NASA
SPACE APPS
CHALLENGE

2016 MISSION REPORT
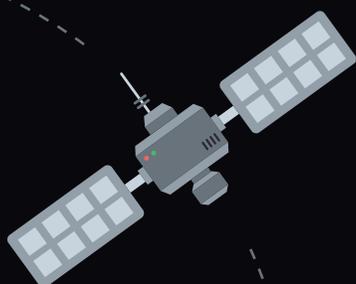
EXECUTIVE SUMMARY

NASA's International Space Apps Challenge is an open innovation incubator and hackathon that encourages innovation, creativity, and collaborative problem solving. In its fifth year the event hosted **15,409 participants** from **161 cities** in **61 countries** around the world. Collectively, over **1300 projects were produced** in response to **25 challenges across six themes** including **Technology**, **Aeronautics**, **Space Station**, **Solar System**, **Earth**, and **Journey to Mars**. Year after year, the global Space Apps community continues to grow with **71 new cities** hosting events in 2016.

For the second year in a row, the program included a pre-hackathon Women in Data Bootcamp to build confidence and give women, girls, and those new to hackathons a head start leading into the weekend. The Data Bootcamp in Pasadena, California, where the 2016 mainstage event was hosted, featured guest speakers such as **Kimberly Bryant, the Founder of Black Girls Code**, **Emily Lakdawalla of the Planetary Society**, **Anita Sengupta of NASA and creative scientist Dr. Kate Stone** who was also a founding member of the NASA Datanauts initiative. In 2016, there were more than **50 Data Bootcamps** held in conjunction with NASA Space Apps events, creating and opening up even more space for a diverse community of global participants.

PREPARING FOR SPACE APPS

Space Apps Amman: Next Generation of Leaders

Feeling inspired after attending a summer program to empower young women to pursue careers in science and tech, high school students **Rasha Al-Khateeb** and **Maram Abu Hussein** set out to host a Space Apps event in their home city of Amman. *"It was an amazing experience. Being an organizer to an event that happens for the first time in Jordan was an incredible feeling. The whole planning process was exhausting but when you see the bright minds coming up with innovative solutions at your event, you feel really proud."* With their first Space Apps event, which reached 70 people, behind them, Al-Khateeb and Hussein have big plans for next year. *"We will hopefully make the event bigger by accepting more participants and bringing people from Egypt, Lebanon and Palestine [together]!"*

Al-Khateeb and Hussein are just two of hundreds of people who work together around the world to plan and prepare for Space Apps each year. Volunteer organizers around the world share tips, resources, and strategies for planning successful events in the months leading up to Space Apps. *"It [Space Apps] makes NASA much more personable, rather than a faceless organization. It also helps to show that NASA isn't purely American and works toward the greater good for the benefit of the planet."* **Ben Noble**, *Space Apps London Lead.*

Unlikely partnerships emerge from global planning calls leading up to the event as hosts with common languages share translated resources and establish connections. In 2016, returning hosts from Glasgow to Guatemala City to Cairo shared important lessons learned from hosting events past. Regional hubs like the Central European Network came together, adding new cities and events throughout the region with guidance from experienced hosts such as the team in Skopje.

Space Apps provides a platform and common goals that unite hosts around the world as they organize events that bring NASA and NASA data to their local communities. As **Dr. Vasiliki Baaka**, a first-time host from Copenhagen said, *"Actively participating felt like working together with [the] NASA team. The whole process brought NASA closer.* **Keshav Tiwari**, *the host of Space Apps Delhi, said, We can now actually work for [NASA] directly and this is what keeps us motivated and excited. We feel proud to build something meaningful for planet earth and beyond!"*

While hosts are planning their events, the NASA team works to craft the challenges and prepare appropriate datasets for the hackathon. This year, the NASA

team curated a set of 25 challenges. Choosing just 25 statements that represent the diversity of NASA missions was a challenge in and of itself. The challenges developed through the process engaged 15,000+ Space Apps participants in 2016. NASA's **Stacey Brooks** led the challenge development process for the NASA team. Brooks says, *"Choreographing the challenges for Space Apps requires an elegant dance to ensure the final outcome represents the diversity of NASA's missions...and engages participants with compelling topics aligned with their technical expertise."*

