

Pathways to the Next Frontier





Chairman's Message

Dear Friends,

Since its inception, Base 11 has always prepared students from Next Frontier industries, from the classroom to the boardroom. As of 2019, we have accelerated more than 10,000 students on their pathway to the Victory Circle. Next year, we expect to meet our initial goal of reaching 11,000 students.

Our Next Frontier facilities continue to offer industry-quality equipment for students to use, and have already propelled students into skilled jobs.

Our Next Frontier programs continue providing hands-on, project-based learning experiences. University students competing in the multi-year Base 11 Space Challenge have advanced to building and firing liquid fuel engines. Meanwhile, high school students in two states piloted a new data analytics course this year.

At the start of 2019, we named Ingrid Ellerbe Executive Director of Base 11, and I am excited to see her continue to develop and expand our impact on students as we move forward. In 2020, Base 11 will launch the Next Frontier Initiative, a nationwide effort to scale our impact 10X, to 100,000 students by 2030.

“If you’re out to change the world, you have to be willing to set bold, courageous goals,” says Al Bunshaft, NFI co-chair and Senior Vice President, Dassault Systèmes Americas.

I couldn’t agree more. With Al and visionary partners like him, Base 11 is out to change the world.

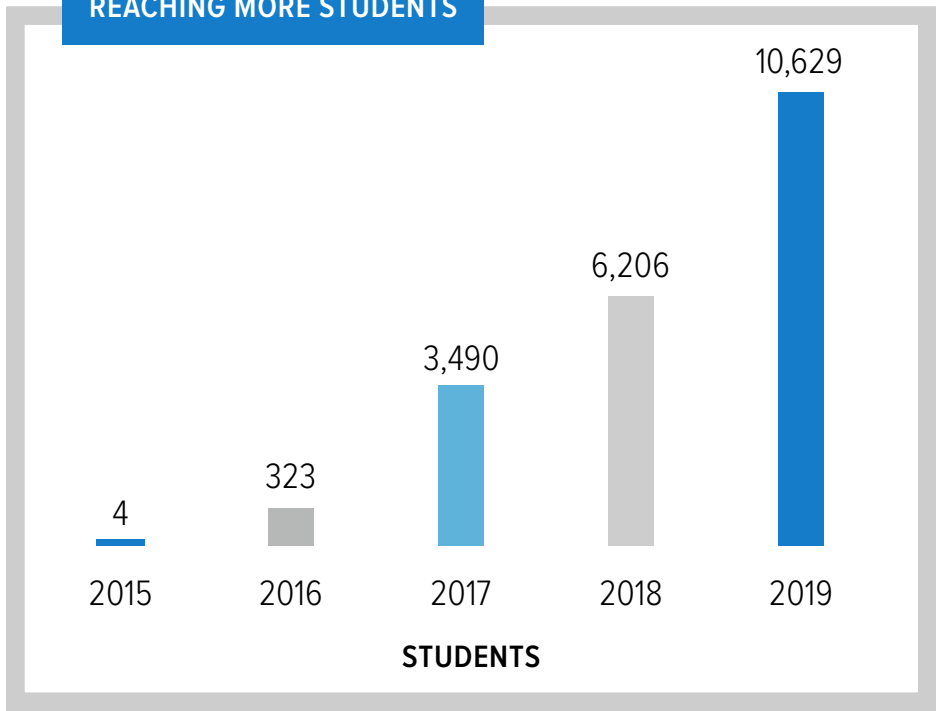
Sincerely,

Landon Taylor,

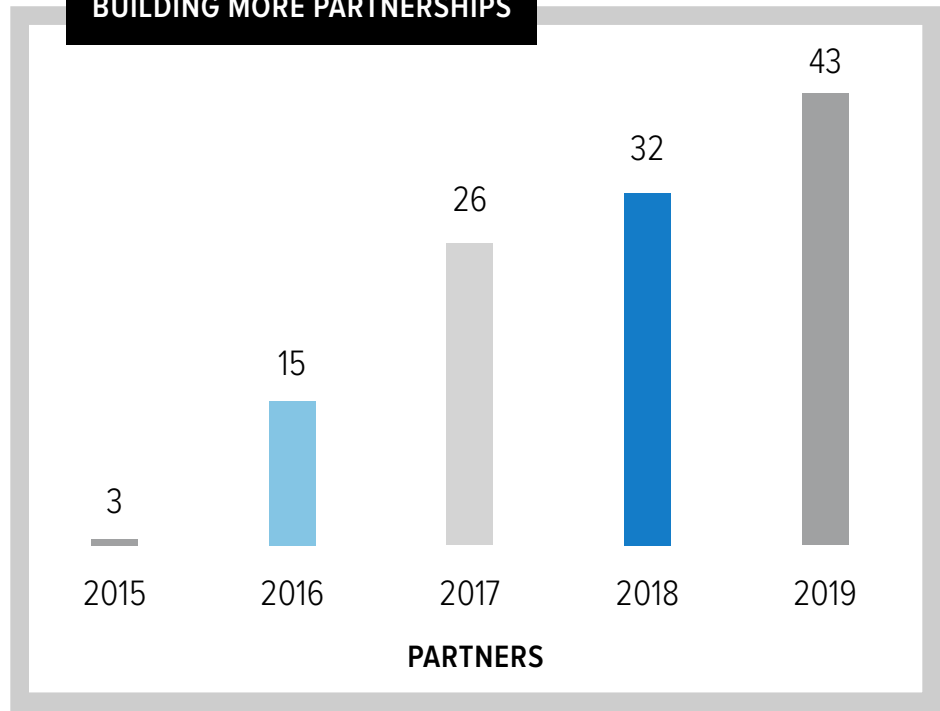
Chairman and CEO

Growing Impact

REACHING MORE STUDENTS



BUILDING MORE PARTNERSHIPS



“

“Each day, I meet Base 11 students who are preparing to become the STEM leaders of next frontier industries, bringing with them a rich diversity of background, experience and vision that will enable them to create a brighter, more sustainable future for our global community.”

Ingrid Ellerbe
Executive Director

Base 11 Impact Timeline



TIMELINE

2016

APRIL 2016

STEM Entrepreneurship Program launched

APRIL 2016

Base 11's first Innovation Center opens at Skyline College in the San Francisco Bay Area

JUNE 2016

First community college students participate in paid Base 11 Summer Fellowships at Caltech

AUGUST 2016

Ellie Mae founder Sig Anderman selects Base 11 to help design and manage Springboard, a bold workforce development initiative to prepare and place African American students in tech jobs in the San Francisco Bay Area

JUNE 2017

Base 11 begins managing Verizon Innovative Learning — Minority Males program at 16 Historically Black College and University (HBCU) campuses, later expanded to 24

JUNE 2017

Base 11 secures over \$3 million in funding to establish residency-based, paid Summer Fellowship programs at the Smithsonian National Air & Space Museum, the University of Southern California, and the University of California, Irvine

SEPTEMBER 2017

Aerospace Workforce Development Symposium & Expo, hosted by Dassault Systèmes, UCI, and Base 11 attended by more than 500 people

2017

AUGUST 2017

Base 11 opens Innovation Center in Irvine, California, at The Cove @ UCI Applied Innovation

OCTOBER 2017

Academic-year internship program for community college students first offered at Caltech, UCI, and USC



JANUARY 2018

Base 11 opens Innovation Center at South Mountain Community College in Phoenix

OCTOBER 2018

Base 11 opens Innovation Center in Compton, California

OCTOBER 2018

First liquid rocket safety training held simultaneously at 3 locations in 2 countries.

MARCH 2019

Base 11 \$1.6M Aerospace Workforce Development Grant awarded to Morgan State University after national competition among HBCUs

SEPTEMBER 2019

Base 11 opens Innovation Center at Cristo Rey Philadelphia, a private high-school serving students who could not otherwise afford a private school education

2018

JUNE 2018

Base 11 Space Challenge kicks off, offering more than \$1 million in prizes for the largest liquid-fuel rocketry student competition in the world

2019

FEBRUARY 2019


NASA astronaut Leland Melvin becomes official national spokesperson for Base 11

JULY 2019

Base 11 Space Challenge Phase 1 prizes awarded

SEPTEMBER 2019

Data analytics high school course piloted in two states, through funding from Deloitte Foundation



Next Frontier Programs

Base 11 Space Challenge

961

students accessed the 3DEXPERIENCE platform, gaining workforce skills with the platform used across eight industry sectors

32

university teams from across the U.S. and Canada registered for the Base 11 Space Challenge

