

# Tech Prairie STEAM EXPO

*"Expanding the Horizon"*

Category: Cross Boundary Collaboration & Partnerships

State: Illinois

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## EXECUTIVE SUMMARY

The Tech Prairie STEAM Expo was a new destination at the 2021 Illinois State Fair on the Illinois State Fairgrounds. The Expo showcased drone racing, eSports competitions, interactive exhibits and demonstrations from over 30 organizations throughout Illinois. Exhibits and demonstrations highlighted the use of Science, Technology, Engineering, Arts, and Mathematics (STEAM) in K-12 education, postsecondary education, research, business, and industry.



The Expo was organized by the Illinois Department of Innovation & Technology (DoIT), in collaboration with the University of Illinois Extension Office, the Illinois Innovation Network (IIN), and Springfield’s “Grow Our Own” Program with participation from Hanson Professional Services, the City of Springfield, and Sangamon County. The debut of the Tech Prairie STEAM Expo recognized the importance of promoting STEAM to strengthen our state and equip students with the skills needed to be successful in the 21<sup>st</sup> century workforce.

The event allowed fairgoers to engage and interact with STEAM exhibitors from across the state including:

- Interactive microscope demonstrations and anatomy dissections from OSF Healthcare
- Flight simulations from Frasca International with the Illinois Department of Transportation’s Bureau of Aviation Safety guides
- Computer Numerical Control (CNC) Machining from Southwestern Illinois College
- Engaging and diverse educational demonstrations sponsored by the IIN with participation from public universities throughout the state toward their mission of driving inclusive innovation, workforce development, and equitable economic growth
- Interactive “Tech Playground” that included a smart electrical grid, K-8 robotics, Makerspaces & 3-D printing, virtual reality in education, and drones provided by the Learning Technology Center of Illinois and Illinois Digital Educators Alliance

The Tech Prairie STEAM Expo was open daily from 10am to 7pm from August 18 through August 22, 2021. Admission was free to fair attendees. Videos, livestream links, and a list of the collaborators is available at the [2021 STEAM Expo website](#).

*Image 1: Tech Playground*



*Image 2: Illinois Innovation Network*



## IDEA

### HATCHING THE CONCEPT OF A STEAM EXPO

Visually displaying and describing STEAM educational opportunities can be challenging, especially during a pandemic. DoIT promotes statewide STEAM opportunities to students of all ages and supports events that expand pathways leading to careers related to STEAM. Utilizing the State Fair as a venue created an opportunity to invite students and fairgoers to explore STEAM pathways and highlight innovative STEAM initiatives within a structured event and defined timeline.

While initial discussions at DoIT for the concept of a STEAM Expo at the State Fair started in early Spring 2020 and prior to the cancellation of the 2020 State Fair due to COVID-19, the planning process for 2021 was compressed to six months partially due to uncertainties caused by the pandemic. In January and February 2021, DoIT began reaching out to a variety of public and non-public organizations to explore collaboration and planning opportunities for the Expo with the plan to host a drone competition and eSports event at the 2021 Illinois State Fair.

DoIT created promotional flyers to help solicit exhibitors and outline the opportunities for sponsorships. Discussions began with Dell through the University of Illinois Extension to secure gaming machines for the eSports competition.

In March 2021, the IIN was approached as another possible collaborator. Discussions progressed quickly and video calls became more frequent through the Spring and Summer, and the IIN staff conducted outreach with the IIN Hubs.

DoIT initiated periodic check-in calls with University of Illinois Extension staff and the Illinois Department of Agriculture State Fair Director, which increased in cadence to weekly planning calls. The full Steering Committee included major partners of the Expo such as the State Fair Director, State Fair Special Events Director, University of Illinois Extension 4-H, IIN, Learning Technology Center of Illinois, Illinois Digital Educators Alliance, Illinois Department of Commerce & Economic Opportunity, Governor's Office, and the DoIT Technical Team. The [STEAM Expo website](#) was created and launched in June 2021.

Applications to participate were shared with potential exhibitors in advance of the Expo. This process was helpful to determine infrastructure needs in the building (electricity and internet bandwidth) and confirm interest to participate as an exhibitor. An email was sent to all exhibitor contacts one week prior to the Expo set up with logistical information including admission pass distribution, exhibit set-up times, link to fairgrounds map, and emergency contacts. The Expo was organized within the existing budget and staff of DoIT. The only external dedicated funding for the event was acquired through sponsorship of the drone competition and support for the audio-visual equipment on the main stage.