The NASA Space Apps challenge (and it's challenges) enlists people across NASA and the globe in solving real problems affecting their lives and futures using NASA data. Planning, coordination and collaboration from hosts to those inside of NASA putting together compelling challenges for participants to the broader space industry are what make Space Apps fun and engaging; making it possible to reach the thousands of people it does each year.
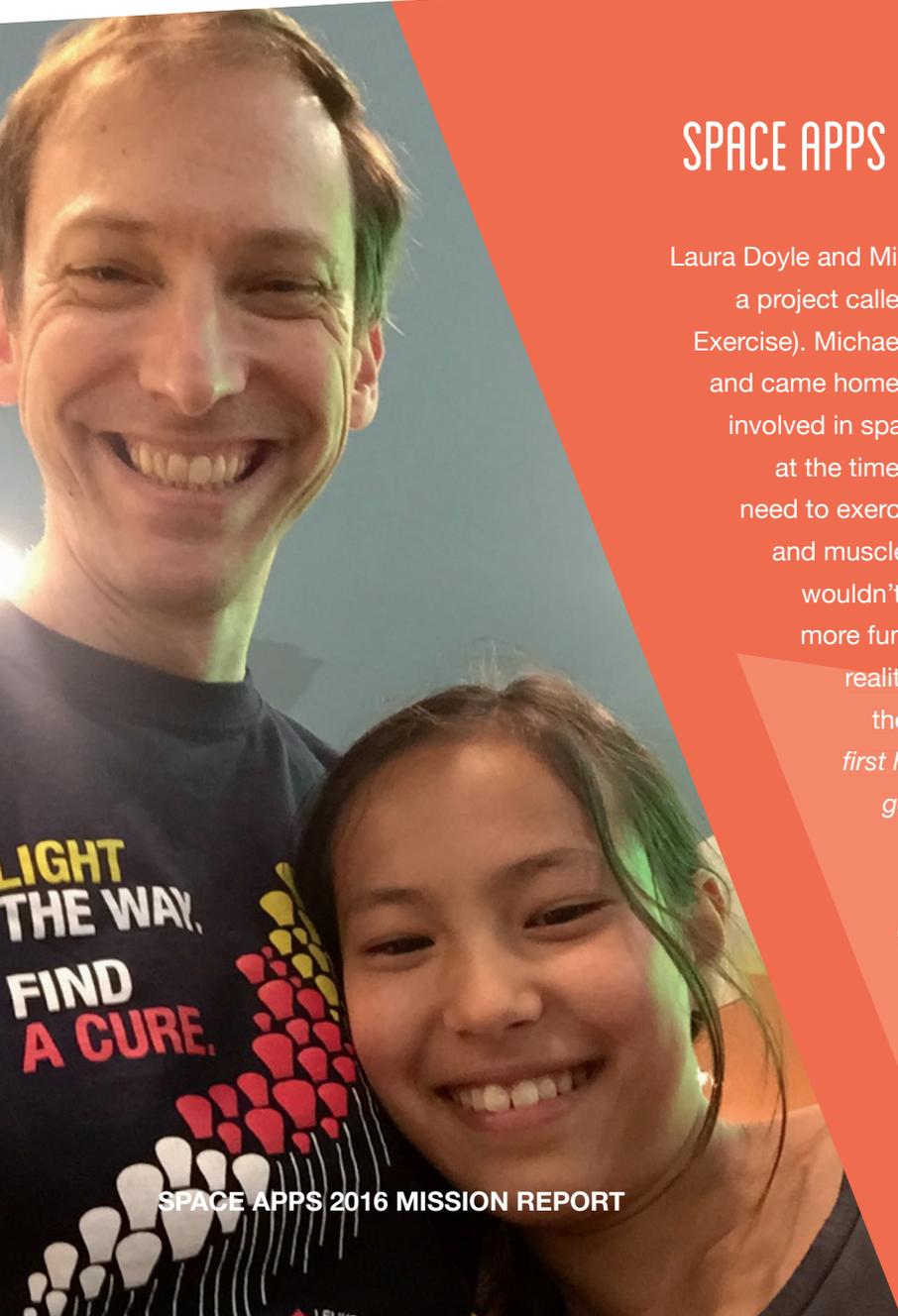
SPACE APPS NYC - FATHER / DAUGHTER HACK