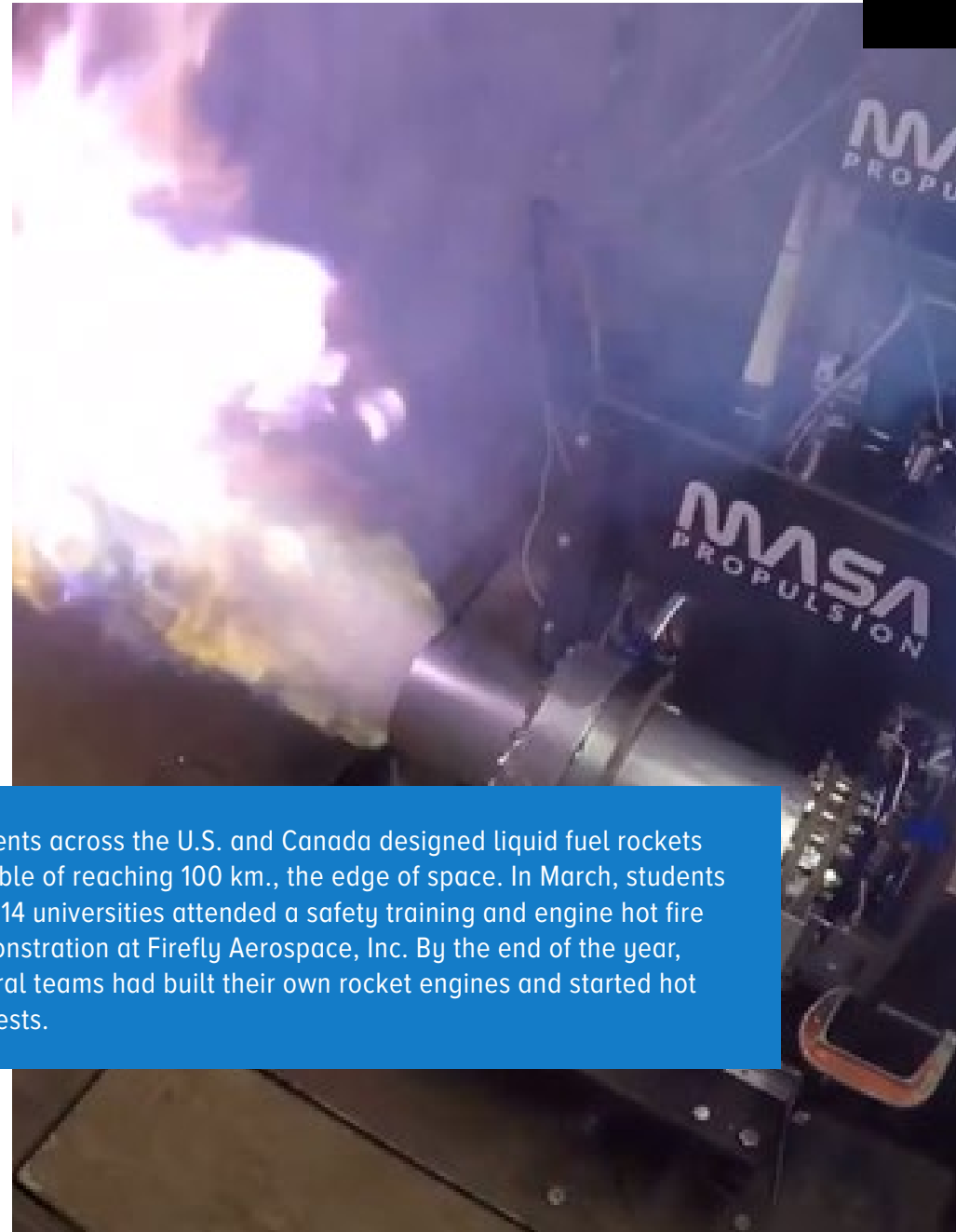
75

students participated in a static test fire demo at Firefly Aerospace, Inc.

4

teams have designed, built, and tested their liquid rocket engines

Students across the U.S. and Canada designed liquid fuel rockets capable of reaching 100 km., the edge of space. In March, students from 14 universities attended a safety training and engine hot fire demonstration at Firefly Aerospace, Inc. By the end of the year, several teams had built their own rocket engines and started hot fire tests.



