



Lessons Learned from AMRoC Fab Lab

Presented by Terri & Steve Willingham of the Foundation for Community Driven Innovation with Scott Ertz of PLuGHiTz Live



FIRST. CHAMPIONSHIP

HOUSTON April 17-20 | DETROIT April 24-27 | 2019



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About Foundation for Community Driven Innovation







The Foundation for Community Driven Innovation, FCDI, is a 501(c)(3) not-for-profit organization dedicated to supporting academic achievement, economic development and the spirit of innovation through inspiring programs and active learning projects.

- FCDI is the founder and developer of the Advanced Manufacturing & Robotics Center (AMRoC) Fab Lab,
- FCDI produces ROBOTICON Tampa Bay, an annual youth STEAM Showcase event and
- > FCDI produces Gulf Coast MakerCon, Tampa's original Maker Festival
- ➤ FCDI facilitates fiscal sponsorship of competitive STEAM (Science, Technology, Engineering, Manufacturing/Math) K-12 teams.
- > FCDI is a member of the Advanced Robotics for Manufacturing (ARM) Institute, the Urban Manufacturing Alliance and the Fab Lab Hub.

Building a FIRST Community Center



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In this presentation, we'll share a road map that can help build a *FIRST* Community Center in your area

Developing Awareness Growing Partnerships

Sourcing Space

Social Enterprise

Model

Developing
Meaningful
Programming



Some Background



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- Project inspired by success and community impact of ROBOTICON
- Seeded by \$30,000 Argosy Foundation Grant
- FIRST Robotics Competition field locally built
- 4-county search for suitable property
- Joined ARM Institute in 2017
- Mall property offered in September 2018
- > Started build out in October, with "soft" programming underway since December
- Grand opening set for June 2019

ARGOSYFOUNDATION 555 East Wells Street Seite 1650 Millwrouken, Wt 53202 + T: 414.721.0021 + F: 414.721.0050

September 30, 2016

Mr. Steven Willingham
Foundation for Community Driven Innovation, Inc.

Dear Mr. Willingham:

On behalf of the Trustees of the Argosy Foundation, enclosed please find a \$30,000.00 grant from the Argosy Foundation to Foundation for Community Driven Innovation, Inc. The intention of this grant is to support the Central Florida FIRST Hub's growth efforts, as described in your proposal with the Argosy Foundation.

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Tampa Bay Advanced Manufacturing & Robotics Center Fab Lab



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AMROC Fab Lab is

- A social enterprise of FCDI
- Sustainable space providing K-to-Gray programming
- Anchored by a full scale FIRST Center



Tampa Bay Advanced Manufacturing & Robotics Center Fab Lab

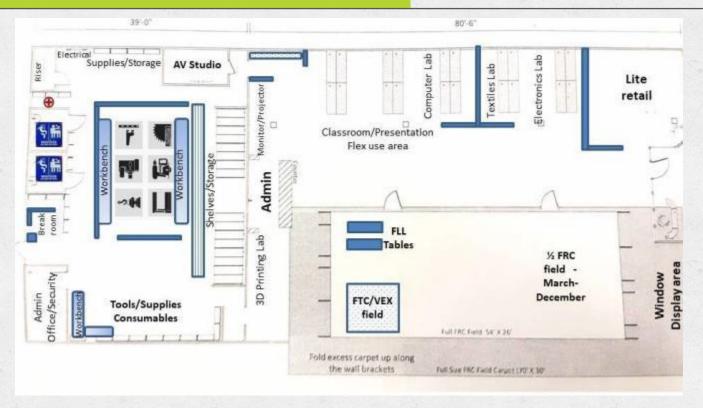


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AMRoC Specs



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The Advanced Manufacturing & Robotics Center (AMRoC) Fab Lab features:

- ➤ 7500 sq. ft. of floor space 4000+
 sq.ft open storefront space + 3000 sq.
 ft. separate machine shop/storage
 space
- Work stations and seating for 40+
- ➤ Full scale *FIRST* Robotics Comp field
- > FIRST Tech Challenge field
- > FIRST LEGO League tables
- Resources for FIRST LEGO League Jr. programming
- > FIRST gear for all programs
- > 3D printers standard and resin

- Drill Press
- Laser Cutter
- > Panel saw
- > Mini-lathe
- > Hand-tools
- > Electronics components
- Small power tools
- > CAD/CAM computer stations
- Meeting & Presentation resources
- Planned: CNC machine, mill, band saw, A/V studio, Textiles lab

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FIRST Center & More



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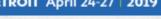


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Community & Program Partners



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PLuGHiTz











FOUNDATION, INC.