Laura Doyle and Michael Doyle, a daughter and dad team, created a project called ISSIE (International Space Station Interesting Exercise). Michael attended the Space Apps hackathon last year and came home full of excitement about how everyone can get involved in space exploration. Laura, who was eight years old at the time, listened to the challenges, which included the need to exercise two hours a day just to stay safe from bone and muscle loss. Laura thought that sounded tedious and wouldn't it be great if we could make that exercise time more fun! Their goal is to deploy a library of augmented reality games for use on the Microsoft Hololens and the exercise equipment on ISS. *"This was Laura's first hackathon so she was pretty excited. She loved getting to work on her project, having others join in and staying up late. It was fun to build our team, to see people excited by what we were doing. It was very intense, too, once we started hacking. There was so much we wanted to do, but we had to keep our eyes on what was achievable."* **Michael Doyle**
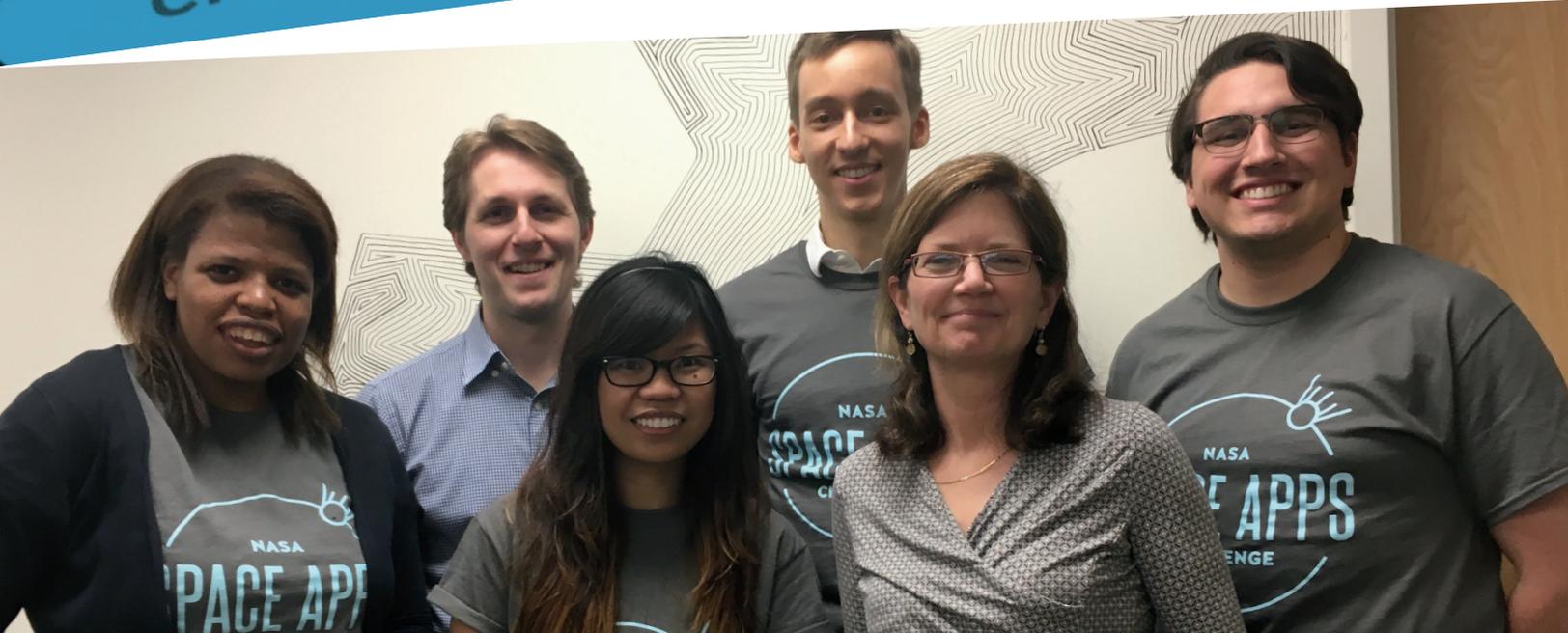
SPACE APPS WEEKEND

Space Apps Vienna: From Displacement to Belonging

"We hadn't heard about this before and haven't really known NASA." **Akbar Muratov** and **Tawab Baran**, both refugees who recently re-settled in Austria said. They were unsure of what to expect when they signed up to participate in Space Apps Vienna. *"It was difficult to understand the whole concept and challenges, but we had a meeting before the event where it got explained."* They couldn't believe how much they were able to accomplish over the course of Space Apps weekend. *"We have never thought we could help develop a concept for an app about creating a biosphere and that for a NASA Challenge. This sounds so crazy!"* Rest assured Muratov and Baran will be confident heading into next year. Their goal for next year? *"Getting ready to win the next Space Apps Challenge, of course!"*

An active and expanding global network allows the initiative to grow and evolve year after year. Throughout the course of the weekend, more than **35 sites connected virtually** with each other to share what they were working on and help participants feel part of something larger than their city alone. In the Philippines, multiple cities collaborated with each other from Dagupan to La Union to Mandaluyong, creating national ties. Regional and international calls were also organized and held between sites throughout the weekend. Hosts from Tunisia, South Africa, Nigeria, and Senegal checked in with each other and shared what they were working on. Administrators from NASA at the mainstage event in Pasadena event kicked off the Rome event via Skype and talked with engineers and rocket scientists from CONAE, the Argentine space agency, who participated in an event in Buenos Aires. The team from CONAE, energized by the call, immediately started planning what datasets they could contribute next year and how to expand the event to more cities throughout their country. The team behind that event is actively planning for Space Apps Next Gen in October, which will engage secondary school students in Buenos Aires.

"Personally, the greatest thing was seeing most everyone come to the event alone and then clustering into groups to work together." **Chase Lanier**, *Space Apps Augusta Lead.*

Virtual teams formed among participants across international sites. Local hosts created and tailored their events to their local community, and the connection to NASA and the global community was important to participants and hosts alike. NASA virtually

supported events around the world throughout the weekend and had representation at 11 events in-person as well.

In addition to attending events or participating virtually, people follow and participate through social media, which reached **25 million people** over the course of the weekend. Using the hashtag #SpaceApps, the global community participated in a weekend-long tweet-a-thon sharing stories about their hackathon experience, the importance of open data, and the presence of women in data at their events.