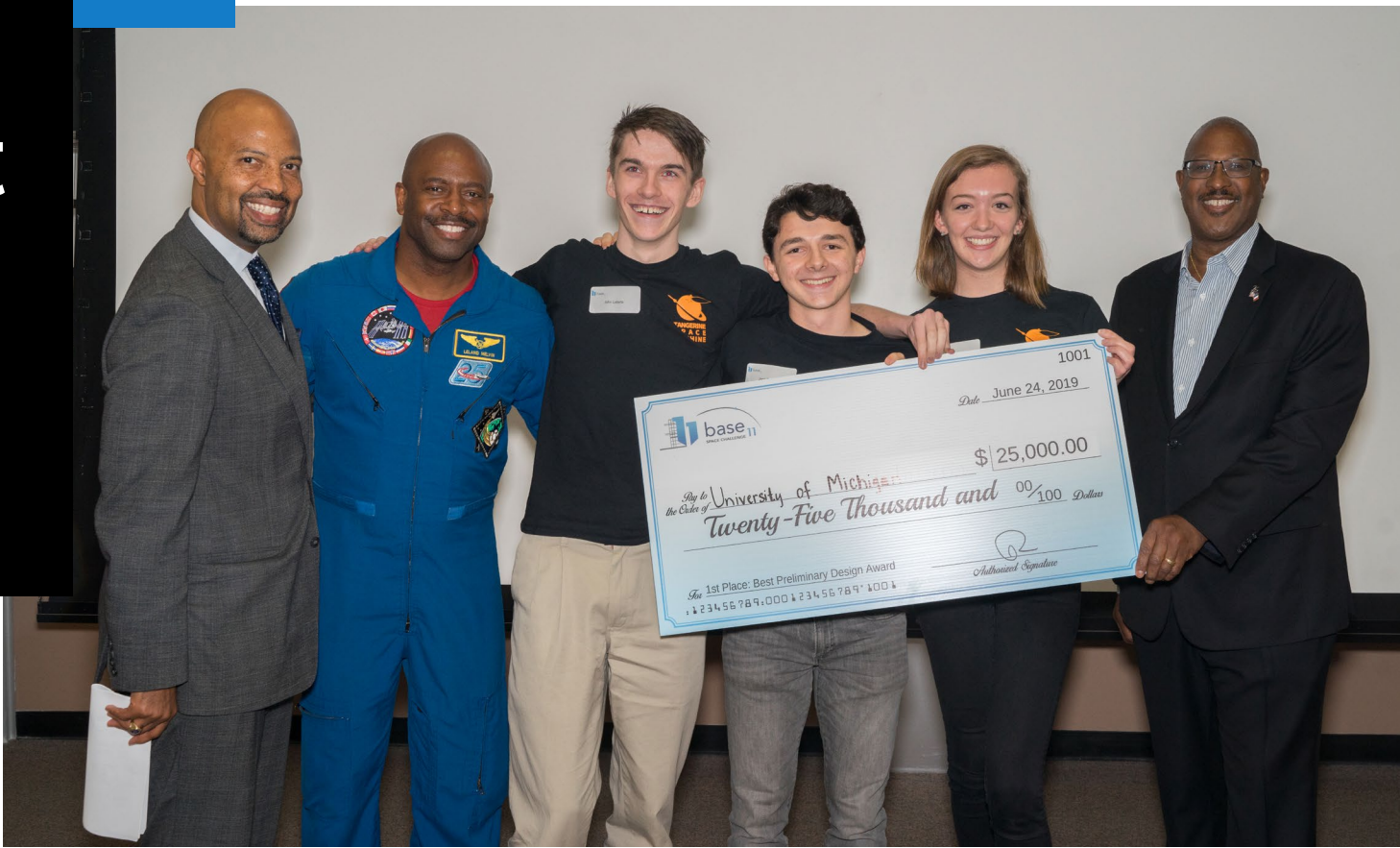


Base 11 Space Challenge

The Space Challenge ultimately aims to equip more students with hands-on experience in engineering to launch them into careers in Next Frontier industries such as commercial aerospace. Buckeye Space Launch team member Joyce Smith proved she has done just that. The junior from The Ohio State University [completed a summer internship at Blue Origin](#) and was offered a full-time job there when she graduates.

[Read more](#)

Phase 1 Prizes for Best Rocket Design



1st Prize
University of Michigan



2nd Prize
Concordia University



3rd Prize
Portland State University

