

FULL STEM AHEAD

Unmanned Aerial Systems, The Future & You!

UAS Demonstration and Competition Event

October 2015

ANDRO

FULL STEM AHEAD

UNMANNED AIR SYSTEMS (UAS)

THE FUTURE & YOU!



**A Science, Technology, Engineering & Math
(STEM) Initiative**

HOSTED BY

ANDRO COMPUTATIONAL SOLUTIONS, LLC

Tuesday, 20 October 2015

8:00 AM - 3:30 PM

The Beeches Professional Campus

7980 Turin Road, Rome NY

Thank You to Our Sponsors:

ANDRO



A Special Thank You to:



**SUNY POLYTECHNIC
INSTITUTE**



ANDRO

Go on a journey with experts, teachers and instructors as we explore UAS technology and the future role of today's students!

Guest speakers from the UAS sector will be in attendance throughout the day to give students motivation, a new experience and a drive to succeed!



Students will be given a hands-on opportunity to learn all about UAS and even assemble quadcopter kits!

Included will be a programming exercise to fly the UAS in a limited competition with the help of onsite experts.

U ⇒ Unmanned Air Systems

A ⇒ ANDRO * Rome Chamber * Rome School Board * RFA * First Source

S ⇒ STEM (Science, Technology, Engineering and Math)

Schedule of Events

- 7:45-8:00** Students Arrive at ANDRO Entrance: Opening Remarks
- 8:00-8:15** NYS Assemblyman Anthony Brindisi Keynote
Educating the Workforce...UAS and the Future
- 8:15-8:20** Students Assemble at the Beeches Conference Center
- 8:20-8:25** Michele Salisbury: Welcome/Introduction
2nd Vice Chairman of the Board of Directors of the Rome Area Chamber of Commerce
- 8:25-8:45** Colonel Kenneth Field, Rome Free Academy
Air Force Command and Control of MQ1/9s
- 8:45-9:05** Dr. Timothy Busch, SUNY Polytechnic Institute
The Sky's the Limit! Gov't Technologies Extended to Civilian Applications
- 9:05-9:25** Ulysses Lee, Air Force Research Laboratory
Next Generation UAS Designs & Commercial Applications by Google, Amazon & Others
- 9:25-9:45** ANDRO Tech Team Introduction
- 10:00-12:00** Assembly/Programming Quadcopter Kits
- 12:00-12:30** Lunch
- 12:30-12:50** Dr. Amit Sanyal, Syracuse University
Command & Control for Collision Avoidance
- 12:50-1:10** Cady P. Kepler, Northeast Airworthiness Manager (NUAIR)
Making Future Skies Safer
- 1:10-2:45** Quadcopter Flight Competition - Held on the Beeches Field
-SPECTATORS WELCOME-
- 2:45-3:05** Seyed Akhavi: MVCC
Educational and Job/Internship Opportunities
- 3:05-3:30** Closing Remarks / Certificate Ceremony / Dismissal

- On Tuesday October 20th, ANDRO Computational Solutions, LLC prepared for the arrival of approximately 60 students from three local school districts.



- Students were welcomed by New York State Assemblyman Anthony Brindisi, followed by many other well respected speakers from the UAS field.

139 W. Dominick Street Rome NY 13440 Ph (315)337-1700 Fx (315)337-1715 info@RomeChamber.com www.RomeChamber.com
Ryan O'Shaughnessy, *Chairman of the Board* ~ Michele Salisbury, *1st Vice Chairman* ~ Franca Armstrong, *2nd Vice Chairman* ~ Debbie Grogan, *Treasurer*



ANDRO Computational Solutions held a first-of-its-kind **STEM competition** for local high school students on Oct 20, as nine teams from Rome and two other school districts were given hands-on experience in assembling, programming, and flying small Unmanned Air Systems (UAS) at The Beeches. Many organizations assisted ANDRO in making the event possible, including First Source Federal Credit Union, Rome City School District, Rome Chamber of Commerce, The Beeches, NUAIR, AUVSI, MVCC, SUNY Poly, AFRL, Syracuse University and Rome Free Academy.

Michele Salisbury, Chamber First Vice Chairman of the Board, is shown greeting

the students at the start of the day-long program, saying: "Today, new and exciting opportunities exist, and we congratulate ANDRO Computational Solutions and all who are involved with making today's program a reality. And, we enthusiastically welcome the students, for you are tomorrow's leaders and innovators. So, enjoy your day and have fun while you are learning."