A storytelling booth was set up at the mainstage event in Pasadena to capture stories of participants, which were shared globally. Interviews were captured in Pasadena and in New York City from folks including: NASA CIO Renee Wynn, NASA CTO-IT Deborah Diaz, NASA astronaut Doug Wheelock, industry influencers like Sandy Carter, General Manager at IBM and Kaitlyn Thaney, Director of Science at Mozilla, as well as, participants such as stay-at-home mom, Madina, who participated in her first hackathon and nine-year old, Presidential Fitness Award Winner, Laura, who used the weekend to tackle the challenge of exercise in outer space.

"In my country, people usually think of space exploration as something out of our reach. I loved it when people were saying: "When we create a colony on Mars", or "When we start mining asteroids." **Zuhair AlSader**, *Space Apps Nablus Lead.*

At Space Apps Irvine, the team used Facebook Live to feature Chelsea, a first time hacker, who created a website for kids and adults to learn about space. In addition to social media, **more than 100 stories were published and broadcast about Space Apps 2016** in a variety of media outlets, including ABC News in Honolulu, BBC World Radio News, Fast Company, and The Planetary Society. Space Apps strives to create an environment where everyone can develop new skills. Sharing the stories of participants and engaging more people is part of that mission.

"We are constantly amazed by the changes in our participants when they finish the event. Even if they do not win, we have seen them change, be more sure and assertive, and we see them leave as different people." **Maria Zaghi**, *Space Apps Guatemala Lead*

NASA Presence at Global Events

▶ White House Chief Technology Officer **Megan Smith** made a guest appearance in Arlington, as well as **Dr. Cady Coleman**, NASA Astronaut.

▶ NASA's Chief Information Officer **Renee Wynn**, Chief Technology Officer for IT **Deborah Dia**z, Astronaut **Doug Wheelock**, Open Innovation Program Manager **Beth Beck**, and Communications Manager **Eldora Valentine** brought their experiences in science and technology to the Women in Data Bootcamp, and Pasadena mainstage event.

▶ **Dave Kelldorf**, NASA Johnson Space Center Chief Technology Officer for IT, served as a judge at Space Apps Round Rock.

▶ NASA Chief Scientist **Dr. Ellen Stofan** turned out in Paris along with the agency Chief Technology Officer **David Miller** and the chief of Space Technology, **Steve Jurczyk**. **Dr. Stofan** also delivered a video message for Space Apps Cairo and Space Apps Bangladesh.

▶ Other NASA teammates participated and showed support at events in New York, Boston, and Washington DC.

▶ Space Apps engaged other federal agencies and governmental groups around the world in addition to NASA.

MORE THAN A HACKATHON

Space Apps Quito:

An Earthquake Won't Stop Us

"Space Apps Challenge is an event that motivates people to get involved in global problem solving. Space Apps Quito Lead, **Roberto Vallejo**, who rallied his community for Space Apps a few weeks after a 7.8 earthquake hit the coast of Ecuador forcing them to postpone their originally scheduled event. In the wake of the tragedy, Vallejo formed collaborations with a number of local organizations to support Space Apps Quito. *"The most challenging issue was to bring together support of private and public institutions due to an uneasy political environment, to obtain resources to build the event in a hard economic situation we are living in Ecuador and getting people together after a natural disaster."* The group added additional challenge statements tackling some of the disaster relief predicaments faced by the community.

Data Bootcamp Spotlight

"At Data Bootcamp, I got to work with light up circuits with blink blink, trekked to Mars and Vesta with JPL, and learned basic soldering with Mind Makers...NASA's Data Bootcamp and Space Apps Challenge is a place where diverse minds come together to learn and solve challenges. It was empowering and inspiring to see people using data to create solutions for space and earth!" **Christine Phu**, *25 years old Phoenix, Arizona, a 2016 Datanaut.*

First piloted at the 2015 mainstage event in New York City, the Women in Data Bootcamp was designed to broaden the base of hackathon participants and bring an even greater diversity of skills and perspectives—particularly from women and girls—to address challenges on Earth and in space. Data Bootcamp provides introductions to coding, making, data set retrieval and storytelling with technology. It signals to women that a hackathon can be a welcome space where unique perspectives and abilities are not just needed but essential. Data Bootcamp is open to anyone looking to get a head start on Space Apps weekend, and participants are encouraged to collaborate with others to form project teams based on shared interests, complementary skills, and new learnings from the Bootcamp. This year, **54 cities** around the world held Data Bootcamps—including Cairo, Kirovograd, Guatemala, Sydney, and Rosario—reaching **more than 5300 participants worldwide**.