In June, rocketry teams from across the U.S. and Canada gathered at Caltech for the Next Frontier kick-off, a day-long event for students, academics, corporate leaders and aerospace recruiters, featuring a keynote by former NASA astronaut and Base 11 national spokesperson Leland Melvin. The pinnacle of the day for many: celebrating Base 11 Space Challenge **Phase 1 awards**, where \$57,000 in prizes were distributed.

“I was inspired by the incredible amount of energy and passion from our future explorers,” said Melvin. “Congratulations to the Phase I winners in the Base 11 Space Challenge. You’ve set a high bar, but this competition is far from over, and I can’t wait to see how you creatively overcome challenges in the next year.”

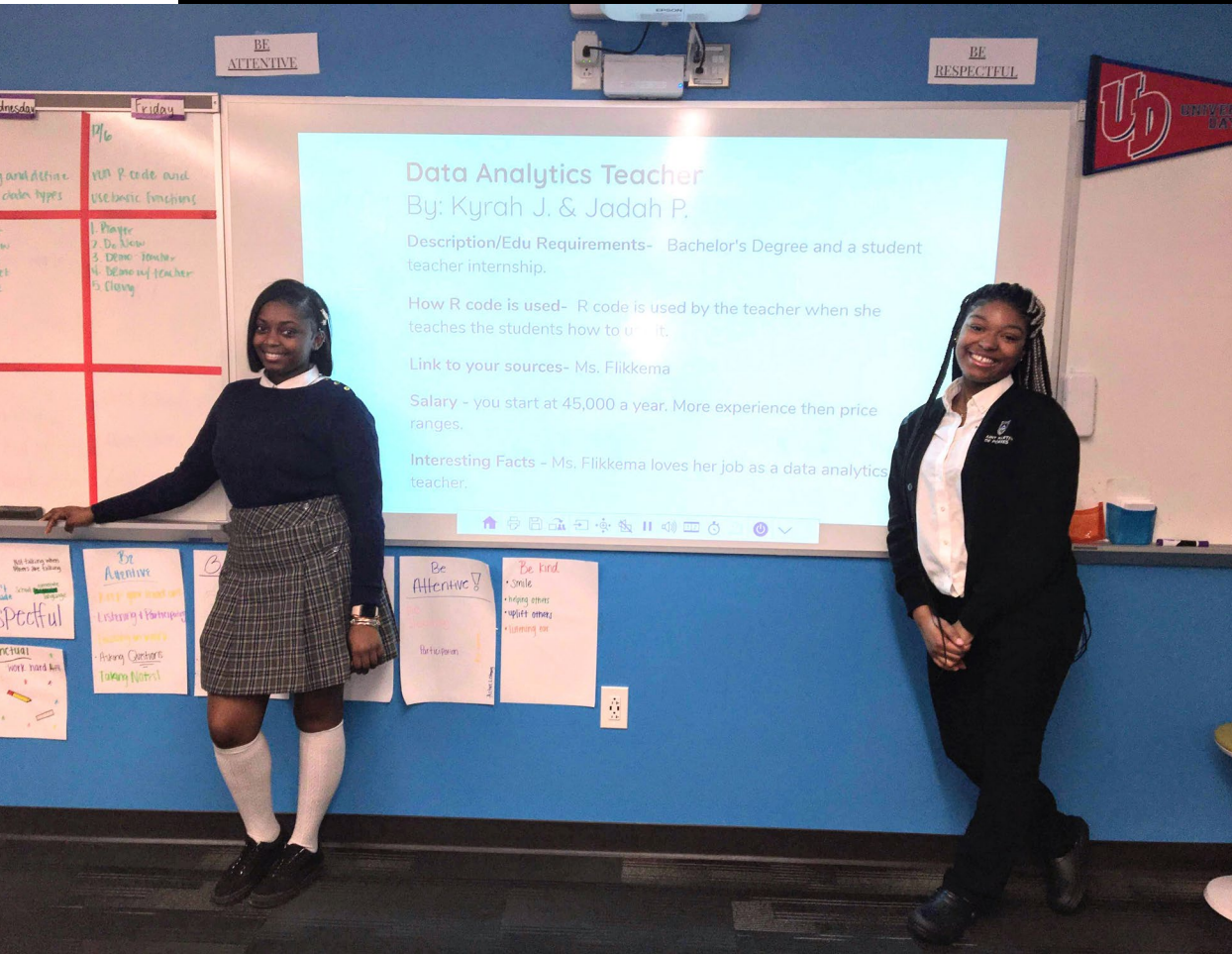
[Read more](#)