High schoolers to learn about drones



Published Oct 14, 2015 at 4:00pm

About 60 students from three local high schools will take part in a day-long program on unmanned air systems (UAS)/ drone technology and the future role of today's students, on Tuesday at The Beeches Professional Campus, 7980 Turin Road.

Students including seniors from the Rome, Camden and Holland Patent school districts will be among participants in the 8 a.m.-3:30 p.m. program. It will involve various speakers, plus students will have a hands-on opportunity to learn about UAS and assemble quadcopter kits.

Included will be a programming exercise to fly the UAS in a limited competition with the help of onsite experts, according to an announcement for the event, which is hosted by Andro Computational Solutions, LLC. Its theme is "Full STEM ahead...Unmanned Air Systems...The future and you!" STEM stands for science, technology, engineering and math.

The event will include speakers from NUAIR/ Northeast Unmanned Aerial Systems Airspace Integration Research Alliance, SUNY Polytechnic Institute, Air Force Research Laboratory, and Syracuse University, plus others.

In addition, keynote remarks on "educating the workforce...UAS and the future" will be offered by Assemblyman Anthony J. Brindisi, D-119, Utica. Andro President and Chief Scientist Andrew Drozd will discuss "UAS in the entertainment industry," among other speakers.

Along with Andro, event sponsors include the Rome Area Chamber of Commerce, Rome school district, Rome Free Academy and The Beeches.

Griffiss International Airport in Rome is one of the Federal Aviation Administration's six test sites across the U.S. for drones. The selection of Griffiss as a test site has prompted local efforts to help the airfield and region benefit from the commercial advancement of unmanned aerial systems.



Published Oct 20, 2015 at 4:00pm

Amid asking students why there is interest in unmanned air systems (UAS)/drones, SUNY Polytechnic Institute assistant professor Timothy Busch mentioned "how about because they're fun....You can have a lot of fun with them."

Meanwhile, in reviewing potential uses for the devices, Ulysses Lee of the Air Force Research Laboratory told students "each one of these ideas can revolutionize...fill in the blank...what we do today."

They were among the speakers this morning at a day-long educational program for students on the opportunities that are emerging and more still to be defined in the rapidly developing UAS field.

"Make no mistake...the jobs are coming," and can be well-paying, said Assemblyman Anthony J. Brindisi, D-119, Utica. He later asked, "the question is....do you have the skills and training to get these jobs?" and added "the stuff you learn today" can help to "make decisions about your future." He also emphasized "we don't call them drones anymore," referring to a common reference that he said is often associated with current military uses of the devices, as opposed to the now-developing commercial fields.

About 60 students from Rome Free Academy and Camden and Holland Patent high schools were invited to the program at The Beeches whose theme included "the future and you!" It was hosted by Andro Computational Systems, LLC; other event sponsors also included the Rome Area Chamber of Commerce, Rome school district, RFA and The Beeches.

The session this afternoon was to include a UAS/quadcopter flight competition for students, weather permitting.

A "lot of new and exciting opportunities" were noted by Michele Salisbury, second vice chairman of the chamber's Board of Directors. She welcomed students to the program as "leaders and innovators of tomorrow."

One of the keys for local interest in UAS/drones is that Griffiss International Airport is one of the Federal Aviation Administration's six test sites across the U.S. for the systems. This has prompted local efforts to help the airfield and region benefit from commercial development of the devices.

The selection of Griffiss is "exciting for our future," Brindisi commented.

Companies will "want to be located near that test site," he observed. It is "like an arms race," as companies vie to "test technology...commercialize products," he added.

Speakers interspersed their remarks with videos showing drones in various potential uses, including some still being developed.

Among the possible applications are for agriculture such as irrigating crops, helping to provide images of terrain, delivering packages, assisting in search and rescue operations.

"As you think about where you want to go to school...engineering is actually an interesting place to go," said Busch, adding "the study of physics and math is really important...in understanding and controlling these types of devices."

With the developing technology, "some of the problems come along with it," Lee observed. For example, with potential package deliveries there can be concerns about how to prevent packages from being stolen. There also can be overall issues with flying the devices safely.

It will be "on you guys...to solve problems and come up with new technology in the future," Lee said.

Andro President and Chief Scientist Andrew L. Drozd said at the start of today's program, "we hope to have this every year in one form or another."