FIRST Tech Challenge R.O.B.O.T. League

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Community Pride

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TAMPA'S UPTOWN BRING YOUR ROBOT!







We can't think of any better ambassadors of Tampa's UPTOWN District to have representing us in Houston, than FIRST Tech Challenge Team Duct Tape, and the wonderful organizations, parents, families and friends that have supported them along the way. Their passion, aspirations and commitment represent the true nature of what the UPTOWN spirit and vision are all about. You have already won our hearts, now go have fun and pursue your dreams!



Christopher M. Bowen Chief Development Strategist RD Management LLC



ROBOTICON

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ROBOTICON Tampa Bay, is:

- Now in its 7th year
- K-12 STEAM education showcase,
 - featuring all four FIRST programs, and
 - academic, engineering and industry exhibits
 - weekend long celebration of science and technology
- Collaboratively produced with University of South Florida, in partnership with
 - Hillsborough County, FL;
 - community sponsors & Volunteers,
 - FIRST Alumni & Florida FIRST partners

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Impact of ROBOTICON



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- Grown from 30 teams participating to 60+
- Direct impact to area teams of over \$10,000 funding support annually
- Direct economic impact to the community over \$75,000 annually
- Made possible the development of and support for the Tampa Bay Advanced Manufacturing & Robotics Center (a permanent FIRST & STEAM education center)
- Raised public awareness about FIRST opportunities & value
- > Launched new teams across all platforms

- Launched FIRST Looks podcast series by PLuGHiTz Corporation, an alumni run company
- 20+ companies now involved including some of Tampa Bay's largest corporations with new mentors & volunteers as well as funding support
- Has become a favorite recruitment event for USF meeting their goals for outreach and community engagement
- Created new opportunities for apprenticeships & internships for FIRST Alumni
- Featured as an event of note by Visit Tampa Bay
 & the Tampa Bay Sports Commission

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FCDI also stays in the public eye by hosting, attending or helping with programs and events including:

- Monthly Economic Development meetups
- Coding events
- County agency fairs and events
- > Innovation District events and programs

Telling the Impact Story



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NEWS SPORTS OPINION



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Tampa Bay Times

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Prior to the start of the demolition work, the mall will host the FIRST Robotics Competition scrimmage for a dozen teams. About 100 youth will converge on the mall Saturday, Feb. 16 from 10 a.m. to 5 p.m. with their 120-pound robots to practice on Florida's only full-size FIRST Robotics Competition field.

The field is the first step in developing the Tampa Bay Advanced Manufacturing & Robotics Center (AMRoC) Fab Lab at the mall. A program of the Foundation for Community-Driven Innovation, the Fab Lab is slated to open this summer but will hold periodic events and programs while construction is taking place.

The Fab Lab is designed to be a sort of incubator for young people interested in project-based project-based engineering education and training. It will also serve as a Tampa Bay FIRST robotics hub, with resources for K-12 FIRST teams.

Image via RD Management

It will provide opportunities for people of all ages to enjoy everything from personal skills development to earning professional certifications and develop needed workforce skills.

SPECIAL REPORTS

ARVESTILLATION

The AMRoC FabLab will also serve as a FIRST youth robotics hub for Tampa Bay and Central Florida, with the only permanent FIRST Robotics Competition field in the state, along with a FIRST Tech Challenge field and FIRST LEGO League tables, resources and gear.

As part of the global FabLab community, AMRoc FabLab is committed to sharing an evolving inventory of core capabilities that will allow facility users the ability to make almost anything in a collaborative and welcoming environment.

For more information, visit AMRoCTampaBay.com.



