dre.ca.gov/>

⁶⁹ International Division program, http://www.phoenix.edu/colleges_divisions/global.html

that wants to see results and creates tools or offers solutions to do so. She needs to see an improvement and has a desire to see an idea become a reality with perseverance and discipline.

Below are Hannah's inventing steps:

1. Notice services or an item that may need improving
2. Analyze and think about a solution to improve it
3. Talk about the idea and improvement with her spouse
4. Talk more about it and let the ideas flow
5. Write down all ideas
6. Talk about the possibility of materializing it
7. Question if it is doable or not
8. Question why no one has come forward to offer a solution
9. Start a formal process
10. Join a group of inventors
11. Attend meetings and get new ideas
12. Write the ideas down

She likes to process her thoughts first but she believes everyone needs other peoples input to improve an idea. She would suggest meeting a reputable group like an inventor's network, read books about the topic. She also suggests hanging around with people that share this desire and learn from them. Then proceed to ask questions such as, "How expensive can this get and how difficult it is to penetrate the market and what are all the barriers involved in marketing?" Having an idea and modeling is an easy task compared to the challenges of the trade. She does not consider herself an artist just a practical person.

Roger Cunningham, Alpena, Michigan

Roger earned his Associates Degree in drafting and design and a two year degree in Electrical Engineering. He has 50 years of work history of which 32 years were self-employed. He worked on the first CAD⁷⁰ programs that came on the market. He believes that most inventors take known technologies and convert or combine them for other useful applications. These are called application engineers. Some inventors see new ideas that never existed before and create new things that make life easier.

He is an inventor and an application engineer, who has created many mechanical things that have solved situations or moved parts through an assembly operation.

He advises inventors to be inquisitive; keep an open mind; don't take "no" or "cannot do" as an answer. Share new ideas with others freely and always remember that a good idea only comes along every so often so don't take it lightly; that is the precise idea that everyone is looking for. He designed the Striker Post Driver⁷¹. His post driver was a simple design but no one else came up with it, however now that it is out everyone is saying that it's so simple why didn't anyone else think of it or invent it?

⁷⁰ Computer Aided Design, a program used for the creation, modification, and analysis of a product, <http://www.webopedia.com/TERM/C/CAD.html>

⁷¹ Air-operated post drivers, used air to take the work out of driving posts, <http://www.strikerpostdriver.com/>

Roger states that inventors must be confident that a solution exists for every situation. If you observe someone doing a task then question the process, is there a better way or process? Roger has always had confidence in his ability to do whatever someone asks of him. If he did not know at that time, he would study the process or task. He never said that he could not do it; instead he took the initiative to learn how to do it. This is true of inventing, you want to think simple and never give up on what you may think is a good idea. Most inventions are to solve a situation that confronts you. He advises to keep ideas to yourself; make a prototype and don't let anyone talk you out of your idea. The inventors club is a great for building inventors.

His whole life career has been about designing products or equipment to solve situations. He invented the boat lifts that we use to lift our sail boats out of the water. It is a simple ramp that is hinged near the tail end of the sailboat so that when you sail the boat onto the ramp, as soon as the center of gravity of the boat passes a hinge, the ramp will pivot causing the entire boat to lift itself out of the water. To push it back into the water, you simply raise the front of the boat & slide it down the ramp into the water.

In his spare time he plays golf, backgammon and cards.

Gyhandi Hill, Ann Arbor, Michigan

Gyhandi earned his Bachelor's Degree from the University of Michigan in Ann Arbor. He worked for Orchid Orthopedics⁷² and has a Nesta Personal Trainer Certification⁷³.

He states that his ideas come from his environment, professional interest and personal challenges. He uses a blend of influences that have caused him to exchange new ideas with close personal relationships resulting in viable projects. He was about eight years old and told his parents that he wanted to be an inventor. He wanted to design moveable foot pedals on the car. The problem is now solved; it was meant to address different heights of drivers. He likes to process his ideas first and then tries to bounce them off people.

He has been seeking support by the numerous organizations that believe in inventors. He has been to meetings throughout the state of Michigan; trying to get his product to the prototype stage and has suffered road blocks by purchasing entrepreneur classes promising to gain access to certain support. After the paid period is over all the resources are cut-off. The goal is not to pay someone continually for support; when the inventor is attempting to put money towards their own invention. The biggest threat to his success is finding someone he can trust. He also states that he has to drive many miles to get small things accomplished. Time, support and money are his three biggest opponents.

Summary

The pool of inventors interviewed was small and comparisons were limited; although, some trends and differences were discovered. Overall inventors appear to be tenacious, strong willed,

⁷² Medical device outsourcing, <http://www.orchid-orthopedics.com/>

⁷³ National Exercise and Sports Trainers Association, <http://www.nestacertified.com/>

from diverse backgrounds, believe in themselves, and have an uncommon drive for success. Engineering knowledge, skills and training seemed to be present but not exclusive.

All of the inventors interviewed are looking for improvements in their work, and are not satisfied with what they have already developed. They appear to be open minded and ready to listen to “challenge of concept”, or ready to defend or look for a better solution. Conducting more interviews would help to make further claims.

Discovery-to-Market Pathways

As stated earlier, inventors are often overlooked in Michigan. Colleges and universities have classes, programs, and degrees for entrepreneurs and state-wide there are programs for entrepreneurs like SCORE⁷⁴, Changing Gears⁷⁵, TechWorks, MiSBTDC,⁷⁶ and EDC SBA Fast Track by the Kauffman Foundation⁷⁷. But the only reliable help for inventors, before the commitment of start-ups, are the Michigan inventor groups⁷⁸, and Makerspaces⁷⁹. However, the question still stands, “What type of assistance do these inventors need to flourish?” There are many discovery to market pathways, or processes. For instance, if an inventor wants to develop, manufacture and sell a product, the inventor might follow one path, however if an inventor would like to create, develop, patent their idea, and sell the rights to the product, they might use another strategy. This section focuses on the inventor process that might precede the entrepreneur process.

