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JANUARY 2023

US Ignite Annual Impact Report

MISSION

US Ignite collaborates with smart communities and research testbeds to drive high-impact solutions to their toughest challenges. Operating like a high-tech startup, our organization delivers timely results by applying technical expertise, stakeholder engagement, and targeted tools. US Ignite works tirelessly to ensure our programs are effective and reach the communities that need them the most.

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LETTER FROM CEO NICK MAYNARD

Ten years ago (plus a few months), we founded US Ignite. We were a small nonprofit born out of the White House in 2012, and our mission was to demonstrate the benefit of high-speed broadband in human terms; how it could improve education, transportation, local economies, and more.

In many ways our mission has not changed. We still help communities realize the advantages of connectivity. But as I look back at our work in 2022, we have significantly expanded our scope and extended our reach. We are working to ensure digital equity alongside broadband access, exploring how to use smart city data responsibly, monitoring environmental conditions to make communities safer and healthier, and driving wireless innovation at startups, with researchers, and in communities across the country.

We have added new services, new team members, and new partners.

Our Smart Bases program now includes a sensor network and data dashboard at Fort Benning alongside continued work at Marine Corps Air Station (MCAS) Miramar and Fort Carson. Our team is tracking data across all three sites to provide insights on critical issues such as weather risk and energy consumption.

In our US Ignite Communities program, we focused much of 2022 on helping our partners build trust with citizens and other local stakeholders. We leveraged new funding to connect the unconnected through Project OVERCOME, proving the positive social impact of broadband. We welcomed half a dozen new communities looking to build leadership capacity for smart cities work. And we continued to grow our small business training services with a spotlight on technology-based startups.

Through the Platforms for Advanced Wireless Research (PAWR) program, we built out a larger footprint of network infrastructure across four testbed locations. We also demonstrated the research value of the platforms in technology areas ranging from spectrum sharing to connected drones and beyond.

We have continued to expand our team and our expertise, becoming more dynamic as we add new people to the roster. Our skills and passions are diverse, but we share a commitment to the work and to the communities we serve.

As always, we owe a debt of gratitude to our partners across the ecosystem. We would not be celebrating a successful year – much less our tenth anniversary – without you. Thank you to those in government, industry, and academia who have been on this journey with us. There is so much more we can do together.

2022 HIGHLIGHTS

- The Smart Bases and Installations Program designed multiple dashboards and decision support tools.

- Project OVERCOME success stories proved the positive social impact of broadband connectivity.

- The Platforms for Advanced Wireless Research testbeds demonstrated spectrum sharing, connected drones, and more.

- New US Ignite communities are working on an array of projects- from smart city signage initiatives to strategic fiber buildout plans.

Meet Our Team

The US Ignite team works tirelessly to achieve success in ambitious, smart, and connected community efforts across the United States. Our team continues to welcome new members each year.

Palak Agarwal   **Hani Almasoud**   **Lizzette Arias**

Praveen Ashok   **Jonathan Beam**   **Kyle Compton**   **Aloizio Da Silva**   **Sayed Elham Zewari**

Lee Davenport   **Catherine Forrest**   **Ryan Guild**   **Nancy Jemison**   **Daniel Kawah**

Domenick Lasorsa   **Arnold Liyai**   **Mojdeh Mahdavi, Ph.D.**   **Nick Maynard, Ph.D.**   **Glenn Ricart, Ph.D.**

Mari Silbey   **Jigyasa Sharma**   **Bill Wallace**   **Eric Werner**

A Celebration

In 2022, US Ignite celebrated 10 years since it formed out of a White House initiative. Over the past decade our small, high-tech nonprofit, rapidly grew in member communities and staff. We expanded our set of programs and services to help ensure digital equity alongside broadband access and to explore the responsible use of smart city data while driving wireless innovation.

10 YEARS
7 Testbeds
50 Communities
Millions invested in innovation

Our Programs

US IGNITE COMMUNITIES

Close to 50 smart communities form the core of our network. We help community leaders prepare smart city initiatives to expedite the adoption of innovative practices.

PLATFORMS FOR ADVANCED WIRELESS RESEARCH (PAWR)

Four platforms make up our PAWR program. The sites offer large-scale wireless testbeds in a public-private partnership that drives innovation and boosts US economic competitiveness.

CHALLENGE COMPETITIONS AND STARTUP SUPPORT

Via our challenge competitions, we spark collaborations between communities and startups. We also connect them to the larger smart city ecosystem in pursuit of new growth opportunities.