Data Analytics Course

“My students know what data is, and they know what machine learning is. They’re constantly on their phones, and their data is being collected, but now they have a greater understanding of what’s being done with that data. Plus, they know these skills are something they can put on their resume.”

Caitlin Flikkema
math teacher

*St. Martin De Porres,
Cleveland’s Cristo Rey High School*



More than 75 high school students at Cristo Rey schools in two states embarked on a pilot of a year-long data analytics course. The curriculum provides skills to use technology that can help solve complex business problems, and develop analytical skills in data-based decision-making and data visualization — skills that are increasingly important for so many jobs of the future.

The curriculum is made possible with a grant from Deloitte Foundation, which supports education through a variety of initiatives that help develop the talent of the future and promote excellence in teaching, research and curriculum innovation. After a competitive process, the Office of Access and Inclusion for the Samueli School of Engineering and the Donald Bren School of Information and Computer Science at the University of California, Irvine was selected to collaborate on developing the curriculum. The three organizations are working together to build the course materials for scale so that more Cristo Rey high schools can introduce data analytics to students in low-resourced communities.

[Read more](#)

Seventeen Base 11 Fellows spent the summer at one of four locations: Caltech, The Smithsonian National of Air & Space Museum, University of Southern California, and University of California, Irvine. Working in teams, they gained hands-on engineering skills through projects that included mapping water-carved features on Mars, testing a rocket, building a drone, and simulating an underwater autonomous vehicle.

[Read more](#)

Summer Fellowships



“There are few experiences in my life where I was able to learn so much in such a short period of time as with my Base 11 fellowship. Now, as I apply for careers upon graduation, there is one thing employers are most excited to hear about: my experience with Base 11.”

Michael Allotey

*Long Beach City College
Base 11 Summer Fellow at UCI*



“This experience showed me the importance of collaboration and hard work to achieve something meaningful in the scientific sector. Through this, I learned that I want to conduct research at the graduate and Ph.D. level and be part of this type of work I admire so much.”

Valeria Villa

*Irvine Valley College
Base 11 Summer Fellow at Caltech*



“The hands-on experience was the most significant aspect of my internship with Base 11. I got to see what student engineers do on a daily basis. Now, I see myself applying and competing for more internships in the future. I feel like Base 11 has really opened doors for me.”

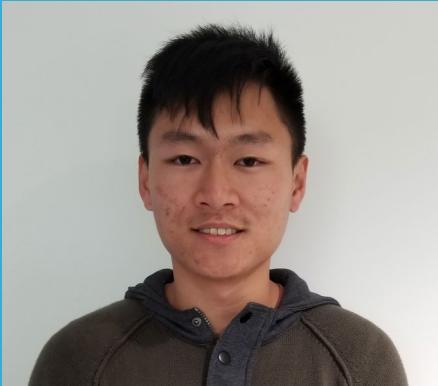
Horacio Iturriag

*Compton College
Base 11 Summer Fellow at USC*

Academic-year Internships

In spring 2019, 27 community college students completed their Base 11 Academic-year Internships at three premier universities: Caltech, University of Southern California and University of California, Irvine. The students' projects included building a Mars rover and developing systems for a liquid-fueled rocket.

[Read more](#)



“This internship gave me the resources, connections, and inspiration to become a Ph.D. at an institute like Caltech. The inspiration provided through these sessions are great and should not be underestimated!”

Kim Hwang Yeo
*Santa Monica College
Academic-year Intern at Caltech*



“I have gained valuable insight into the aerospace industry over the past year. This internship has definitely increased my interest in pursuing a career in aviation.”