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Active & Varied Social Media



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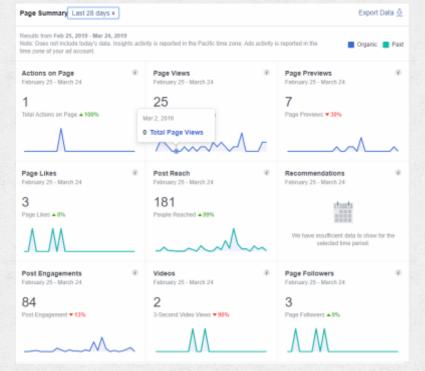














Inspiration for AMRoC



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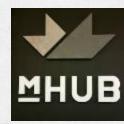


Kettering University produces more inventors per graduate than all but three universities in the country, according to a recently released study profiled in The Economist examining how exposure to innovation influences inventiveness.

Having a multiuse permanent space:

- Helps existing teams meet, build & practice
- Improves sustainable access & inclusivity
- Grows teams
- Provides resources & support
- Raises awareness
- Recruits more sponsors & mentors
- Creates avenues for internships & jobs





Explore Every Option

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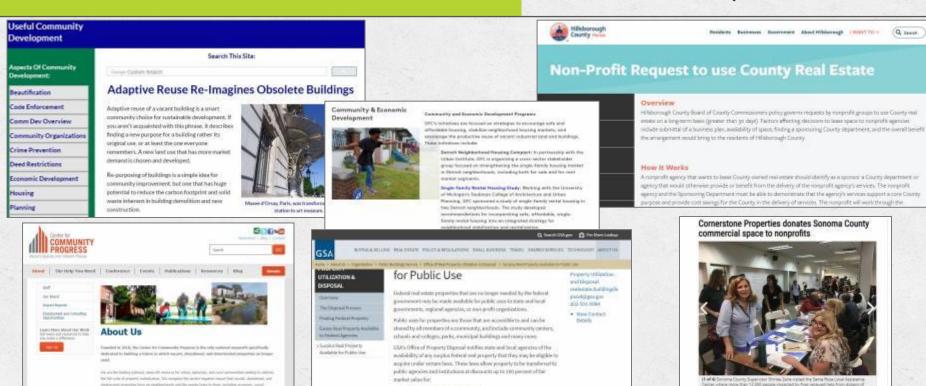
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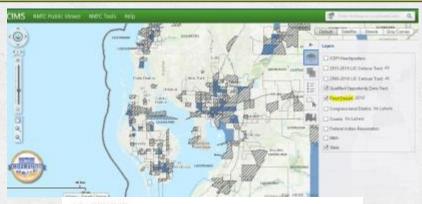


· Public health or return \$200 diagra-

* Public Parks and Public Recognitional Assess

Opportunity Zones

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| Tampa FL | | | | | | | | |
|--|------------|-------|------------|-------|------------|-------|-----------|-------|
| lampa ru. | 1 mi midus | | 3 mi milus | | 6 ml milus | | 7 mi mdus | |
| Race and Ethnicity | | _ | | | | | | = |
| Total Population (2018) | 23,464 | | 148,419 | | 293,801 | | 460,007 | |
| White (2016) | 9.237 | 39376 | 80,382 | 84.16 | 199,104 | 17.7% | 274,814 | 80.01 |
| Black of African American (2018) | 10,540 | 44.0% | 46,202 | 31.1% | 86,120 | 29.7% | 127,741 | 20,00 |
| American Indian or Alaeka Native (2018) | 195 | 245 | 881 | 649 | 1,165 | 44% | 1,719 | 0.05 |
| Asian (2018) | 608 | 24% | 6,019 | 4.1% | 11,824 | 4.19. | 16,623 | 421 |
| Hawaiton in Positic Islander (2018) | 45 | 0.74 | 136 | 216 | 223 | £18 | 287 | an |
| Other Race (2016) | 1.968 | 54% | 9,500 | 54% | 15,180 | 3.7% | 23,394 | 50 |
| Two-or More Paces (2016) | 976 | 4,7% | 5,536 | 279. | 10,305 | 229 | 15,870 | 345 |
| Papulation < 16 (2018) | 8,130 | 28.19 | 31,223 | 2129 | 62,439 | 2129 | 99,676 | 27.89 |
| White Not Hippania | 587 | 3689 | 6,470 | 20.7% | 15,851 | 20.0% | 25,826 | 20.85 |
| Black or African American | 3,297 | 32.7% | 12,666 | 46.6% | 28,417 | 57.5% | 34,690 | 3479 |
| Asian | 194 | 199 | 1,000 | 329 | 2,196 | 129 | 3,597 | 389 |
| Other Race Not Hopassic | 243 | 6.09 | 1,364 | 249 | 2,700 | 4.7% | 4,049 | 6.75 |
| Hepatic. | 1,879 | 323% | 0,721 | 31.16 | 18,273 | 25.7% | 31,666 | H2 |
| Not Hispanic or Latino Population (2018) | 96,011 | 662% | 198,776 | 79,7% | 217.216 | 75.0% | 326,060 | 70.69 |
| Not Hispanie White | 4,569 | 3129 | 56,011 | 31.5% | 116,300 | 54,5% | 179,518 | 85 /4 |
| Not Hispanic Black or African American | 9,667 | Acres | 42.667 | 20.00 | 80.027 | MITTE | 110,000 | 36.25 |
| Not Hispanic American Indian of Alaska Nation | 60 | 200 | 353 | 4.00 | 878 | 6,7% | 986 | 0.25 |
| Not Hispanic Asian | 563 | 3.7% | 6,646 | 54% | 11,666 | 2.7% | 17,846 | 3.59 |
| March St. Co. Co. Co. Co. Co. Co. Co. Co. Co. Co | 10.44 | 100 | 4.00 | 4.00 | | A | minus. | 100 |