Venturing vs. Licensing

There are different ways to develop product into a reality. There are two different schools of thought on the process of venturing and licensing. Venturing is where you are in charge of the entire process and have to finance a team of people to make your product a reality. Licensing is renting your idea to companies that have the team members already in place and the money to make a product a reality. Licensing may be how the inventing process works in the future. Licensing is a very dynamic way for the regular every day individual to join the world of inventing. In contrast to venturing, you don't need the business skills or the large investment to make a business out of your ideas. This is something in which you need minimal skills but a “get it done attitude” and you will start receiving royalty checks.

First, you need to get started with an idea in mind. You start with initial research; this is your most important step. Conducting good research will save you a lot of time and money in the long run. By searching for your product online you will learn more about your competition and how your product fits into the marketplace, and most importantly if your idea is already out there.

⁷⁴ Mentoring and workshops for entrepreneurs, <http://www.score.org/>

⁷⁵ Remaking the manufacturing belt, <http://www.changinggears.info/>

⁷⁶ Provide services to Michigan's existing, growing, technology-based and start-up companies, <http://misbtcd.org/>

⁷⁷ Entrepreneurship start-up program, <http://www.kauffman.org/>

⁷⁸ Groups of inventors in Michigan that gather together to share ideas and network

⁷⁹ Workspace for members to create, invent, educate and learn, <http://www.lansingmakersnetwork.org/about-lansing-makers-network/>

Searching on Google Shopping, Google Images, and Google Patents (these are 3 different search engines) that should bring back different results. You also need to use different search terms through the different search engines. By spending an hour or more looking through these different search engines you will receive a world of information that is imperative in this process. While doing this search it is easy to run across many of the different companies that are involved in the industry. It is very important that the information is collected for all the companies because you will be calling them once your product is ready to sell to them.

Second, you need to market your product. With this step you need to make sure that you are conveying your product and the benefits of your product in the most efficient and effective way. There are different forms of media in this process. If the product is very demonstrable a video should be used and if the product is static then pictures will work, but it depends on the nature of the product. In this marketing piece you need to give the viewers a video that develops the “Aha moment!!” that you had when you first developed the idea. Great examples of this are TV commercials. With Static products use only one sheet of paper with pictures of the product and the benefit it will bring to the customer.

Third, is protection. In the inventing business you are selling ideas and without protecting the ideas you are not playing by the rules of the game. There are many different ways to protect your ideas. Provisional Patents is one method; they are cheaper and quicker than a full patent and still have a good level of the protection to get products started. Protection is something that you want to have an attorney help you with. You want to learn as much as you can before you start paying an attorney because they get expensive. Read a couple patents and understand what the parts of a patent are i.e.: drawings, abstract, claims, description. If you have a patent attorney that costs too much money you could research them online, which can be free.

Fourth, Selling is the most important step to monetizing your idea. This is where inventors fall on their face. A large reason why people fail on this step is that they have a perception that once their product is patented, companies will be knocking down the door to buy it. That’s not true. Companies don’t know about your patent and won’t know about it until you sell it to them. This step is all about calling and making human contact. People think that sending out a mass email to a bunch of companies will get a response, however people delete junk mail and that is what it is. Call companies and get talking to them and pitch your idea. When you call companies here is a suggested script below to help you through the process:

Inventor: Hi, my name is John Doe and I am calling to see if your company is looking at new product ideas. At this point they will say either “Yes”, “No” or “I don’t know” but it is becoming more common for them to look at new ideas. If they say “No” usually there is no way of selling your way in. But if they say “I don’t know” then ask to speak to someone in marketing and typically they will let you in.

Operator: Yes...I will put you through to Tom Smith.

Company Representative: Hi, this is Tom Smith

Inventor: Hi, my name is John Doe and I was calling to see if your company is looking at new products.

Company Representative: Yes

Inventor: Ok, can I send you some information?

Company Representative: Of course, my email is tomsmith@company.com

This is the usual interaction of selling an invention. At this point you send over your video or sell sheet. If you have a good idea they will email you soon after, if not you should follow up three days later.

The NDA or Non-disclosure Agreement is a contract that if you are looking to license your ideas you will need to get comfortable with. This is a way of protecting yourself and the company you are presenting. Most of the time they will have you sign an NDA prior to presenting. These contracts can be good and sometimes they can be bad, you have to read them over them carefully before you sign. Be prepared and know that you should have an attorney look them over, but it will get expensive very quickly.

Once there is interest in your product the negotiations begin. You will be negotiating some large points.

1. Royalty Rate (percent of sales which is usually of wholesale price)
2. Advances
3. Term or length of contract
4. Territory
5. Minimum Sales Requirements

These variables are based on the industry and the company. For example the novelty industry pays a higher royalty than the packaging industry. This is not something you will know until you start pitching your ideas in the industry of your interest. You can bring in an attorney to negotiate the terms of the contract but it is recommend that agreeing on the big points prior to discussing that point, it will save you money.

In closing, licensing is a way that everyday individuals can become an inventor and get their products on store shelves. There are four simple steps to accomplishing this 1) research 2) market 3) protect, and 4) SELL. By breaking it down into these simple steps people can become very successful in the inventing world.