## IMPLEMENTATION

### CULTIVATING CURIOSITY AND CAREER PATHWAYS IN STEAM

Initiating and managing the inaugural [Tech Prairie STEAM Expo](#) at the 2021 Illinois State Fair required cross-boundary partnering, innovative approaches, and patience. The Expo highlighted innovation and emerging opportunities with exhibitors and special events such as a [drone racing competition](#) and [eSports competition](#). While most exhibitors were present for all five days of the Expo, some rotated in and out for single day exhibits with a total of [36 exhibitors](#) engaged with in-person demonstrations and exhibits within the Expo. Four additional organizations sent materials that were displayed, and three

more organizations participated in virtual presentations from the main stage, including the University of Illinois Veterinary Medicine, Latinx Digital Leaders Now, and a previous Illinois Teacher of the Year.

Staffed exhibits showcased the breadth of STEAM and STEM programming at the public universities as well as collaborations with businesses. Examples included interactive science experiments with the Northern Illinois University innovation hub exhibit and its family-focused activities and displays that highlight innovation in sustainability, food, water and energy; robotics demonstrations with Southern Illinois University at Carbondale; and a collaborative interactive demonstration between Governor’s State University and the Mi-Jack Travelift Crane Operation Simulation.

*Image 3: Governor’s State University & M-Jack*



*Image 4: Southern Illinois University at Carbondale*



Demonstrations and interactive exhibits displayed STEAM subject areas in ways that engaged and connected with the community. Bringing together representatives from K-12 education with postsecondary institutions in the same building deepened collaboration to promote a continuum of STEAM career opportunities and programs. Sharing interactive exhibits where fairgoers experienced virtual reality through a headset and watched a 3-D printer create a replica of a heart cultivated digital literacy awareness through a different lens. Hands-on computing and gaming brought the eSports business and sport to authentic levels.

*Image 5: 3-D Printing*



*Image 6: U of I Aerospace*



IIN Hubs represented public universities and their partnerships with community colleges and businesses across the state.

Exhibitors at the 2021 Expo representing diverse areas of STEAM included:

2021 STEAM Expo Exhibitors	
Abraham Lincoln Presidential Museum	Northern Illinois University
AirV Labs	Southern Illinois University Carbondale
Aerospace Engineering at UIUC Grainger College of Engineering	Southern Illinois University Edwardsville
Laboratory for Advanced Space Systems at Illinois CS4IL	University of Chicago Health Sciences Rockford
Double Dutch Boom Bus Hip Hop Xpress	University of Illinois Chicago
Frasca International, Inc.	University of Illinois Springfield
Grow Our Own Program, supported by the City of Springfield and Sangamon County	Western Illinois University
Health Care Engineering Systems Center at UIUC Grainger College of Engineering	Illinois Mathematics and Science Academy
Illinois Assistive Technology Program	Latinx Digital Leaders Now
Illinois Department of Commerce & Economic Opportunity	Learning Technology Center of Illinois
Illinois Department of Innovation & Technology	LuxBlox, LLC
Illinois Digital Educators Alliance	MHub
Illinois Innovation Network	National Center for Supercomputing Applications
Chicago State University	OSF Healthcare Jump Simulation
Discovery Partners Institute	Shabazz International Charter School
Distillery Labs	Southwestern Illinois College
Eastern Illinois University	Sylvan Learning – Springfield
Governors State University	40 Below Joe
Illinois State University	Illinois WorkNet Center
Northeastern Illinois University	Illinois 4-H Team 14204 "Super Scream Bros.
	University of Illinois Urbana-Champaign Research

## LEARNING WHILE COMPETING

### Drone Competition

[Grow Our Own](#), a partnership between the City of Springfield, Sangamon County, and Hanson Professional Services, sponsored the [drone competition](#) with half of the funding going toward the management of the competition and the other half dedicated to prize money. DoIT facilitated the partnership, but the financial relationship was directly between the organization and the Central Illinois Drone Racers who managed the competition with online registration, course set-up, and full logistics. Strong guidance for the competition was provided by staff at Illinois Extension 4-H, which submitted the “FAADroneZone” Airspace Authorization application for approval to conduct the drone competition in the Multi-Purpose Arena on the Fairgrounds and received the FAA “Certificate of Waiver or Authorization.”

The first State Fair drone competition course was set-up during the afternoon on Thursday, August 19, 2021. Warm-ups and qualifying rounds for the competition started at noon on Friday, August 20, 2021, and the competition began at 6pm with a total of 25 competitors. Top pilots from around the nation competed, with a 14-year-old winning the top prize.