"It was great to see the excitement created for the girls who participated. I believe it will make a difference in the future in how they perceive and engage in technology." **Bill Shaw**, *Organizer, Space Apps Tampa*

At the mainstage event in Pasadena, second-time Space Apps organizer, Joe Brisbois, a leader in the local tech community, hosted the Women in Data Bootcamp on April 22 with **over 140 participants**. Kimberly Bryant of Black Girls Code spoke about the next generation of coders and emphasized the importance of getting girls interested in tech early. Dr. Anita Sengupta of NASA's Jet Propulsion Laboratory shared a behind-the-scenes look at how she and a team of NASA engineers successfully landed the Mars Curiosity Rover. These women provide important examples of the impact women are making on technology and data science.
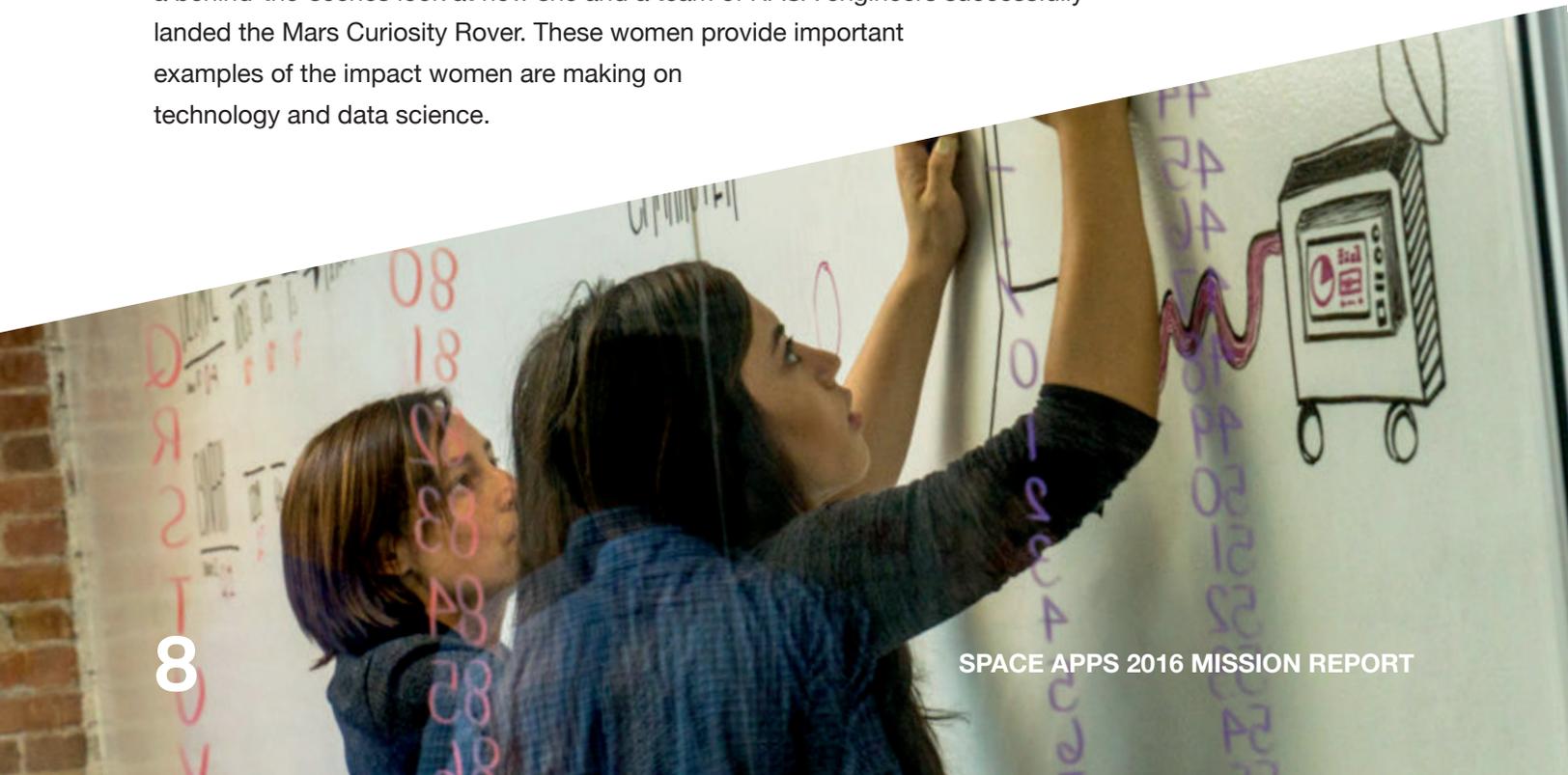
NASA created the speaking series "Tech Hacks, Life Hacks" in which a curated group of women shared stories that demonstrate creative solutions to tough challenges. In Pasadena, Intel Fellow Amber Huffman discussed her model concept of "competence, confidence, and perseverance" for achieving audacious goals. Alex Tosti, CEO and co- founder of blink blink, described how she hacked a camera rig to help her better display her prototypes and grow her startup. Creative scientist Dr. Kate Stone shared her personal story of hacking cultural perceptions. Speakers also included Emily Lakdawalla, Senior Editor of The Planetary Society, Nicole Messier, co-founder of blink blink, and Kiki Wolfkill, Studio Head of Halo transmedia and entertainment at 343 Industries. Lakdawalla shared how being open to learning and trying new things, including coding, had helped her throughout her career.