Hobby/Serial Inventor Process

On a day to day basis people come across alternative ideas and solutions that may not exist yet. These could be anything from ideas about saving money, making something easier, or an idea that could improve your health. Ideas come from playing games, sports, hobbies or from lots of personal experiences. The inventor process is unique and may be different from inventor to inventor. Many inventors may shift from one process to another process but that's the beauty of the discovery to market process, many times it may take a path of its own.

There are many inventors who could be called Serial Inventors. These are inventors who have in the past or are currently receiving profit from an invention(s) or working with others to develop ideas. Most of the inventors that were interviewed for this Co-Learning Plan fall into this category and many of the members of the inventor groups aspire for this classification. Although

it is to be warned that many Serial Inventors are not successful. Some serial inventors who have good ideas sometimes cannot seem to take them to the market, to license it or become an entrepreneur.

The Problem: Many inventions start with the identification of a problem. The tooth paste doesn't come out right, you see plastic laminate cabinets in a hospital treatment room (particle board harbors bacteria), or you need to do something and there is not anything you can find to do it. There are challenges we face every day, many of which we fix without a thought. It might be the second time you come across the challenge that you wonder if anyone else has had that problem. A curious mind, a questioning mind, not satisfied with how it is, is how serial inventors look at a problem. The key is the inventor must identify a need before they can start the process of an idea.

The Idea: The beauty of ideas is that they can spark in your mind at any given moment, whether it is in your dreams, while driving, even in the shower! When it hits you whether it be an idea to solve a problem or just a moment of inspiration, no matter what, you should take action!

The Solution: Do not confuse an idea with a solution, as many do. Very few ideas are instant successes, as a matter of fact your identification of a problem may not be accurate and there might be a better idea on the way to the solution. Get help, more eyes see more challenges, changes, and fixes. (See learning Module A⁸⁰)

Sometimes a solution is conceived in conjunction with seeing a problem. It is difficult to assess that a problem exists without having enough understanding of the function behind the source of the perceived problem. Understanding the function gives the ability to see the use allowing the ability to see miss-used and failure points. Many serial inventors possess this ability (not all). Other times it needs time to settle, stew, or process. Many times the answers come in pieces. Sometimes an inventor will play with it and break it on purpose to see how and why it breaks. The answer to the problem is sometimes considered the "aha" moment. However every idea is not an invention and every invention is not a marketable product. Many inventors fall prey to falling in love with an idea. The serial inventor knows full well that the idea is just a starting point for a bigger adventure. Through experience they have a better ability to see when to walk away from the bad idea, but they can miss the mark too. The science to determine a good or a bad idea is not clear and there is not a perfect formula.

The estimated approximate cost of solution: Price is usually the deal breaker. In some cases technology will give you a break on this, but not for long. Many projects fall into the technology class and often there is a small window where the need drives the market to pay for the technology. Rest assured the market will drive the price to the lowest it can as fast as it can. Manufacturing cost can be driven by volume and a more efficient process. Many times the market will not pay the cost of manufacturing and you have no option but to walk away.

⁸⁰ Module coming soon on Michigan Inventor Coalition website, <http://michiganinventorscoalition.org/>

The next group of steps could come in different orders depending on each situation. They are all important and all need to be given time, but depending on the project, money, and outside influences the order in which they are performed may be different for each project.

The Ask: “Is this a project worth continuing?” The big question that determines your resolve! At every step and or juncture you must ask is this worth continuing or should you stop? This is a question only you can answer, it is sometimes painful, but must be a question that is asked at each revelation. Not every idea will pay back the time and effort; reading the book “Will It Sell” by James E. White could help to answer this question.

The Check for Patentability: An early check can be done on Google or on the patent office website. Remember the more time you invest in this project the more value you set and the better you will want to research which should include help from a patent attorney. Conducting a search early will save you time in the long run and give you valuable research for improving your idea or product.

Market Study I: The earlier this is done the better. Search for any product similar to your idea. Does it do a comparable thing, does it do something in another market, or does the same thing as your product exist but for a completely different function. During the early market research you will look at pricing, materials, and who or what market can best utilize this product idea. This is a constant review and may require a prototype. There is a lot of information available on whether the idea exists, the idea will work, the idea is patentable, and there are one or more markets for the idea, if there is a lot of competition you will have to ask yourself what the market will pay for the idea or product. This first study includes: Google search, Google images, Google Shopping, Google Patents (we will go into this further in a moment), a trip to the store (the bigger the better) check what they have similar, go to a specialty store that sells products in your category, ask friends, family, and anyone you think that might have knowledge in the category of the idea. Remember that anyone you talk to can file for the patent so when you talk be aware of who you are talking to and do not share the special sauce. Others are always looking for the easy opportunity to capitalize on an idea, don't give it away. This step will help you to not waste time on a repeat product idea; help you improve your idea (you only go forward if your idea is better: better price, works better, improves on existing technology, etc.) to see if you can compete.

The Design: At this point in the process you are stacked with information. The patent search shows patent potential, the Google search shows a hole in the market to be filled or a problem with the current products or a way to make it for less and while making a good profit, or your technology is advanced and will satisfy the market with a new need (this usually comes with more work later). There are many ways to get the product or project designed. Some still hand-draw their ideas for reproduction. This is limiting for some projects but works for getting a prototype made. In the proper format the drawing can be used for a 3D copy saving time, money and with better precision. New formats of electronic drawings can also do stress testing; interference testing for better accuracy and compare materials for best performance and price. Some inventors have access to these electronic tools but many do not. Although there are CAD⁸¹

⁸¹ Computer Aided Design, a program used for the creation, modification, and analysis of a product, <http://www.webopedia.com/TERM/C/CAD.html>

drafting services for a fee, inventors find that many schools across Michigan will offer engineering (CAD⁸⁰) classes and a few students capable can do the work at an affordable price range for inventors. Design is not always in drawing form, many inventors will actually make the prototype.