Tania Ramirez
*Compton College
Academic-year Intern at USC*



“By getting this hands-on experience, I’ve gained so many skills that I can apply to research labs and I better understand topics in class that relate to this project.”

Ebony Warren
*Santa Monica College
Academic-year intern at UCI*



Next Frontier Facilities

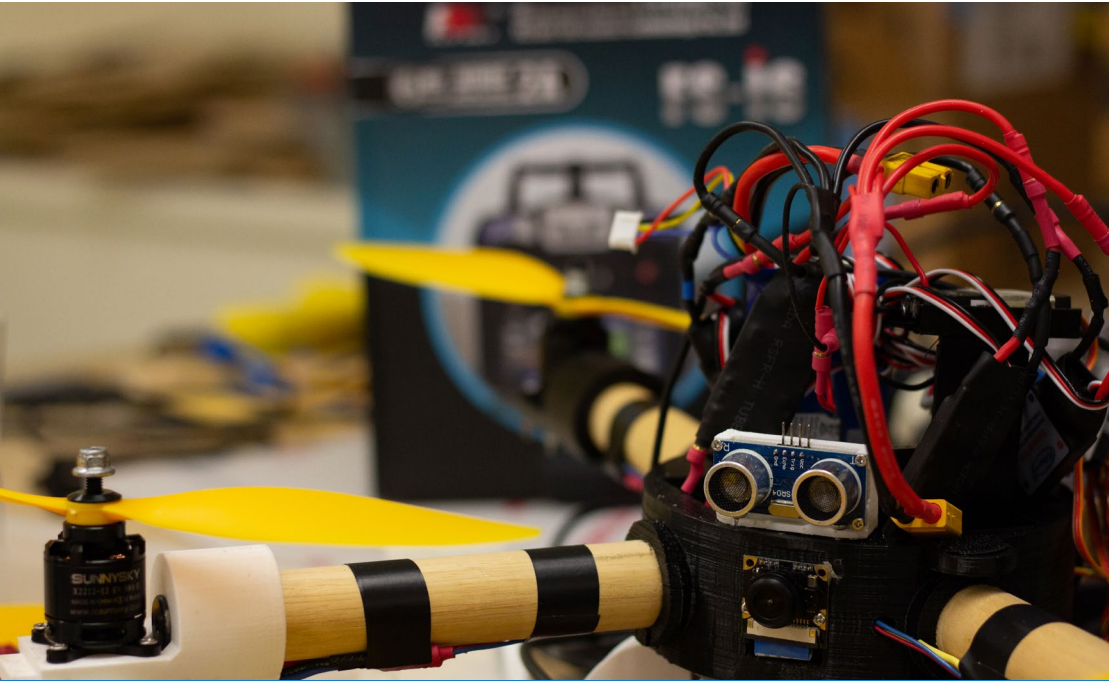
Orange County, California

Base 11's Orange County STEM ecosystem thrives around the Innovation Center at The Cove @ UCI Beall Applied Innovation.

During the academic year, community college students gain skills with mechanical engineering, computer programming, electronics and robotics as they built a scaled-down Mars rover. In the summer, another cohort of students spent five weeks immersed in a project to design, build and fly their own drones.

Local students also rely on the Base 11 Innovation Center to complete their own class projects. Orange Coast College's Danny Yos used the lab over winter break to finish building a camera from scratch.

Yos said, "The space has pretty much everything you can ask for: a small CNC, 3D printers, a soldering station, and a lot of CAD software (like Solidworks)."



"The opportunities that I see for myself now are being able to apply for internships at big or small engineering companies because of the many skills that I learned during the Base 11 internship."

Vicente Presilla,

*Orange Coast College student,
Base 11 Summer Fellow at UCI*

167

students completed
projects in the Base 11
Innovation Center

1,691

UCI engineering students
used equipment provided
by Base 11 on campus

16

community college students participated in the
Autonomous Systems Engineering Academy
through Base 11 internships and fellowships



Compton, California

“Working in the Compton lab facilitating a workshop with Project Payload was like stepping into the future. It is wonderful to see the level of engagement from the young women and the excitement that is generated.”

Donnell Layne,
Moreno Valley College STEM Director

Project Payload brought 30 middle school girls to experience hands-on project based learning at the Base 11 Innovation Center in Compton, California, through a partnership between USC and Base 11.

Project Payload was designed to empower historically underrepresented middle school girls to enter aerospace and computer science fields. The scholars designed and built a mini-satellite called a cubesat to ultimately be launched on a weather balloon.