An Opportunity Zone is an economically-distressed community where new investments may be eligible for preferential tax treatment.

More information -https://bit.ly/2lh8m4a

- Opportunity Zones have now been designated covering parts of all 50 states, DC, and five U.S. territories.
- Opportunity Zones are an economic development tool— they are designed to spur economic development and job creation in distressed communities. -

https://www.cdfifund.gov/Pages/Opportunity-Zones.aspx

Swing for the Fences

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Too Little...





...Too Big



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Just Right University Mall, Tampa



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Mall Magic



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1. Malls as lifestyle centers

The question of what happens next is an intriguing one. One popular idea is that the malls will evolve into lifestyle centers, offering a wider range of options for visitors than simply shopping, eating and movies. "The mall is not dead, just changing. Give it a minute to get decent."

Marshal Cohen

Chief Industry Analyst, Retail, NPD Group

4. Malls as mixed-use spaces

Mails do not, of course, need to be only one thing. As retailers continue to explore options, there may be spaces that end up serving multiple purposes.

"There's 1,200 malls in America, and class B and C malls are about a third of the inventory," Glenn Brill, managing director at FTI
Consulting, a financial advisory corporation, told Retail Dive. "So there's a lot of retailers looking at their footprints, and there's stores closing. Having worked for a developer, I understand the dilemma. A mall is roughly 110 acres. It has power, water, a ring road, a huge parking lot. All that infrastructure has been built and permitted, and in place, so you have two scenarios. You can attempt to reuse the existing structures, or you can scrap them."



The secret to success, as identified by Vintage Real Estate and other retail investors, is to turn malls into retail destination hotspots with ease of access to everything one might need. That is why mall repurposing is pursuing the route of replacing vacant renting spaces with fitness centers, food courts, grocery stores, as well as extra space for events, classes and activities for all ages.

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RD Management



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University Mall

2200 East Fowler Avenue & Bruce B. Downs Blvd./N 30th Street, Tampa, FL 33612

Location

University Mall is located in Hillshorough County at 2200 East Fowler Avenue & Bruce B. Downs Blvd./N 30th Street in Tampa. FL 33612

Type Regional Mall

stegional sai

5ize ±1,332,205 SF

Parking 6.522 Cars

Major Tenants

Dillard's 143.614 SF Burlington 101.193 SF Grand's 90.000 SF

Description

- University Mall, a member of Tampa ip, is in the midst of a significant transformation into a mixed-use facility to include: retail, entertainment, hospitality, education, medical, office & residential
- Area employers: University of South Florida. H. Lee Moffint Cancer Center, VA Hospital, Florida Hospital, Shriner's Hospital, Busch Gardens
- Studio Movie Grill with 14 screens & 2,000 seats, an upscale experience with in-



| Demographics | 3-Mile | 5-Mile | 7-Mile |
|-------------------------------|----------|----------|---------|
| 2023 Projection Population | 165.965 | 328.438 | 516,712 |
| Households | 64,775 | 128,449 | 199,111 |
| Avg. HH Income | \$46.815 | \$65,243 | 568.234 |
| | | | |

Considerations



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- Zoning & Permitting change of occupancy designation may require some research and additional costs and Fire Marshal approval
- ➤ Ease of adaptation Evaluate the challenges of retrofitting spaces to accommodate equipment, storage and ventilation
- Hours Consider accessibility, parking, available days/hours vs after hours availability
- Access In a mall, controlled access is another consideration, balanced with welcoming openness



Clean -> Dusty Layout



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Culture

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Once you have space there are a few important considerations in making it effective, safe and sustainable.