The Prototype: Remember that completing a prototype can answer questions about the cost; the function; manufacturing challenges; design issues and other benefits and challenges not seen until in hand. A prototype is a marketing and design tool you need for proof of concept. Getting your prototype made can be a self-build project or you can go to Makerspaces⁸², Fab Labs⁸³ or Tech Shops⁸⁴. These are shops where you can use machine equipment to make your prototype yourself. These are great opportunities that provide help and the tools and manufacturing knowledge that can help make the prototype better and also find design defects. It is highly recommended that at least visiting and checking out these resources before spending money to pay for a prototype. Money seems to be the biggest delay in the success of inventors getting the product to the market. For an inventor touching and using a finalized product confirms what was only an intangible thought. Many people do not have the ability to see a finished product. Drawings and detailed explanations give some customers enough information. But for most including the financial investors, purchasers, and most of the customers you have to have a prototype in hand. It also shows that you are serious about your idea. There are many different ways to access a prototype, from paper or cardboard, to wood or even a 3D prototype⁸⁵ copy. Getting a prototype made in actual materials such as plastics, metals, or other material can get expensive if you go to the manufactures. Sometimes you can even get a prototype made for free, it still comes with a cost (future investment or manufacturing location), and sometimes this cost can be advantageous, (future manufacturer) most manufactures will charge you for making a prototype. For more info on the prototyping process refer to Module B⁸⁶.

The test performance of the product or process: You have to know if your product will break; how it works; what it costs and if it has aesthetic appeal. Will customers buy it? You are now in proof of concept and what you find out during this step will determine whether you start to spend a significant amount of time, money and effort. This step may send you back to the drawing board, to make changes that are needed, whether they are big or small; what new markets might reveal themselves, as well as the input that is received whether it is good or bad. The next step is filing for your Provisional Patent Application.⁸⁷ The biggest challenges in this step is realizing the cost, if your product is better than the competition, and learning how to bring the market to a new level. This step brings challenges to the thought process in designing the product.

File for a Patent: This is when the clock starts ticking, a serious step in testing to see if the investment is worth it or not. It is highly recommended inventors work with an attorney. If you find a good patent attorney they will help enormously. Redesigns and customer returns will cost

⁸² Workspace for members to create, invent, educate and learn, <http://www.lansingmakersnetwork.org/about-lansing-makers-network/>

⁸³ Workshop for digital fabrication, <http://www.fablabinternational.org/>

⁸⁴ Community that allows people to access tools and software, <http://www.techshop.ws/>

⁸⁵ Rapids prototyping service that makes products quickly, <http://www.3dprototype.com/>

⁸⁶ Module coming soon on Michigan Inventor Coalition website, <http://michiganinventorscoalition.org/>

⁸⁷ Application you must have in order to create a patent, <http://www.uspto.gov/patents/resources/types/provapp.jsp>

you far more than fixing weaknesses and flaws early on. You are near the fabled line crossing into an entrepreneur. There is still one step before you choose to play this to the end. Some feel that this is a point of transition from the hobbyist to a job. Be careful to maintain enough income to pay your bills because you are still a ways away from your hobby supporting you and your family, and the cost for continuing this hobby to the market is just beginning.

There is disagreement amongst inventors on when and even if a patent should be filed. If there is competition or you know others are working on the subject area the patent will serve you if there is a chance that someone you showed it to has given you cause to worry. File early and you might be the first person to file it in the country. It is better to file a patent and it not go anywhere and protect your idea, then to come close and lose your right to build it by a day or an hour. There are patent thieves; the reality is it could happen to you. Some inventors believe that if your idea is a formula or something that cannot be reversed engineered, you are safer than never disclosing the secret. When you file the full patent all of the secrets are disclosed in the patent, so anyone can read the patent and make the idea. Then it is up to you to defend your patent, which means more legal fees. A patent attorney should be your best friend. You should be able to trust him/her, they should understand your idea as well as you do, they should tell you their concerns and be willing to tell you that they do not feel you should file (this means they will not make money on this one), many of the best patent attorneys will even offer thoughts on improving it or adding more areas in the claims to broaden the protection for your idea. The better you do with your patent the better your patent attorney has accomplished their work. You need the patent attorney and they need you. You can save money with your attorney by writing as many of your claims yourself. This does not mean that they will not have to improve the claim with legalese because this is what they are trained to do. But you can with your best effort explain in writing a detailed explanation of what you see your product accomplishing and how it is made step by step, everything someone would need to know to make your product, project or idea. It has always seemed disturbing to me that the foundation of a patent is to train everyone to make your idea. This is why some do not like to file and to keep the secret recipe. Once they know how to make your idea they can develop an improvement, make it better with technology that evades your patent, it is a wicked world out there. In the module C⁸⁸ you will find a comprehensive learning presentation on the patent process and information about patenting a product. At this point you have two directions you could follow. You can follow the first process we discussed by taking the idea that is patent pending to buyers or a company that would buy the rights to build and sell your product or idea or look for a manufacturer to build your product or idea. Refer to module C⁸⁸ to learn more about this step.