Ten Stardust Stations were conceived of and hosted by community leaders, designers, engineers, developers, and startups who represent some of the most interesting technology companies in the world. They demonstrated applications of data, simple hardware projects, and taught high level data concepts. Participants lined up for one-on-one sessions to learn how to solder with Mind Makers Michelle Easter, who brought her team of "rock star engineers" including NASA JPL's Bobak Ferdowsi and Isis Anchallee the software engineer who started the #iLookLikeAnEngineer movement. Creative minds from Microsoft, Novalia, Socrata, and Oppeos rolled up their sleeves and worked alongside participants, forging new bonds, and showing that anyone with the drive to seek out resources and a passion for Earth and space has a place at Space Apps.

"A highlight of Bootcamp consisted of a participant who is a mother in her 50s. She said she had visited NASA Space Apps Challenge NYC last year but was afraid to participate due to limited hacking experience. However, through the Bootcamp she felt she had gained some useful knowledge and was glad to have interacted with others who shared similar fears. This experience gave her a little more confidence to help her participate in this year's hackathon, have fun, learn, and submit a solution." **Robert Carlsen**, *Space Apps NYC*

PROJECT ACCELERATION SUPPORT

Space Apps Waterloo: Space is now Trending

"I've been thinking for a while now about how I could bring the Waterloo space community together and this just seemed to be a perfect idea." 2016 was **James Slifierz** first year as an organizer, but he certainly was no stranger to Space Apps. He participated in Space Apps Toronto in 2014 after finding out about the event on Twitter. His team, SkyWatch, went on to win the global award for Best Use of Data. Slifierz and his team turned their Space Apps project into his current company, and therefore his decision to host in Waterloo was a nice progression of his Space Apps story. Space Apps Waterloo went on to be a marquee Space Apps 2016 event. Highlights included a keynote delivered by the Vice President of Space Exploration of a Canadian space company, an appearance by the Mayor, and a visit from NASA's Stacey Brooks. Slifierz' parents even came out to support and barbecue for participants. *"At the end of the day, everyone's support was the best part. From sponsors to hosts to volunteers to mentors to judges -- it all came together beautifully."*

Following the hackathon weekend, motivated hosts can use the Space Apps Project Accelerator framework to continue to support their community. NASA created the Space Apps Project Accelerator Toolkit in 2015 as a resource for hosts looking to offer acceleration support to teams who want to take their hacks beyond the hackathon. Several sites around the world have used the Toolkit to date.

Some examples of sites undertaking efforts to accelerate Space Apps projects include:

▸ **Waterloo:** Space Apps Waterloo Lead, **James Slifierz** announced the launch of MaxQ a space-industry focused accelerator at Space Apps Waterloo, where 75 percent of hackers expressed interest in applying.

▸ **Silicon Valley:** The Space Apps Silicon Valley Lead and mentor to a broad network of sites throughout Central and Eastern Europe, **Irena Chaushevska** applied the toolkit framework to develop a project accelerator. She is looking to recruit project teams from Space Apps Silicon Valley and her broader network of sites.

▸ **Guatemala:** Later this year, Space Apps Guatemala Lead, **Maria Zaghi**, plans to launch a project accelerator she'll run out of a dedicated floor at Universidad de San Carlos, Guatemala's oldest state university. Zaghi will open up the project accelerator to all Space Apps Guatemala project teams past and present. Technical and business mentorships will be available to teams in the Guatemala project accelerator.

GLOBAL AWARDS

Grassroots Get Out The Vote - People's Choice

People's Choice Award is a highly competitive social process. Three sites - Chittagong, Skopje, and Kiev – launched successful get-out-the-vote campaigns within their communities.

The effort to garner support for Martian Oasis, the People's Choice Award nominee from Chittagong catalyzed support from across all of Bangladesh. The Martian Oasis team enlisted national influencers to support such as the State Minister of Information & Communication Technology in Bangladesh and on the ground were able to gain votes from 57 different college campuses around the country.

In Skopje, organizers called on support from a variety of channels to spread the word to vote for Team Avis. The Skopje Leads rallied support by activating the vibrant startup community in Central and Eastern Europe through their global accelerator's dedicated social media following and convinced the largest mall and the largest telecom provider to spread the word as well. Team Avis also did numerous TV and radio spots to promote their project, including one interview on a notable international television network.

In Kiev, the Mars Hopper team took a local, grassroots approach to get votes. The organizing team called on family, friends, coworkers, and anyone they could reach to get votes. They also spread the word through news stories produced by local media who were on hand at the event. *"We pushed hard and used all available social media power to support our team," said Kiev Lead* **Andrey Begunov**.

NASA verified over 50,000 votes and named Mars Hopper as the global winner. *"I have to say that NASA is a magic brand [and] well recognized everywhere and this helped a lot,"* **Begunov** *added.*

In addition to People's Choice, NASA recognizes a handful of outstanding projects through the Space Apps Global Awards, with stiff competition from hundreds of solutions nominated by local judging teams around the world. Each Space Apps location nominated two projects for global award judging. Each site also selected a People's Choice Award nominee. Teams receiving global nominations submitted 30-second videos through

the website to tell the judges about the story and team behind their projects. Challenge owners and subject matter experts at NASA narrowed the field from **322 global nominations to 25 finalists**, as well as 25 finalists for People's Choice public vote. Five project teams receive recognition in the following categories: Best Use of Hardware, Best Mission Concept, Most Inspirational, Best Use of Data, and Galactic Impact. These five teams, as well as the People's Choice winning team are invited to attend an upcoming rocket launch with the NASA team.