SMART BASES

We work with DoD bases and installations to test and implement smart technology solutions that meet operational research needs. These projects bring together government, academia, and private sector experts.

SMART CITIES DATA

We offer unbiased support to municipal leaders so that they can leverage and capitalize on their datasets. Our data experts help communities accomplish everything from forming data policies to building custom dashboards.

Startup Support in SLC and Beyond…

Thanks to funding from the Economic Development Administration, US Ignite launched InnovateSLC, a new program in Salt Lake City to build up capacity among startups and small businesses that will fuel the growth of the smart city ecosystem. The three-year program includes a smart city accelerator for startups and a training series for small businesses.

SMART CITY ACCELERATOR WITH VENTURECAPITAL.ORG

US Ignite selected VentureCapital.Org, an expert accelerator, to develop and run a smart city accelerator program. Below we list the names and descriptions of the startups selected for the first cohort:

- **Kado** offers a management platform to connect universities and businesses to provide micro-internships and work opportunities for students.
- **Service Robotics & Technologies (SRT)** brings easy-to-use centralized control for building management.
- **Assemble Teams** offers an intelligent SAAS Platform that lets customers integrate and analyze their systems and align their resources.
- **Poly** helps organizations of all sizes and types manage and monitor engagement by streamlining engagement activities.
- **Powder Watts** builds smart roofs that can reduce heating costs, all while constantly monitoring the roof for leak-causing ice dams.

Startups presented at a live-pitch event attended by investors and city leaders.

These participants found tremendous value in networking with investors and community leaders. The culminating live-pitch event led to funding commitments and centralized exposure for the participants. VCO and US Ignite plan to accept applications for the next cohort in 2023.

SMALL BUSINESS TRAINING SERIES

Alongside the smart city accelerator, US Ignite delivered a hybrid training series for small businesses in Salt Lake City. The workshops gave small businesses the information and tools needed to pivot toward the smart city industry. Moreover, the participants had an opportunity to connect with US Ignite's network of community institutions - such as government agencies, libraries, universities, and museums. All online sessions were recorded and can be found on the US Ignite website:

- [Understanding Smart Cities and Smart Businesses](#): Overview of smart cities and the applications that small businesses can use to grow.
- [Pivoting Towards the Smart City Industry](#): Learn what businesses need to pivot and pitch the city on their smart solutions and services.
- [Using Data to Grow or Expand Your Business](#): Walkthrough of the many uses of data and how it can be used to expand a business and enter the smart city space.

NEXT STOP - WASHINGTON, DC!

US Ignite was awarded a $1.5 million grant from the U.S. Department of Commerce to build and run a similar program for technology-based organizations in Washington, DC and Northern Virginia. More details on how startups and small businesses can participate will be shared this year.

Platforms for Advanced Wireless Research

At the end of 2022, the Platforms for Advanced Wireless (PAWR) Project Office, run by US Ignite and Northeastern University, proudly announced that the U.S. National Science Foundation (NSF) awarded $2.8 million in new funding for the Project Office to continue its mission to accelerate wireless innovation. This NSF investment underscores the importance of the PAWR Program to research and development in areas like drone-based wireless systems, spectrum sharing, and open radio access networks (Open RAN).

Below are key demonstrations that exemplify the impact of the PAWR research platforms.

5G DRONE RESEARCH COLLABORATION FOR SMART AGRICULTURE

*Footage of grazing cattle streamed by a 5G-connected drone.*

AERPAW, one of the PAWR platforms, successfully demonstrated the uses of a custom 5G-connected drone for precision agriculture. In collaboration with North Carolina State University, the AERPAW team equipped a drone with a connected camera and local compute capacity so that it could be used to monitor cattle for information on grazing patterns in a remote field. The footage from the drone was streamed over a 5G connection enabled by an Ericsson base station and 5G NSA core. This demonstration and future advances will help drive smart agriculture by improving remote monitoring of fields, farms, and livestock.

INTELLIGENT SPECTRUM SHARING WITH ZYLYNIUM

Two PAWR assets were key in a successful demonstration of a new dynamic spectrum allocation system, Spectrum Exchange - the POWDER wireless testbed and the Colosseum network emulator. Created by startup Zylinium, Spectrum Exchange is a network service for scheduling spectrum use and allocating spectrum resources when multiple users want to connect at the same time over the same bands. The demonstration at POWDER used the live, over-the-air network of the testbed to show how 5G network users could be prioritized over IoT clients. The demonstration at Colosseum showed the ability for Spectrum Exchange to carve out space for priority altimeter use in potentially contested C-band frequencies.