ANDRO

RFA Wins First Full STEM Ahead Contest

By PAT MALIN

The inaugural Full STEM Ahead initiative at the Beeches Professional Complex on October 20 turned into a field day, literally, for selected students from three local high schools.

But it was a fun day as well for employees of ANDRO Computational Solutions LLC, who sponsored the event and helped the students fly their miniature drones right on the grassy slope behind ANDRO's offices at The Beeches Conference Center.

ANDRO president and chief scientist Andy Drozd came up with the initiative to pair STEM (science, technology, engineering and math) courses in the classroom with real-world, hands-on training for students in the new unmanned air systems (UAS).

"We want to help the kids become aware of how these can be used for civilian purposes," said Drozd, whose company is developing software for the local UAS industry. "We also want students to look at job opportunities and the commercialization of this burgeoning field."

Drozd worked with the Rome School Board, the Rome Chamber of Commerce and First Source Credit Union to develop a daylong conference for 60 students from Rome Free Academy, Holland Patent and Camden high schools.

New York Assemblyman Anthony Brindisi (D-119 Utica) gave the keynote address at the morning briefing, encouraging students to prepare for jobs in the new UAS industry, which is rapidly evolving at the Griffiss Business Park and



RFA's Tyler Cornell, left, and Josh Hobbs, the UAS pilot, wait their turn during the Full STEAM Ahead competition for student's sponsored by ANDRO at The Beeches.

Polytechnic Institute and Ulysses Lee of the Air Force Research Laboratory (AFRL) before setting to work assembling their own quadcopters from kits supplied by the schools. ANDRO's "tech team" also assisted the students in setting up their drones.

The handheld quadcopters weigh only a few pounds. They are manufactured by DJI and run on 22.2 volt batteries. They came with built-in video cameras, but the cameras were not activated for this demonstration.

The purpose of the conference was not only to learn about and observe the unmanned systems, but to teach the students the rules and ever-expanding new regulations of flying the mini-drones.

announced it will begin requiring UAS owners and manufacturers to register their systems.

The government is also imposing fines for drone users who violate U.S. airspace and use the UAS for other illegal activities.

After lunch, the students heard remarks from Dr. Amit Sanyal of Syracuse University and Cady P. Kepler, northeast airworthiness manager for NUAIR, a Griffiss company which has begun testing larger unmanned aircraft at Griffiss Airport.

That aspect of educational and job opportunities was addressed by Seyed Akhavi, a technology instructor at Mohawk Valley Community College, at the awards ceremony wrapping up the



November 3, 2015 - November 16, 2015 • 8 Pages • Vol. 11, Issue No. 22 • Published Bi-Weekly

RFA Wins First Full STEM Ahead Contest

(Continue from Page 1) ANDRO, wrote the operations manual for the teams to build and program the quadcopters. He also designed the test course on the wide-open field behind The Beeches.

"I set up the five locations," he said. "The students had to configure the GPS coordinates for each waypoint."

Students Aim UAS at Targets

For the next two hours, each of the teams selected a "pilot" who used a control box to remotely fly the quadcopter within a set amount of time around a course marked with five bullseyes. Volunteer judges from ANDRO, AFRL and MVCC graded the teams during the competition.

The winning pilot was the one whose vehicle came closest to the target. Points were deducted for distance from the bullseye, breaking the balloons, the drone crashing or going out of control. As students cheered or groaned for near-misses, the UAS did manage to land near the targets and there were no accidents.

RFA purchased 10 mini-drone kits and fielded seven teams of students dressed in orange and black school colors, while purple-shirted Holland Patent and Camden's Blue Devils each had one team competing. Each quadcopter cost \$450.

"We signed up [for the conference] because we hope to learn about the future applications of the drones," said Seamus Riley of RFA.

Perhaps it was home-field advantage or strength in numbers, but a team from RFA's Junior ROTC club won the event by coming closest to the targets.

Josh Hobbs of Team Pink, another pilot from Rome, waited his turn with a con-



lan Joyce, a technology instructor from the Case School at Syracuse University, demonstrated his advanced UAS to the students.

troller in his hand. "I've run similar [vehicles] before," he said. He talked about going to college and becoming a history teacher, not realizing he might have been witnessing a small piece of history that afternoon.

ANDRO Taps into UAS Market

ANDRO hopes to make Full STEM Ahead an annual event.