[Read more](#)

Phoenix

500

students completed projects
in the Base 11 Innovation
Center at SMCC

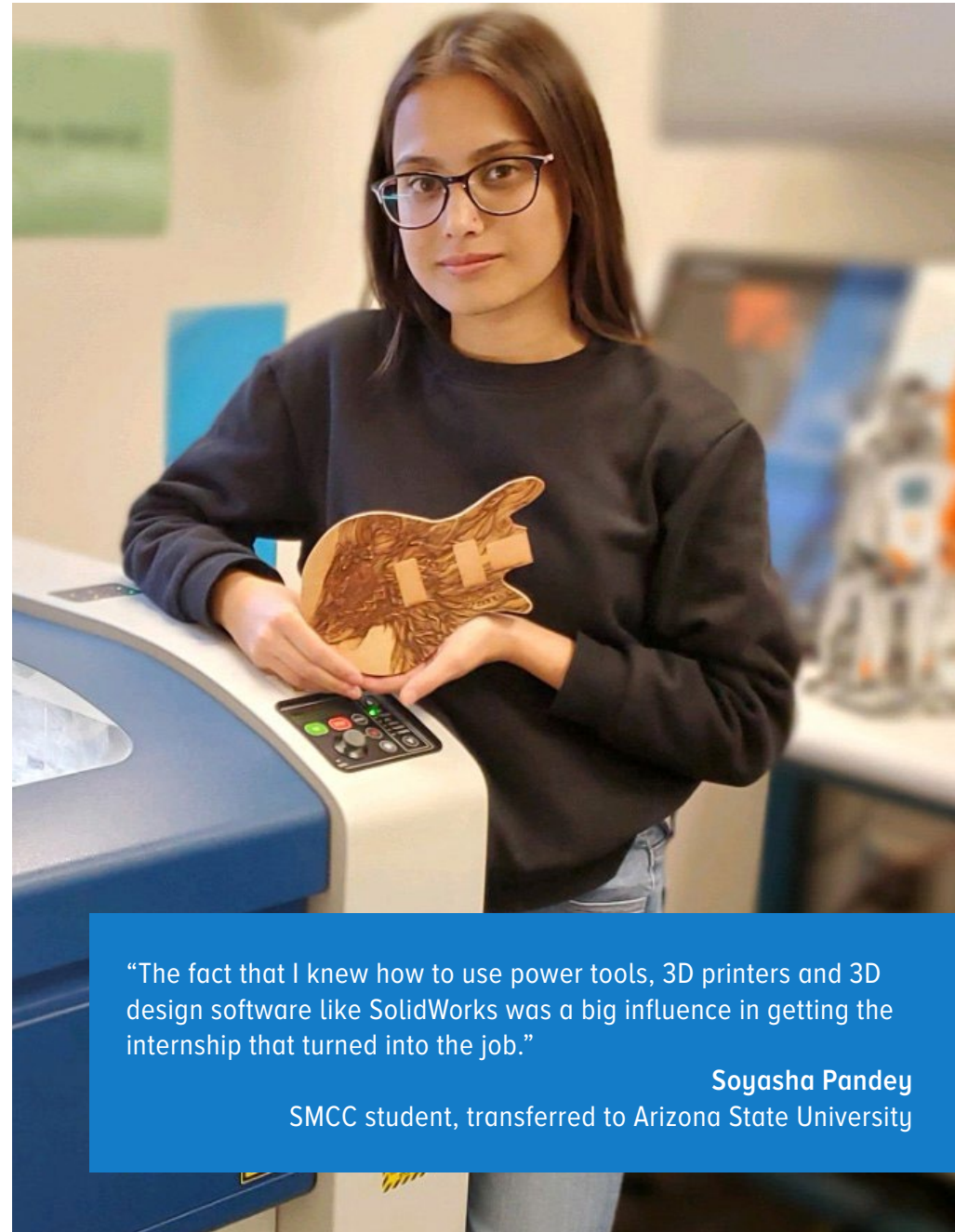
3,400

visits to the Base 11
Innovation Center
at SMCC

At South Mountain Community College in Phoenix, the Base 11 Innovation Center became the catalyst for repositioning the school's engineering program and doubling enrollment within one year. The lab includes manufacturing equipment that students learn to use through formal courses or individual projects, building skills to succeed in a variety of Next Frontier industries.

"Being from a family of laborers, I am the first generation exposed to such education," said Ulises Contreras, SMCC student who worked in the lab and earned a Solidworks certification. "I realized, 'Wow, I can compete.' Knowing that I have these skills has given me a lot of confidence."

[Read more](#)



"The fact that I knew how to use power tools, 3D printers and 3D design software like SolidWorks was a big influence in getting the internship that turned into the job."

Soyasha Pandey

SMCC student, transferred to Arizona State University

San Francisco Bay Area



330

students completed projects in the Base 11 Innovation Center at Skyline College

Since opening in 2016, Base 11's very first Innovation Center at Skyline College in the San Francisco Bay Area continues to serve as a model for others. Year-round, the lab is buzzing with activity from college students working on engineering projects to summer camps to inspire girls' interest in STEM fields.

For the third consecutive year, Skyline's Engineering and Robotics Club students leveraged the equipment to build and improve their solar-powered boat for the California Solar Regatta (pictured.)

[Read more](#)

A photograph of two men in business suits shaking hands. The man on the left is wearing glasses and holding a pair of large blue scissors. The man on the right is smiling. The image is darkened and framed by a blue border.