FTO (Freedom to Operate) assessment:

Module E⁸⁸

Market Study II: This is a more in depth than your original market study. You need to break this down into several areas. First, consumer testing: if you can you should try to make several copies of your product to let your specific consumer market try it and respond to it. There are inventors that develop a great fishing product, and then take it to a bass tournament. You know if

⁸⁸ Module coming soon on Michigan Inventor Coalition website, <http://michiganinventorscoalition.org/>

the test users have a positive result the product will be in demand. Products that have had to achieve FDA⁸⁹ testing requirements is a big hurdle but with big results (if positive). Second, competition comparison: there is always a competitive product. It does not have to do the same thing or be in the same market, but if it is selling then you need to find out why. Third, manufacturing: who can at what cost and how can you reduce the cost. If your product can't be made at the "consumer buyable price" then you're done. Many times this is one of the more elusive questions. The better and more work you put into this market study means the better your next step will look. It is time to make another choice as to whether or not to move to the "Inventing to Licensing" and sell the rights to manufacture, or cross the line into will it sell and for how much.

Entrepreneur: The intent of this co-learning plan is to get you to this point. The State of Michigan offers a lot of help for entrepreneurs. There is the GLEQ⁹⁰, the MiSBTDC⁹¹, SCORE⁹², MEDC Shifting Gears, ⁹³SBA⁹⁴, the Kauffman Foundation⁹⁵, and many more. If you are not planning to start a business then you are selling the manufacturing rights and starting new ideas.

Market Study III: At this point your marketing study will include developing your customer base, marketing method, website, customer awareness, delivery method, and other customer connection methods. The marketing plan should be part of the business plan. Sometime after the decision to follow the entrepreneur path (and not sell it to a buyer) you should have started planning how you are going to start and build your business. You need to give thought as to what it will look like, what your priorities are and who you need to make it (with your new business). Where can you get help on your business plan? The MiSBTDC⁹⁶ provides help with writing a business plan. Assistance can also come from economic development groups, universities and colleges, SBA⁹⁷, the Kauffman Foundation.⁹⁸ Refer to Module F⁹⁹.

Manufacturing: Getting your product made is usually a challenge. Finding a manufacturing partner is a big (this is not understatement) decision. Consider it on the same level as a marriage; you will have to live with it for a while. A bad manufacturing partner is a "kiss of death", do not make the decision quickly, and do not let the manufacturer make it for you. Find out about your manufacturer, ask others, the local economic development office, and other manufacturers, do some digging because your success may depend on it. Take it to the market- Sell it: Develop the team, take it to an already existing sales team, and create a system to get it to the customer (this can be using existing systems). Finding a manufacturer leaves options for you. Depending on

⁸⁹ U.S. Food and Drug Administration, <http://www.fda.gov/>

⁹⁰ Encourage and educate entrepreneurs on the creation, start up and early growth stages of high-growth businesses <http://gleq.org/gleq.nsf/index.html>

⁹¹ Provide services to Michigan's existing, growing, technology-based and start-up companies, <http://misbtcd.org/>

⁹² Mentoring and workshops for entrepreneurs, <http://www.score.org/>

⁹³ Michigan Economic Development Corporation program, <http://www.nwm.org/workforce/news/news-article.html/51/>

⁹⁴ U.S. Small Business Administration, <http://www.sba.gov/>

⁹⁵ Entrepreneurship start-up program, <http://www.kauffman.org/>

⁹⁶ Provide services to Michigan's existing, growing, technology-based and start-up companies, <http://misbtcd.org/>

⁹⁷ U.S. Small Business Administration, <http://www.sba.gov/>

⁹⁸ Entrepreneurship start-up program, <http://www.kauffman.org/>

⁹⁹ Module coming soon on Michigan Inventor Coalition website, <http://michiganinventorscoalition.org/>

who you find to manufacture your product, you may find one that has sales capability and will work with you to enter the market. You may find a manufacturer that might help with startup costs for an investment in the project. You may find a manufacturer that will build your product for a quoted price. You may find several manufacturers that can make the different pieces for your product and then you or an assembler can put it together, and the scenarios go on and on. You need to find the manufacturer that can make it for the lowest cost that can keep up with the market demands, can make your product with quality so that it will hold up, so you do not have returns for broken or malfunctioning product. This is contract time and you are making a contract with a company you need to know like you marital partner. A good contract with a good partner can be the best thing that ever happened to you. A bad partner or a bad contract will cost you more than just money. Ethics are ethics, in society people without ethics are those to stay away from, they will pull you down. Companies are the same as people but all companies need to make money to survive. Many are focused on their own gain at the expense of many inventors. Research who you are doing business with and get a good contract attorney; do not accept a contract as they write it unless your attorney approves the contract protecting you. There are good companies, good contracts, and winning relationships where everyone wins. Just do not sell yourself short. Working with investors is like working with manufacturers. You may find useful information on this subject in Module D⁹⁹ in the Appendices.

Complete market study with actual pre-production product: for additional market tests. This should include determination whether to market under a "brand name" and application for any needed trademarks.

Recommendations

A few regional grassroots inventors' networks and nonprofits have, for some time, supported Michigan's Garage and Basement Inventors, but their resources are limited and scattered across the state. The Michigan Inventors Coalition's mission is to connect inventors to the best resources available. This opportunity to achieve success could be accomplished through a series of educational experiences, inventor events, and other services. MIC proposes to finalize its "MICH Invent" program intended to provide comprehensive training in aspects of developing an idea from concept to market. MICH Invent is designed to help in all fields, including technology and life sciences. MICH Invent sessions would be led by the local Michigan inventor groups, experienced facilitators and experienced coaches who can make the inventor process come alive by sharing experience, proven methods and knowledge.