## ESports Competition

An eSports competition was held on Saturday, August 21, 2021. The STEM Specialist at the University of Illinois Extension 4-H managed the [eSports competition](#) and Extension 4-H provided financial support for awards. Four games were played on Saturday, August 21, 2021: Minecraft, Super Smash Bros., Rocket League, and Fortnite with 38 competitors. Competition began at 10am and ended in late afternoon. Dell provided 20 Alienware desktop machines, which were shipped to Illinois Extension 4-H so that Extension staff could load the games on the machines and provide peripherals and controllers.

## Illinois Innovation Awards

Illinois Innovation Awards celebrate and recognize outstanding innovation provided across IIN Hubs. These awards were presented at the STEAM Expo on the main stage on August 19, 2021. Winners captured a small glimpse of the innovation and resources located in our public universities and 15 IIN Hubs across Illinois.

Image 7: Drone Competition



Image 8: eSports Competition



Image 9: Illinois Innovation Awards



## ELEVATING ATTENTION TO STEAM

DoIT issued two press releases to the general media in June and August 2021 to advertise the STEAM Expo and utilized social media to share photos from the event and encourage attendance. Various media outlets broadcast and promoted the availability of the Expo. The [NPR "Community Voices" story on August 16, 2021](#) summarized the opportunities at the STEAM Expo. Video clips from the opening of the event and drone competition as well as a list of exhibitors can be found on the 2021 STEAM Expo website.

A main stage area with an opportunity for an audience to observe was used to open the event on August 18, 2021, show activities within the building on a large screen such as the eSports competition, and conduct presentations via interactive video with experts. Drones held the ribbon that was then cut by the Secretary of DoIT to open the event. She was joined at the ribbon cutting by the Director of the Illinois Department of Agriculture, Miss Illinois County Fair Queen, and Expo organizers. Props for the background on stage included an exhibitor's LuxBlox Rocket and the University of Illinois Urbana-Champaign Healthcare Engineering robot. Presentations on stage included the announcement of winners of the Illinois Innovation Awards and opening day remarks by two previous Illinois Teachers of the Year stressing the importance of STEAM exploration and mathematics education.

## IMPACT

STEAM fields open our world to infinite possibilities through the power of innovation, creativity, and imagination. Exposing students to STEAM has lasting impacts on their lives, education, and future career choices. Walking around the 2021 Expo showed that there is no age limit on the excitement of STEAM experiences.

The Tech Prairie STEAM Expo showcased interactive activities and presentations from tech innovators across the state, as well as drone racing, eSports competitions, and robotics demonstrations. DoIT facilitated significant collaboration among state agencies, not-for-profit advocacy organizations, educational initiatives, and businesses to host the event.

The pandemic dampened attendance at the 2021 Illinois State Fair, but those who staffed and attended the STEAM Expo were able to engage safely in a spacious 39,000 square-foot building where masks were required, and exhibits were adequately spaced apart. Bringing together representatives from K-12 education with postsecondary institutions in the same building deepened collaboration to promote a continuum of STEAM learning, programming, and career opportunities. Sharing interactive exhibits where fairgoers experienced virtual reality through a headset and watched a 3-D printer create a replica of a heart cultivated digital literacy awareness through a different lens. Hands-on computing and gaming brought the eSports business and sport to an authentic experience. Fairgoers were able to walk into a mobile trailer with Southwestern Illinois College guiding the CAD programming and CNC machines to provide a souvenir metal piece to take home. Sparks were provided to students that ignited interests in previously unfamiliar areas of STEAM such as aerospace engineering or healthcare engineering.

## LONG-TERM PLANS FOR THE STEAM EXPO

Plans are underway to host the second STEAM Expo at the 2022 Illinois State Fair. Post-event reflection by participants in September 2021 affected some changes and improvements planned for the 2022 Expo. Modifications to the plans from last year include increasing promotion of the event to schools and media, adjusting the hours of the event, relocating the drone competition to the main Grandstand, and adding a focus on career opportunities. A State Government Job Fair organized by Illinois WorkNet and multiple state agencies is planned to coordinate with activities to encourage K-12 students to pursue STEAM careers. Guided tours will be offered in 2022 for organized student groups and coordinated with the Department of Agriculture's Ag Tours across the fairgrounds. Recorded segments from the Expo will be promoted on the STEAM website as a free resource for classroom teachers.

DoIT anticipates expanding the number of Expo exhibitors and sponsors in years to come to make a stronger impact on fairgoers. Expansion is expected to include the addition of emerging technologies, such as quantum information science.

Full STEAM ahead!