Partners

Partners

Founder's Circle

FOUNDATION FOR
THE CAROLINAS

Chairman's Circle



Deloitte Foundation

Diamond Level

JACK KENT COOKE
FOUNDATION



Platinum Level



SPACEX



Gold Level

HONDA
The Power of Dreams

MORENO
VALLEY
COLLEGE



SANTA
MONICA
COLLEGE



Silver Level



Supporters



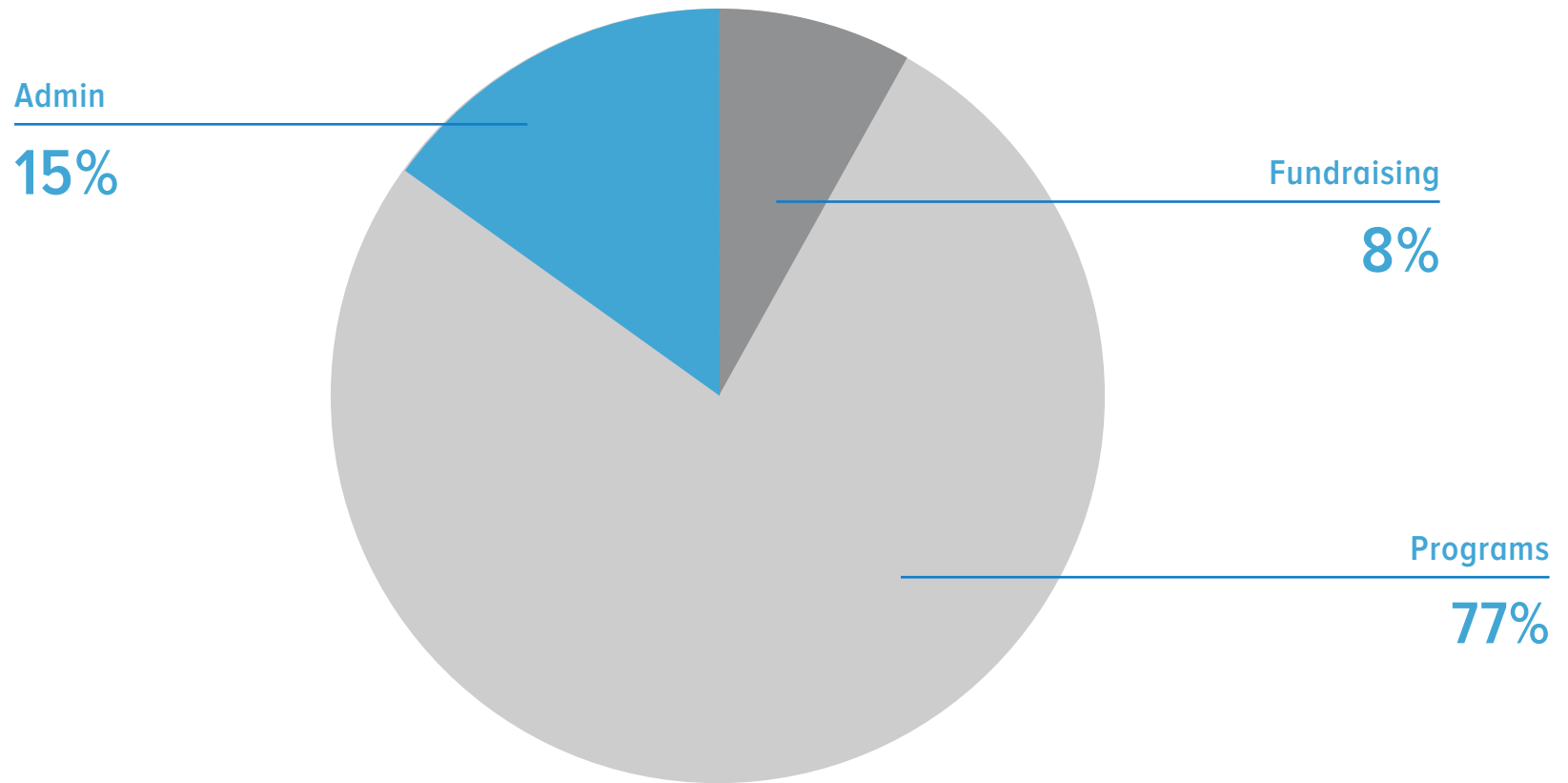
CROUL FAMILY
FOUNDATION



Financials



USE OF FUNDS



Total revenue: \$1,815,742

A group of people are seated in a meeting or conference room. A woman with blonde hair, wearing a teal top, is seated on the left, looking towards the center. A man in a dark suit and striped tie is seated on the right, looking towards the center. In the background, a man is standing and gesturing with his hand. The room has a dark background with a large screen displaying the word "Workforce". A potted plant is visible in the background. The entire scene is framed by a blue border.

Corporate & Advisory Board

Board

Corporate Board

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Managing Director – Chief Technologist, JH Technology
Associates LLC

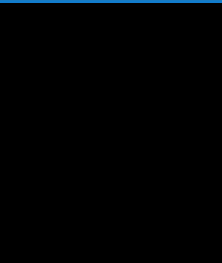
Bryan Kent Wallace, Ed.D.

Assistant Professor of Physics, Director of Physics
Laboratories, and Coordinator of Rocketry Department
of Life and Physical Sciences Fisk University



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