AMRoC Fab Lab is a safe and inclusive space, where all are welcome regardless of sex, race/ethnicity, sexual orientation, gender identity or expression, cultural background, age, or physical or mental ability; a place where the rules guard each person's self-respect and dignity and strongly encourages everyone to respect others.

Document and keep within easy reach and open access:

- Mission & Goals
- Code of Conduct
- Facilities Use Rules & Requirements
- Safety Guidelines
- Scheduling Processes
- Costs

Programming



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Things that need to be taken into consideration with STEM center programming:



- Assessing community needs FIRST center only, or combined community programming?
- Accessible and Inclusive with both space & programming; good signage, accessible tools & resources
- Costs Free or Fee-based?
- > Scheduling programming –separating noisy activities from quiet ones, machine use away from computers, etc.
- Working a FIRST season keeping deadlines and overlapping programs organized, coordinating mentors and training
- Evaluating success & value/gathering metrics based on return usage, applied knowledge, job placement, certifications
- > Agile and adaptive space use that adapts as needed



Social Enterprise



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Nonprofits **can** engage an earned income venture, selling goods or services to diversify its funding base while providing positive impact in the community.

| NOT | SOC | NOT | |
|-------------------------|-----------------------|---------------------|-------------|
| social enterprises | ENTER | social enterprises | |
| (don't sell things) | (sell things to achie | (no social purpose) | |
| contribution nonprofits | commercial | social | traditional |
| | nonprofits | businesses | businesses |
| NONPROFI | T SECTOR | BUSINES | SS SECTOR |

Examples: Girl Scout Cookies, Inside the Box Catering run by Metropolitan Ministries Homelessness Services, Goodwill stores

More of funding sources:

- Membership & Use Fees
- > Sponsors
- > Grants
- Naming Rights
- Goods & Services
- Space Rental
- Professional Development
- Micro-manufacturing

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Fiscal Responsibility



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Fiscal responsibility makes for sustainable social good!

Sample team fees - Queen City Robotics

FRC Teams:

- \$20 per hour
- \$100 per day including use of field & shop
- \$650 per month during build season including use field & shop

FTC Teams:

- \$20 per hour
- \$50 per day including use of field & shop
- \$125 per month including field & shop

FLL Teams:

• \$300 per season

- Structuring Costs
- Paying Staff
- Maintaining Affordability & Access
- > Keeping the Doors Open
- > Earned Revenue



From ROBOTICON to AMROC



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Relationship building takes time but consistency and a good track record pays off!



Six years later, program our partners include:

- USF
- Hillsborough County
- Lockheed Martin
- Jabil
- JP Morgan Chase
- SOFWERX
- Florida High Tech Corridor
- **USF Research &** Development

And interest and support from:

- The ARM Institute
- > The USF Innovation District
- Hillsborough County Extension Services
- Hillsborough County Economic Development
- Hillsborough County Children's Services
- Business Center for **Diversity & Inclusion**

Lather, Rinse Repeat



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- Build on Past Relationships & Successes
- Celebrate Partners Regularly
- Cultivate New Collaborations

Stephen Gran gave me your contact information regarding a possible partnership to bring more robotics and STEM programming and resources to the youth in Hillsborough County. We'd love to learn more about you and your business and how we can work together. I've copied my co-agent, Brandi Yancy, on this message. If there's a time that we could set up a phone call or in person meeting, please let us know.

We look forward to hearing from you and finding ways to partner together.

Have a great weekl

Charles K. Poliseno 4-H Extension Agent UF/IFAS Extension Hillsborough County



ROBOTICON Partner Spotlight: Meet JPMorgan Chase!