ACCELERATING OPEN RADIO ACCESS NETWORKS (OPEN RAN)

Multiple PAWR platforms stepped up efforts to support testing and development of open radio access network (Open RAN) technologies. Both POWDER and COSMOS hosted proof-of-concept demonstrations organized by the O-RAN Alliance, and COSMOS was designated as an official Open Test and Integration Centre (OTIC) by the Alliance at the end of the year. POWDER developed an automated Open RAN testing environment to allow researchers to test near-real-time RAN Intelligent Controllers and their own network applications, also known as xApps.

POWDER developed an automated Open RAN testing environment
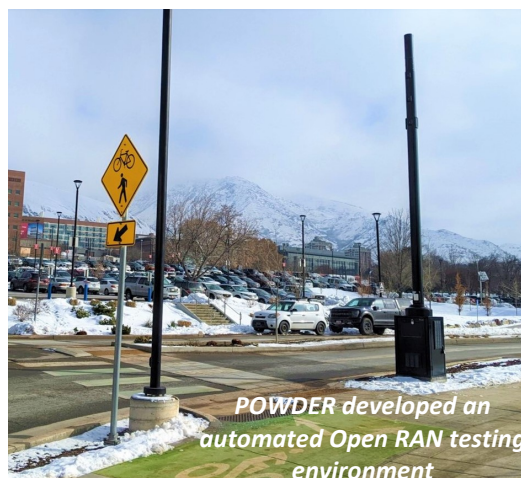
Smart Bases and Installations

US Ignite manages three Smart Base and Installation Programs – Fort Carson, Fort Benning, and MCAS Miramar. Within these, we promote the rapid deployment of dual-use, commercial technologies, which meet the needs of each installation. Below are highlights of high-impact use cases that are currently underway at the bases we serve.

ENERGY COMMUNICATIONS AT MCAS MIRAMAR

A commercial wireless solution was leveraged to remotely control distributed energy assets like these photovoltaic arrays.

Two years ago, US Ignite helped launch the 5G Living Lab (5GLL) at Marine Corps Air Station (MCAS) Miramar. The test environment is built on top of Verizon's 4G LTE/ 5G Ultra-Wideband network, which is used to power the 5GLL projects, a unique and novel approach for the Department of Defense. Among the noteworthy use cases at Miramar is our energy communications project. The project aimed to securely connect and remotely control energy assets scattered across the installation. US Ignite first restored a research-level energy management system. Then it established communications to the energy assets, which linked to a single operational interface. This offered a way for MCAS Miramar leaders to wirelessly control the station's energy resources.

WEATHER RISK MANAGEMENT AT FORT BENNING

Early in 2022, US Ignite announced a $3.8M contract from the U.S. Army Engineer and Development Center (ERDC) to design and deploy the Smart Community and Installation Dashboard at Fort Benning. One of the use cases of the program centers on weather risk management.

Fort Benning is a training installation located in the South, which can include weather conditions that contribute to soldiers experiencing heat injuries. The Smart Bases team, with extensive input and help from partners and vendors, developed a Weather Risk Management application to provide real-time recommendations to training safety officers when the risk of heat injury increases dramatically. By the end of 2022, US Ignite successfully deployed two micro-weather stations and a heat stress sensor to measure weather conditions directly on the training range.

US Ignite installed two micro weather stations and a heat stressor sensor at Fort Benning.
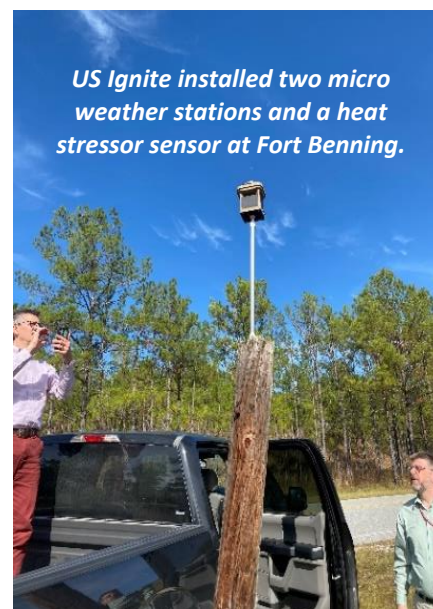
INCLEMENT WEATHER DECISION SUPPORT AT FORT CARSON

After successful completion of the Smart Transportation Testbed program at Fort Carson, ERDC awarded US Ignite a $1.7M contract to support the design and implementation of a new predictive model that offers inclement weather decision support to Fort Carson leaders. Throughout the year, the Smart Bases team has worked with project partners and vendors to design and develop an Inclement Weather Decision Support Tool that communicates real-time information and delivers risk assessments in a clear and visual manner. With this added support, Fort Carson leaders anticipate reducing transportation and public safety issues. US Ignite expects to operationalize the tool with stakeholders in early/mid-2023.