ANDRO Computational was founded by Andy Drozd in 1994 and has more than

doubled its workforce since then. It is broadly involved in developing communications and radar software for transportation systems, especially for the railroad and aviation industries and the U.S. military.

Within the last year, Drozd has recognized opportunities for his engineers and researchers to expand into the UAS market, especially with NUAIR (Northeast UAS Airspace Integration Research Alliance) and the Air Force Research Lab in his backyard.

"We're getting into some new [UAS] technology," he said following the STEM contest. "It's a natural for us."

ANDRO is located in a 15,000 square foot building next to the Beeches restaurant. It is finishing construction on a smaller building as part of a \$1 million expansion and start-up of a subsidiary.

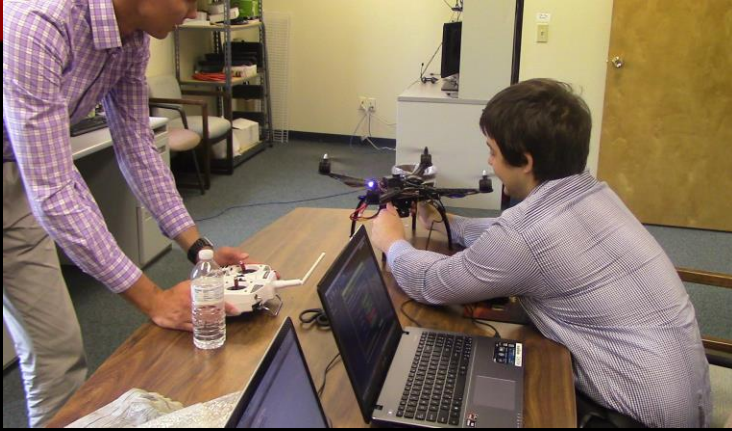
The subsidiary will develop new sense-and-avoid and command-control-communications (3C) software for the unmanned drones.

Drozd said he expects the new company to begin operating in the first quarter of 2016.

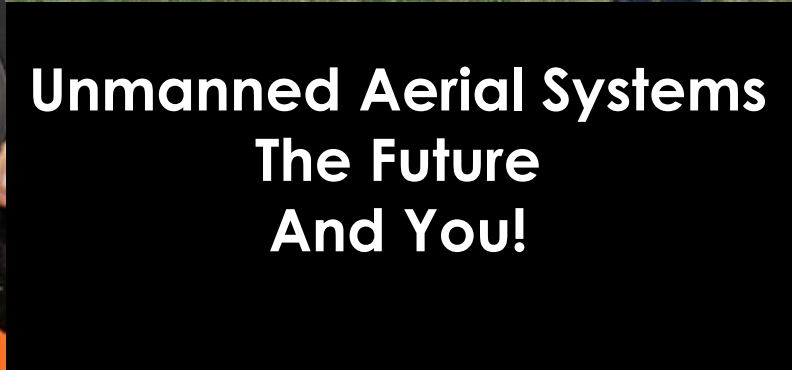


Ian Hughes of the Air Force Research Lab and a volunteer at Full STEM Ahead helps RFA student Tyler Redpath set up his quad-copter.

PREPARING FOR FLIGHT ⁹



ANDRO





6:16 58°
2


NEWSCHANNEL 2 AT 6:00

Kristen COPELAND

ANDRO

WUTR abc HD
EYEWITNESS NEWS

WUTR

ANDRO



STUDENT FEEDBACK

13

The following are the averaged results from 54 students surveys:

- 41 students enjoyed the competition portion the most.
- 40 students enjoyed the speakers/presentations the least.
- 49 students said they would attend again if invited.
- Average rating of the instructors (1-5): 4.17
- Average rating of the overall experience (1-5): 4.25

STUDENTS' COMMENTS

"It was very informative and interesting."

"I had always had an interest and this has definitely made me want to learn more about this."

"This was very interesting and eye opening to me and I am much more interested in being a part of today's technology trend."

"Very fun today, would do it again!"

"I enjoyed it and would come and do this any day besides school."

"Do more of this!"



Jake DiBari

October 20 at 8:36am

Over 50 students from RFA, Camden and Holland Patent are at the Beeches this morning holding one of the world's first UAV/Drone high school competitions. Very exciting stuff! Big thanks to Rome Superintendent Simons, Maria Smith, Andy Drozd, Della Pray, Anthony Brindisi and all their people who made this happen.