JPMorganChase ()

JPMsegan Class is proud to support the ROBOTICON Program for the second year in a row. The firm is one of Tampa Bay's largest employers with more than 5,000 employees working locally across all of its lines of business mouding nearly 2,000 sechnologies. It serves consumers and small businesses shrough more than 50 local Chase branches and 200 ATMs. In addition, the firm has invesced more than \$2 million in workforce initiatives to help young people in Tampa Bay gain the skills needed to meet the region's growing demand for skilled workers.

ETR: Why is year organization supporting 808073CON Tompo Buy?

JPMC. We believe in setting an example for our community, and supporting those who go above and beyond. We strive to support students in pursuing their passion, whether it be through external programs (such as ROBOTICON), or our sum programs (One Hour of Code), where we travel to local High Schools and seath students how to code. We believe in not only supporting ROBOTICON, but por youth in the community



I would like to introduce you to Francis Joseph. He is the President of CANDO (Caribbean American National Development Organization).

While at the UACDC Board meeting this afternoon, I announced you automotive training classes. Francis is very interested in discussing this with you as a training vehicle for the Caribbean-American Community).



Other FIRST Centers



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The Kettering University FIRST Robotics Community Center, in Michigan, opened in 2014. The Center is the first of its kind on any university campus in the country, and provides work areas for FIRST teams, a regulation size practice field and a lab with machining tools and software.



kettering.edu/about/first-robotics

queencityrobotics.org

The *FIRST*® Zone – Charlotte was created by the three teams forming the Queen City Robotics Alliance: Bots of War #4290, T-Rex #4935, and YETI # 3506. The Zone is 5,000 sq ft. containing a workshop, team storage, competition fields for FRC and FTC and FLL. The space is open to teams in North & South Carolina.

The Mary Baker Smith Career Center, part of the Lafayette Parish School System(LPSS) is focused on design & manufacturing, with a robotics & programming lab, machine lab with CNC Mills & CNC Routers, a 3-D printing lab & the states only permanent *FIRST* Robotics Competition field.



lpssonline.com/site1449.php

Resources



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- Creative Uses for Downtown Buildings https://fyi.extension.wisc.edu/innovativedown townbusinesses/files/2017/03/Creative-Uses-for-Downtown-Buildings-030317.pdf
- Community Progress https://www.communityprogress.net/
- Repurposed Architecture https://architizer.com/blog/inspiration/collecti ons/repurposed-architecture/
- Repurpose Project https://ilsr.org/the- repurpose-project-building-communitythrough-reuse/
- Community Guide to Repurposing Vacant &

- Underutilized Historic Buildings https://www.mhpn.org/wpcontent/uploads/2012/08/A Community Gui de to Repurposing Vacant and Underutiliz ed_Historic_Buildings_FINAL.pdf
- Splitting Big Box Stores https://www.tulsaworld.com/business/realest ate/addition-by-division-splitting-big-boxstores-becoming-commonplacein/article 7bf459b9-e9c1-57ec-b472-0d403f8e4a46.html
 - Shopping Malls Repurposed http://www.rdtaxsavers.com/articles/Shoppin q-Malls

Resources



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- Innovative Funding Programs for Placemaking -https://www.pps.org/article/innovative-funding-programs-for-placemaking
- Opportunity Zones https://www.cdfifund.gov/Pages/Opportunity-Zones.aspx
- Urban Manufacturing Alliance https://www.urbanmfg.org/
- Society of Nonprofits Earned Income: https://www.snpo.org/funding/earnedincome. php

- Mary Baker Smith Career Center, Lafeyette, LA https://developinglafayette.com/wp/roboticsprogramming-3-d-production-machinery-areall-highly-prioritized-at-w-d-mary-bakersmith-career-center/
- Charlotte FIRST Zone http://queencityrobotics.org/
- Library Makerspaces: The Complete Guide (Rowman & Littlefield, 2017), Theresa Willingham – for Makerspace/Fab Lab best practices

Questions? Comments? Connect.



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Steve@FFCDI.org or Terri@FFCDI.org

Advanced Manufacturing & Robotics Center Fab Lab

AMRoCTampaBay.com fablabs.io/labs/amrocfablab

ROBOTICON

ROBOTICON.net

FIRST Looks

FIRSTlooks.tvl scott@plughitz.com

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