The goal of this project is simple; to provide assistance, not currently available on a state level, to inventors and local inventor groups in the state of Michigan. In addition this program would help first time inventors discover whether or not their idea has merit, by following a particular process. This is an area the state has not wanted to invest time or money because of the high rate of drop out. With this new program dropout would not be a concern; as a matter of fact it would be a key to the process. Dropping the bad ideas, will save the inventor and the service provider's time, money and effort.

The Michigan inventor groups that form the MIC are the filters that would provide an efficient process getting more inventions to the market in Michigan. Help of this kind does not exist

outside of these groups. There is currently no funding for implementing this program. The MIC believes that if they can show an increase in Michigan inventor success (more products to market) within the participants of the inventor groups, i.e. members, attendees, that they will gain support and funding in the form of grants, donations, or any form of support to further expand help for local groups in the form of inventor education and guidance to further increase inventor success.

Modules and Classes

Upon understanding inventor pathways, it is recommended that economic developers should develop, support and offer a set of learning modules or classes based on specific inventor needs and one source of help would be from the local inventor networking groups.

Possible modules or classes would be developed around the major topics found in a variety of discovery to market paths currently used by Michigan inventors. These modules and classes could be organized and run similar to the classes currently offered to entrepreneurs. The modules suggested in this co-learning plan are currently offered by speakers that have presented at the MIC local group meetings. These speakers are experts in specific subject areas. Using their expertise they are able to provide insight to the stumbling blocks that plague inventors and prevent good ideas from moving forward. These experts also show processes to check the viability of the project so the inventor knows when to stop investing time into a project that does not have a future. For instance, educational presentations on patent law from patent attorneys could be offered to inventors, similar to the SBA¹⁰⁰, MEDC¹⁰¹, GLEQ¹⁰², Ann Arbor Spark¹⁰³, training for entrepreneurs. Currently the JIN¹⁰⁴ (Jackson Inventors Network), LIN¹⁰⁵ (Lansing Inventors Network) and the other Michigan inventor groups are offering patent classes but it is recommended that further data be collected from each inventor group to see what kinds of further assistance or course work is needed for specific communities or regions. These trainings could be offered by state and/or local economic development corporations.

Inventor Help Desk

MIC also proposes creating a one- stop shop help desk for Michigan inventor groups, economic development groups¹⁰⁶, think tanks¹⁰⁷, nonprofits¹⁰⁸, state and federal resources¹⁰⁹, patent attorneys¹¹⁰, prototype assistance¹¹¹, Fab Labs¹¹², engineering companies and other engineering

¹⁰⁰ U.S. Small Business Administration, <http://www.sba.gov/>

¹⁰¹ The MEDC strives for partnerships that will flourish with the application of programs, incentives and innovative strategies. <http://www.michiganbusiness.org/>

¹⁰² Encourage and educate entrepreneurs on the creation, start up and early growth stages of high-growth businesses <http://gleq.org/gleq.nsf/index.html>

¹⁰³ Helps with business start-up and growth, <http://www.annarborusa.org/>

¹⁰⁴ Non-profit support group for inventors, marketers and creative people to network and learn, <http://jacksoninventors.org/wp/>

¹⁰⁵ Support group for inventors, marketers and creative people in Lansing

¹⁰⁶ Groups that focus on ways to implement economic development in their area

¹⁰⁷ People who think about new ideas or give ideas to others, <http://www.merriam-webster.com/dictionary/think%20tank>

¹⁰⁸ Conducts business for the good of the common people, <http://legal-dictionary.thefreedictionary.com/Non-profit+organization>

¹⁰⁹ Resources provided by the state and federal governments

¹¹⁰ Attorney who specializes in providing qualifications for patents

support, SCORE groups,¹¹³ business and entrepreneur groups. This data would be accessible to the leaders of each of the local groups affiliated with MIC. The resulting database would be the most complete data collection of this type in Michigan. The “Help Desk” would be a resource for all of the inventor groups to find resources in their community. MIC is currently collecting business support contact information on businesses that help inventors, local and state government resources, basically any entity that an inventor might need to transport their idea to the market.

Recommended Data Base of Resources for the Help Desk

Inventors’ Networks - Agencies finding help for local inventors. It is also for communication between the local inventor groups.

Economic Development and Enterprise Groups - A key connections list for the economic development and enterprise groups; Smart zones and other groups who are working to draw jobs and business opportunities to their local community.

State and Federal Resources – A list of state and federal programs with research grants and funding.

Michigan Higher Education - College and university coursework, programs, and workshops,

Think Tanks – A list of think tanks with opportunities for problem-solving products.

Nonprofits - Working with the nonprofits will be a two-way endeavor. The nonprofits have learning segments for our groups and our inventors can help the nonprofits.

Patent Attorneys - A list of available Michigan patent attorneys.

Engineering assistance - A list of engineering companies who provide services for inventors and share which colleges and universities are able to provide student help (sometimes free).

Prototype Construction - Prototype shops, Fab Labs, and makerspaces in the state.

Manufacturing Help - Connections with Michigan Manufacturing Assoc., JAMA¹¹⁴ and others; a list of companies that might manufacture products.

Entrepreneur Help - Groups in the state similar to Great Lakes Entrepreneur Quest, Ann Arbor Spark, they work to help inventors find information, training, and programs.

Marketing Help – List of where inventors can get marketing help.

Funding Sources – A list of angel and venture capital sources.

Conclusion

Michigan’s Small Business Technology Development Centers (MiSBTDC¹¹⁵) and the Michigan Economic Development Corporation (MEDC¹¹⁶), both funded in part by the state and federal government, offer support and resources to entrepreneurs. It’s possible that some inventors

¹¹¹ Assistance with making a prototype for an invention

¹¹² Workshop for digital fabrication, <http://www.fablabinternational.org/>

¹¹³ Mentoring and workshops for entrepreneurs, <http://www.score.org/>

¹¹⁴ Not-for-profit association of manufacturers and associate members located or doing business in Jackson County, Michigan, and the surrounding region.