Maximizing Federal Funding Impact for Communities

Together with the John S. and James L. Knight Foundation, US Ignite identified seven new communities in 2022 with a unique blend of initiatives related to broadband adoption and smart city projects to join the US Ignite Communities network. The selected cities included:

- Charlotte, NC
- Detroit, MI
- Duluth, MN
- Long Beach, CA
- Miami-Dade County, FL
- Philadelphia, PA
- San José, CA

Thanks to a $214,000 investment from the Knight Foundation, these seven communities are crafting broadband expansion models and developing innovative smart city pilots in a robust peer-learning network of civic leaders managed by US Ignite.

Since the selection and announcement of the seven communities, US Ignite has worked with leaders from each community to identify and develop digitally transformative projects. The selected project topics demonstrate the seven communities' different needs and assets and range from smart city signage initiatives to strategic fiber buildout plans. All seven communities are leveraging US Ignite's expertise and network of partners to maximize the impact of federal dollars and ensure all residents can benefit from expanding connected community services.

Project OVERCOME

In 2022, US Ignite completed the ground-breaking Project OVERCOME initiative. The project selected communities to build and test rapid proof-of-concept networks for unserved and underserved homes across rural and urban communities. Thanks to a grant from the National Science Foundation (NSF Award #CNS-204448) and support from Schmidt Futures, the communities received funding to run pilots that improved our understanding of the strengths and weaknesses of novel broadband solutions.

Additionally, US Ignite and the OVERCOME communities administered a social impact survey to study the impact of the deployments in the community members' use, trust, and adoption of broadband. The most promising finding from the survey analysis was that Project OVERCOME had a significant effect on Internet use for employment and healthcare purposes in homes that received assistance navigating the Internet from trusted sources alongside access to a reliable broadband connection.

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SPOTLIGHT

San José, CA

In November 2022, the City of San José welcomed city leaders, privacy experts, academics, and policy advocates for a workshop to explore the need for digital signage and examine its potential impact on public communication and privacy. Consistent and intentional signage can help gain residents' trust and understanding in smart city pilot projects, and help provide transparency around the use of any collected data.

The workshop, organized with US Ignite and Helpful Places, aimed to build alignment on how to address privacy concerns about technology in public spaces. After a day of engaging conversations and considerations, the group decided to create the California Smart City Signage working group to continue the discussion and explore future pilots and legislative avenues for broad statewide adoption.

Key for 2023

OPEN RAN ADVANCEMENTS

US Ignite is the proud co-chair of the National Spectrum Consortium's Open RAN advisory group. In the upcoming year, we will be working with government agencies and industry partners to accelerate the development and deployment of open radio access networks.

COMMERCIALIZED STARTUPS

After working with the winners of both the Virginia Cybersecurity Challenge and the West Lafayette Smart City Challenge on commercialization plans over the past year, we are excited to see implementations of their work in 2023.

ACTIONABLE RESOURCES FOR COMMUNITIES

Communities can look forward to new playbooks, white papers, and blog posts to support and showcase their work of advancing connectivity and smart city initiatives. There will be even more chances to network in person and online.
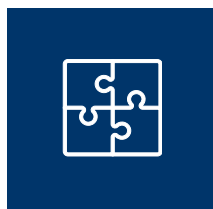
PAWR

PAWR platforms will collaborate with and extend their services to new industry partners in 2023, supporting efforts to test connected farm equipment, explore the capabilities of multi-drone convoys, study spectrum use and areas of conflict across a wide range of frequency bands, and much more.

Grateful for our Boards

We thank our Board of Directors and Advisory Board for their ongoing support and guidance.

BOARD OF DIRECTORS:

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Special Thanks and Well Wishes to Anna Gomez

We're incredibly thankful to Anna Gomez, who served on the US Ignite Advisory Board since 2021. The US Department of State's Bureau of Cyberspace and Digital Policy appointed Anna to lead the US preparations for the International Telecommunication Union World Radiocommunication Conference. US Ignite is fortunate to have benefitted from her significant experience in the telecommunications sector.