As evidence of progress from the intentional focus on Women in Data at Space Apps Data Bootcamps and hackathon weekend events, more than half of the 2016 Top 25 finalists had women on the teams or were women-led – including four of the five Global Award winning teams. NASA judges found that projects with a mix of men and women tend to be more interesting, less linear, and offer a social or humanitarian component to the solution. These projects rise to the top – listen up, future teams!

GLOBAL AWARD WINNERS

⬦ BEST USE OF DATA

Winning team: **Scintilla**
Location: **Space Apps Pasadena**
Challenge: **Aircheck**
Team: **Chelsea Graf, Chris Del Guercio, Eric Gustafson, Konrad Ludwig, Kyle Spitznagel**

An application that gives users a real-time air quality score for any location on Earth. Scintilla combines human sentiment data and local air quality measures from multiple sources.

Five friends from high school had been talking about participating in a hackathon together when they heard about Space Apps from the local organizer and decided this would be the one, with the goal in mind to have fun and create something cool.

The team decided their resources and skillsets were best suited to tackle the Aircheck challenge, focusing on the information gap between air quality measures and human ailments. They wrestled with scattered data throughout the weekend and managed to deliver Scintilla, which makes air quality data available to those who need it most. The team plans to continue work on the project and is already working with partners to make improvements.

🛡 MOST INSPIRATIONAL

Winning team: **Kid On The Moon**
Location: **Space Apps Toronto**
Challenge: **Book it to the Moon**
Team: **Tanya Oleksuik, Huanning Wang, Allard Schipper, Nippun Goyal, Katrina Shiu, James Chiu, Sophia He, Mohammad Zubayer**

An interactive app that inspires children four to eight years old and their families to become passionate about space travel through self-guided exploration of the moon both on and offline.

Space Apps 2015 was Tanya's first hackathon and she wasn't sure what to expect, but was "relieved to find a very supportive, friendly, and encouraging atmosphere. She met people from all different backgrounds, with a diverse range of skill types and levels, all ready to work together." She came into Space Apps 2016 knowing she wanted to take on the Book it to the Moon Challenge, but knew she couldn't do it alone. She found her team at the event, all sharing a passion to create a project that would inspire the next generation of space explorers.

The Kid on The Moon team made quick decisions together as a team and worked to make adjustments to their plans and move forward when a team member became ill on the second day. After Space Apps, the team plans to continue working on their easy to play with space exploration app, and demoed the app at a large science festival, receiving lots of positive feedback.

🛡 BEST USE OF HARDWARE

Winning team: **Canaria**
Location: **Space Apps London**
Challenge: **Rock-IT Space Fashion and Design**
Team Members: **Rob Finean, James Lynn, Alex Moss**

A patch and earpiece that monitors the wearer's heart rate, blood oxygen, and atmospheric CO2 levels to keep astronauts safe on earth and in space.

The Canaria team formed spontaneously between three strangers at Space Apps London. One team member, Alex, pitched an idea for a technology to solve the issue of detecting pockets of CO2 in spacecrafts and thought the ear could be a good anchoring point. James and Rob liked her pitch and the Canaria team formed over coffee.

The team got to work and realized counter-intuitively that it was easier to create an earpiece system that was able to monitor blood oxygen and heart rates as well as a CO_2 detector. The team envisions Canaria as a device that could be useful as a monitoring system for both astronauts in space and rescue missions or hospitals on Earth. They will continue developing the technology and since Space Apps have launched as an Ltd company and gained "patent pending" status in the United States.

GALACTIC IMPACT

Winning team: **L.I.V.E. Glacier (Ice Cream Team)**
Location: **Space Apps Rome**
Challenge: **Earth Live**
Team Members: **Fabiana Milza, Roberta Ravanelli, Paola Belingheri, Gabriele Mamoli, Martina Di Rita, Marco Di Tullio, Andrea Nascetti**

A web tool providing near real-time visualization of glacier surface velocity fields and an app based on the web tool for sustainable tourism. The app helps understand and demonstrate the impact of climate change on glaciers.

The Ice Cream team met at Space Apps Rome and formed a dynamic crew of men and women sharing an interest in combating climate change. The team developed a glacier visualization tool drawing on radar images adding environmental variables as well as an app for people to see impacts of climate change on glaciers. They hope to promote sustainable tourism to those areas with their project. The team is currently working on fundraising to complete the project and get it out into the world.

BEST MISSION CONCEPT

Winning Team: **Fractalnet**
Location: **Space Apps Greensboro**
Challenge: **Rock-IT Space Fashion and Design**
Team Members: **Tony Vaughn, Andrew Denio, Joe Greene**

A data glove and a network of wireless devices that provide communications in a subterranean environment.