¹¹⁵ Provide services to Michigan’s existing, growing, technology-based and start-up companies, <http://misbtcd.org/>

¹¹⁶ The MEDC strives for partnerships that will flourish with the application of programs, incentives and innovative strategies. <http://www.michiganbusiness.org/>

might find these resources helpful, but as previously mentioned, those resources are not inventor-specific; they are geared toward aspiring and existing business owners. As we look at the beginning of Michael Suman's book, *Should your idea become a business?*¹¹⁷ He asks the question "Are you an entrepreneur?" "Do you have a good understanding of business management practices including all aspects of operations, balance sheet control, and team building?" The point is deciding to continue with the project and becoming an entrepreneur, as a new part of the adventure, which requires new hats, different roles, and responsibilities. An entrepreneur is about starting or owning a business. Inventors are good at inventing, and designing an idea or product through many different discovery to market pathways, but marketing and business management require a new or different skill set, which most likely are not in the inventor's cookbook. This should not dismay or deter the inventor, it just means that they might need to find others who have those skills and or they should learn them. But by collaborating with others they will develop new skill sets and bring diversity to the project. This can also be the turbo boost a project needs. Crossing over takes the inventor into an entrepreneur mode and is a whole new adventure and should be treated as such. This could be a lifetime decision and, through this project, MIC hopes to guide and direct inventors to this point and then to guide and recommend the groups across the state of Michigan that help inventors through the course of discovery to market and on to entrepreneurship.

Author

John D. Hopkins, Author

John is the chairman and founder of the Jackson Inventors Network; active for 3 ½ years and helping many inventors go from idea to market. He is also the chairman of the Michigan Inventors Coalition, a group that is dedicated to help grow and sustain Michigan's economy by facilitating education, collaboration, and cooperation among Michigan inventors, inventor support groups, maker groups, and local Michigan economic development groups. The winner of the Jackson County Chamber of Commerce 2013 "Entrepreneur Vision"¹¹⁸ award he is very involved in the chamber, Jackson Area Manufacturers Association (JAMA¹¹⁹), Jackson 2020¹²⁰, Jackson Citizens for Economic Growth¹²¹, the Microenterprise Network of Michigan¹²², and the device committee for MichBio¹²³. John holds 3 patents for medical device, one is for a surgical instrument cleaning system that cleans 9.9 million more cells per cell left than the AAMI or the national standard, has a dozen or more products in the market, consulted more than a dozen companies into new markets, such as from auto and aerospace into medical. He has a BS Architecture, been NCARB intern, has a minor in structural engineering and urban planning,

¹¹⁷ Book about generating ideas into an efficient running business,
<http://www.ferris.edu/HTMLS/parentinfo/success/2012/suman/>

¹¹⁸ Award given by the non-profit organization for manufacturers in the Jackson County area, <http://www.jacksonjama.org/>

¹¹⁹ Non-profit organization for manufacturers in the Jackson County area, <http://www.jacksonjama.org/>

¹²⁰ Projects to transform Jackson County by 2020, <http://www.createjackson2020.com/>

¹²¹ Community group that focuses on economic change in the Jackson area,

http://www.mlive.com/news/jackson/index.ssf/2009/04/jackson_citizens_for_economic_1.html

¹²² State-wide association for microbusiness development, <http://microenterprise.cedam.info/>

¹²³ Non-profit organization dedicated to advancing Michigan's bioscience industry,

<http://michbio.org/displaycommon.cfm?an=1&subarticlenbr=29>

held his residential builders license for 30 years, been a City of Lansing building inspector and designed over 100 medical facility projects from nursing units to doctors' offices to surgical suites.

Contributors

Orville Crain

Orville graduated in 1972 from Western Michigan University with a Bachelor's of Science degree. He has attended hundreds of seminars and other learning experiences. He owned the Quick Stop Party Store and Car Wash and a real estate agency. He was a Builder for Superior Builders¹²⁴; owned Whitelake Skateland and Bingo Hall¹²⁵ and was the Principal in a GH marketing company. He is on the Board of Directors for the United Inventors Association¹²⁶ (national) and he is the founder and president of the Muskegon Inventors Network¹²⁷ and he is also a member of the Muskegon Chamber of Commerce¹²⁸. He sits on the Advisory Council for Baker College¹²⁹ and Muskegon Community College¹³⁰ and is an Adjunct instructor at Muskegon Community College¹²⁵ teaching a self-designed patenting class. He is the co-owner of Klever Innovations¹³¹ and has won several awards: Muskegon Chamber- 'Agents of Change' Award¹³²; Finalist in Entrepreneur of the year – '12¹³³ and Grand Rapids and 'Leaders of Thought' Business Review Magazine '11¹³⁴.

David Fedewa

David earned his Bachelors of Science degree in Business Administration and Economics. He owns Think Tank Innovation LLC¹³⁵.