91 Likes 4 Comments



Rome City School District - Rome, NY

October 22 at 11:13am



15

Teachable Moment

John E. Joy 3 and 4 graders got a lesson in UAS (drones) on October 20th from RFA senior, Zach Flick. Zach (and some of his team members shown here) were on the orange team, who placed first in the UAS flying competition on Tuesday at the Beeches.



Like Comment Share

26 people like this.

Top Comments

**Rome City School District - Rome, NY**

October 20 at 3:57pm · 🌐

Orange Team Winners of the Drone Flying Competition, lead by RFA Teacher Jed Musch.



Like

Comment

Share

32 people like this.

[Rome City School District](#) ▶ [Homepage](#)

[Return to Headlines](#)

STUDENTS GET FIRST HAND EXPERIENCE WITH DRONES DURING 'FULL STEM AHEAD' EVENT HOSTED BY ANDRO



Della Pray, from the Pink team helps the orange team with software: L to R: Madeline Allen, Della and Kayleigh East.

RFA, Camden and Holland Patent students learned about Unmanned Air Systems (UAS) during a daylong event at the Beeches on October 20th. The event called 'Full STEM (Science, Technology, Engineering and Math) Ahead' was hosted by ANDRO in conjunction with the Rome Chamber of Commerce and the Rome City School District. The high school teacher came up with a team name and color. The students learned about UAS and programmed the quadcopter kits with assistance from ANDRO staff. The teams each performed a series of flight exercises.

Along with keynote speaker, NYS Assemblyman Anthony Brindisi there were guest speakers from the UAS sector throughout the day. There were nine teams from Rome Free Academy, Holland Patent and Camden (approximately 60 students).

Sponsors include: ANDRO, Rome Area Chamber of Commerce, RFA, RCSD, The Beeches. Full STEM Ahead competition t-shirts provided by First Source Federal Credit Union. **Special thanks to:** MVCC, Syracuse University, SUNY Polytechnic Institute, NUAIR, and Air Force Research Lab.

The 'Orange Team' finished in first place: RFA - Jed Musch group; 'Purple Team' finished in second place: Holland Patent - Russell Stevener, Jr.; and 'Grey Team' finished in third place: RFA - Melissa Damsky group. Congratulations to all of the teams! They did a fantastic job of programming and flying the drones.



Col. Kenneth Fields (RFA Teacher) works with team, light blue





Rome City School District - Rome, NY added 5 new photos.

October 20 at 12:48pm · 🌐

Rome Free Academy students (shown here) programming the drones with help from ANDRO employees. They along with students from Camden and Holland Patent will be flying the small Unmanned Air Systems on the Beeches great lawn at 1:15 p.m. today. Come out to see the competition!



Rome City School District - Rome, NY added 6 new photos.

October 20 at 3:52pm · 🌐

RFA, Camden and Holland Patent Students Competed in a Unmanned Air Systems Flying Contest on the Beeches Lawn Today. The 'Orange Team' finished in first place: RFA - Jed Musch group; 'Purple Team' finished in second place: Holland Patent - Russell Stevener, Jr.; and 'Grey Team' finished in third place: RFA - Melissa Damsky group. Congratulations to all of the teams! They did a fantastic job of programming and flying the drones.



👍 Like 💬 Comment ➦ Share

33 people like this.

Top Comments ▾

13 shares

ANDRO LEAD TEAM ¹⁹



- *Jessica Griffin, Tammy Willson,
Amy Singletary*

ANDRO TECHNICAL TEAM²⁰



Back Row: Tom Arcuri, Josh O'Brien, Alex Petrushenko, Ian Hague, Andrew Burger, Larry Spadaro

Front Row: Scot Zahas, Tom McCombie, Ashwin Amanna, Travis Murphy

ANDRO



Brenden Hatzinger programs the UAS



My team finished in third place in the drone flying contest.



Staley students cheer on RFA students.



John Joy 3 and 4 graders got a lesson in UAS (drones) on October 20th from RFA senior, Zach Flick. competition.

9 new AUVSI student memberships!

THANK YOU!



Team Lime Green with Melissa Damsky

PRIMARY SUPPORT / STEERING COMMITTEE

- **Mr. Jeffrey P. Simons, Superintendent**
- Debbie Grogan, First Source CU
- Maria Smith, RFA
- Jake Dibari, City of Rome
- Tammy Willson, ANDRO
- Jessica Griffin, ANDRO
- Amy Singletary, ANDRO
- Alex Petrushenko, ANDRO