The Fractalnet team is composed of three hardware enthusiasts and friends from the Fayetteville, NC maker community. Their hacking wasn't limited just to their project. Two team members had a conflicting commitment to exhibit at local Maker Faire on the same weekend as Space Apps and came up with the

creative solution to build their project remotely as part of their exhibit. The Fractalnet team reconvened at Space Apps Greensboro on Sunday to add final touches and deliver an award-winning pitch.

The Fractalnet team pushed the limits of their hardware and programming skills to complete the project in just 48 hours. They're excited about its potential applications both on Earth and beyond.

⬡ PEOPLE'S CHOICE

Winning team: **Mars Hopper**
Location: **Space Apps Kiev**
Challenge: **Jet Set Mars**
Project Team: **Pavlo Pravdyukov, Viacheslav Osaulenko, Oleksandr Butkaliuk, Andrii Muzychenko, Ilya Rubinsky, Nikolay Denisenko, Sofia Butkaliuk**

A concept for a plane to the investigate the Mars poles and its surroundings using CO2 to create jet thrust.

All successful Space Apps projects require creative thinking and imagination. The idea to use Mars dry ice to power a space vehicle came from 11-year old Sofia, who participated in Space Apps Kiev with her father. The Mars Hopper team rallied behind Sofia's idea and came up with the solution to build a plane that used dry ice to create jet thrust.

They divided the project into three tasks: virtual modeling, physical calculation, and real life model demonstration and got to work. They ran into a challenge working with dry ice at high pressure, but ultimately managed to complete the project without causing any explosions. The Mars Hopper team is continuing to work on the project by bringing in experts and is trying to cooperate with the National Space Agency of Ukraine.

SPECIAL THANKS

Special thanks to NASA's Deborah Diaz, Space Apps Champion, and to all the Space Apps hosts, who are the engine that keeps Space Apps moving forward!!

MISSION CATEGORY CHAMPIONS

Aeronautics: Tony Springer
Earth: Dr. Shobhana Gupta
International Space Station: Sam Scimemi
Journey To Mars: Doug Craig
Solar System and Beyond: Dr. Michelle Thaller
Space Technology: Chris Baker and Jay Falker

CHALLENGE OWNERS

Salim Ansari/European Space Agency
Beth Beck/NASA
Jeannine Bennecib/European Space Agency
Stacey Brooks/NASA
Caley Burke/NASA
Matthew Cechini/NASA
Lin Chambers/NASA
Pamela Clark/NASA
Mike Conroy/NASA
Jason Duley/NASA
Dr. Shobhana Gupta/NASA
Jason Kessler/NASA
Erik Kuulkers//European Space Agency
Thomas Jordan/NASA
Ryan Kobrick/Space Florida
John Koelling/NASA
Emily Law/NASA
Ashutosh Limaye/NASA
Elizabeth MacDonald/NASA
David Richwine/NASA
Cosmin Vrinceanu/European Space Agency
Kevin Ward/NASA
Liz Ward/NASA
Kristen Weaver/NASA
James Windsor/European Space Agency
Charles Thompson/NASA

NASA GLOBAL JUDGES

Dr. Gale Allen, Deputy Chief Scientist
Deborah Diaz, Chief Technology Officer – IT
Lawrence Friedl, Director of Applied Sciences, Science Mission Directorate
Jim Reuter, Deputy Associate Administrator for Programs, Space Technology Mission Directorate
Dawn Schaible, Deputy Chief Engineer
Greg Williams, Deputy Associate Administrator for Policy and Plans, Human Exploration and Operations Mission Directorate

NASA LEADERSHIP, STAFF, AND TEAM MEMBERS DEPLOYED TO SPACE APPS EVENTS:

Pasadena mainstage: Renee Wynn, Doug Wheelock, Deborah Diaz, Eldora Valentine, Carrie Freeman, Elyssa Dole, Davar Ardalan, and Beth Beck
Buenos Aires: Katey Metzroth
Cairo: Blake Garcia
Cambridge: Justin Gosses
Cleveland, Rochester, Toronto, Waterloo: Stacey Brooks
Irvine: Deborah Diaz and Beth Beck
NYC: Dr. Shobhana Gupta and Nick Skytland
Orlando: John Sprague
Paris: Dr. Ellen Stofan, Dr. David Miller, Steve Jorczyk, Gib Kirkham, and Neal Newman
Roundrock: Dave Kelldorf and Yulan Lin
Silicon Valley: Jason Duly

SPACE APPS TEAM MEMBERS

NASA

Beth Beck/Office of the Chief Information Officer
Jason Duley/Office of the Chief Information Officer
Eldora Valentine/Office of the Chief Information Officer
Stacey Brooks/Space Technology Mission Directorate
Neil Newman/Office of International and Interagency Relations
Margaret Roberts/Office of General Counsel

VALADOR

Katey Metzroth/SecondMuse
Blake Garcia/SecondMuse
Elyssa Dole/SecondMuse
Carrie Freeman/SecondMuse
Davar Ardalan/SecondMuse
Ben Slavin/Chalk + Chisel
Nick Hudkins/Chalk + Chisel

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DESIGN

Phuse

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