Ron Betzig

Ron is currently lead member of faculty for entrepreneurship at Jackson Community College¹³⁶ and a member of JIN's¹³⁷ Board of Directors. He has co-founded several businesses, including University Consulting Group, Inc., Trade Links International, Inc., and Ann Arbor

¹²⁴ Roofing Contract Company in Tawas City, Michigan, <http://www.yellowpages.com/tawas-city-mi/mip/superior-builders-7283403>

¹²⁵ Skate Park and Bingo Hall in White Lake, Michigan

¹²⁶ Non-profit organization that empowers inventors through education, access and advocacy, <http://www.uiausa.org/>

¹²⁷ Non-profit support group helping inventors, marketers and creative people to find a platform to learn and network, <http://www.muskegoninventorsnetwork.org/>

¹²⁸ Chamber of Commerce in Muskegon, Michigan, <http://www.muskegon.org/>

¹²⁹ Largest independent college in Michigan focused on education and training, <http://www.baker.edu/>

¹³⁰ College that provides Associate Degrees and Certificates in Muskegon, Michigan <http://www.muskegoncc.edu/pages/1.asp>

¹³¹ Committed to the development of products for the safety and utility cutting markets, <http://www.kleverinnovations.net/>

¹³² Individuals or projects that have made a positive contribution to the Muskegon Lakeshore, <http://www.muskegon.org/whats-happening/372-meet-the-2012-agents-of-change>

¹³³ Award given by the Grand Rapids Chamber of Commerce, <http://www.grandrapids.org/epic-awards#.Uo0gGVceprA>

¹³⁴ Business Review article in West Michigan, <http://www.mlive.com/businessreview/>

¹³⁵ Internet marketing with an emphasis on affiliate marketing and utilization of CPA networks, <http://thinktankinnovations.net/>

¹³⁶ Community college located in Jackson County, <http://www.jccmi.edu/>

¹³⁷ Non-profit support group for inventors, marketers and creative people to network and learn, <http://jacksoninventors.org/wp/>

Machine Company¹³⁸. Ron holds a Master's degree in Business Administration and a Master's degree in Education, both from the University of Michigan, as well as a Bachelor's degree in Economics from Northwestern University. Ron's passion is developing "human capital" ...he guides entrepreneurs in writing business plans, helps students approach problems from an entrepreneurial point of view, and seeks to foster collaboration among people from divergent backgrounds. During summers, Ron teaches math to incoming freshmen at the University of Michigan

Marty Sovis

Sovilok Manufacturing, Inc. a supplier of break-in prevention products. Currently his company supplies locksmiths and wholesalers throughout the United States with their doorframe reinforcement equipment and also sells retail on their website. Marty comes from the automotive industry. As a journeyman Machine Repair Machinist, he designed and built product handling automation. He progressed into the training field, developing preventive and predictive maintenance programs and was an instructor for Problem Solving and Change Methodology. He was a Business Unit Manager for a tier one supplier of safety restraint equipment for the North American automobile industry. He is a graduate of Mott Community College¹³⁹ with a degree in Industrial Engineering and is a licensed builder in the state of Michigan. His expertise in design, CAD¹⁴⁰ and machining, developing his line of products, he shares the experiences bringing his products to market. He currently holds two patents and a third pending. Marty is an active member of the Inventors Council of Mid-Michigan¹⁴¹ His training session focuses on what inventors can do themselves before they spend the family savings or mortgage the home. Realizing everyone does not have the training and expertise in every field needed to develop a product, his session stresses: "Do what you can - Hire what you can't"

Tom Grace

Tom has an Associate's Degree in Industrial Technology; a Bachelor of Arts degree in Industrial Design and completed graduate studies through GMI¹⁴², Wayne State University¹⁴³ and Lawrence Technological University¹⁴⁴. He worked for the General Motors Corporation¹⁴⁵ for 41 Years and owned Maverick Industries in Jackson Michigan.

¹³⁸ Manufactured machines that fabricate parts for the auto industry, http://arborwiki.org/Ann_Arbor_Machine_Company

¹³⁹ Community College in Flint, Michigan, <http://www.mcc.edu/>

¹⁴⁰ Computer Aided Design, a program used for the creation, modification, and analysis of a product, <http://www.webopedia.com/TERM/C/CAD.html>

¹⁴¹ Non-profit that brings new and innovative products to the inventor network/market, <http://www.inventorscouncil.org/>

¹⁴² University in Flint, formerly GMI, currently called Kettering University, <http://www.kettering.edu/>

¹⁴³ University located in Detroit, Michigan, <http://wayne.edu/>

¹⁴⁴ Technology focused university in Detroit, Michigan, <http://www.ltu.edu/>

¹⁴⁵ General Motors vehicle manufacturers, <http://www.gm.com/>

Dale Moretz

Dale Moretz current owner of Moretz Technologies, LLC, Pentar Stamping Inc.¹⁴⁶, and Rotary Valve Systems, has been a board member of the Jackson County Chamber of Commerce¹⁴⁷, Jackson County Community Foundation¹⁴⁸, and Center for Family Health¹⁴⁹, Small Business Association of Michigan¹⁵⁰, and numerous other relevant government and community organizations. He holds 14 patents and is currently working on major relevant technology for the automotive industry.

¹⁴⁶ High quality, cost effective stamp products, <http://www.pentarstamping.com/>

¹⁴⁷ Non-profit organization for the advancement of businesses and non-profits in the Jackson area, <http://www.jacksonchamber.org/>

¹⁴⁸ Foundation that donates to projects for the common good of the Jackson community, <http://www.jacksoncf.org/>

¹⁴⁹ Accessible health care for residents of the Jackson community, <http://www.centerforfamilyhealth.org/>

¹⁵⁰ Focuses on the power of small businesses in Michigan, <https://www.sbam.org/>

About REI

The MSU EDA University Center for Regional Economic Innovation (REI) seeks to identify and develop new economic development tools, models, policies and practices to support innovative economic development high-growth enterprises and job creation in distressed regions across the state. REI has established a new economic development ecosystem to cope with the ever-changing global and regional dynamic. Through this ecosystem, we engage innovative and creative minds which result in new economic development practices.

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