

# Lone Pine Paiute-Shoshone Reservation Virtual Lab



**Technology for Cultural Preservation,  
Education, and Economic Development**

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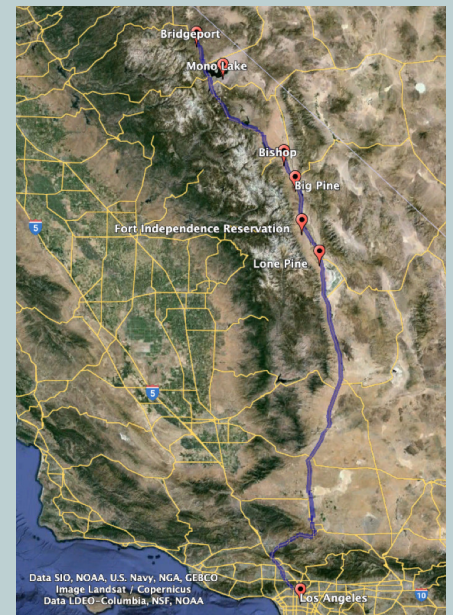


Loren Joseph at the LPPSR Virtual Lab

For Loren Joseph, a respected LPPSR Tribal Elder, the lab has been a journey back into the world of computers, reacquainting him with the basics and beyond. The ability to learn at his own pace, supported by mentors who guide him through challenges and introduce him to shortcuts, has reignited his passion for technology. This support system and the opportunity for hands-on learning have been transformative.

## Introduction & Program Overview

The digital landscape is rapidly evolving, presenting both challenges and opportunities for communities across the globe. In Payahuunadü (Owens Valley, California), nestled near majestic Tumanguya (Mount Whitney), is The **Lone Pine Paiute-Shoshone Reservation (LPPSR)**, a small yet vibrant Tribal community that has embarked on a remarkable journey towards digital inclusion and empowerment. This white paper delves into the LPPSR Virtual Lab's initiatives, which are part of the suite of solutions known as the Intel® Connected Education Kits. It highlights the community's progress, the challenges faced in rural and emerging markets, and the vision for a digitally inclusive future.



Tribes near LPPSR

## Community Perspective

Loren's engagement with the Virtual Lab exemplifies the broader community's aspirations to leverage technology, enabling him to also work remotely and seek assistance when needed. His engagement with digital skills also extends into his role as a motivational speaker and storyteller, sharing life lessons with

**"If I can increase my digital skills, it will help me share my life's stories."**

-Loren Joseph, LPPSR Tribal Elder

youth across the country. The Virtual Lab has equipped him with the tools to digitize his stories, enhancing his presentations, and making his cultural and educational outreach more impactful. He aspires to utilize speech-to-text technologies to document his life's stories, further enriching the cultural heritage shared with future generations.

# The LPPSR Virtual Lab: Bridging the Digital Divide

Since 2020, the LPPSR has been on a mission to bridge the digital divide within its community, achieving significant milestones such as securing over \$2 million in grants, acquiring spectrum licenses, and launching a Private 4G LTE network. At the heart of these achievements lies a strategic collaboration with technology experts and nonprofits, including **NümuNetworks**, the **Nü Communications Alliance** (NüComm), and **Geeks Without Frontiers** (GWF), which have been instrumental in bringing the vision of the Virtual Lab to life. A pivotal moment in this journey was initiating a partnership between NüComm and the **N50 Project**, an initiative facilitated by GWF. This multi-stakeholder partnership introduced NüComm to Intel and other technology leaders. This collaboration is what led to the installation of the LPPSR Virtual Lab, equipped with Intel® Connected Education Kits.



LPPSR Virtual Lab Open House Event in Oct 2023



**Why the Lab?** The Indigenous Broadband Employment Accelerator Program (IBEAP) was developed by the Nü Communications Alliance (NüComm), a 501(c)(3) committed to enhancing digital connectivity and literacy across indigenous communities. NüComm, embodying a collaborative spirit and a shared vision for a digitally empowered future, identified and addressed the critical need for comprehensive digital skill sets within the LPPSR. This initiative underscores the essential nature of digital connectivity in supporting community's needs.

*The Virtual Lab, a central component of the IBEAP initiative, serves as more than just an educational space. It is a beacon of innovation where community members can partake in both foundational digital literacy classes and specialized technical certification training.*

The inception of this program and the establishment of the Virtual Lab reflect a deliberate strategy to transform community members from passive consumers of digital content into active creators, managers, and innovators within their digital infrastructure. By leveraging the strengths and vision of NüComm and partners, the Virtual Lab is poised to equip the community with the necessary tools and knowledge to navigate, contribute to, and thrive in the digital era.

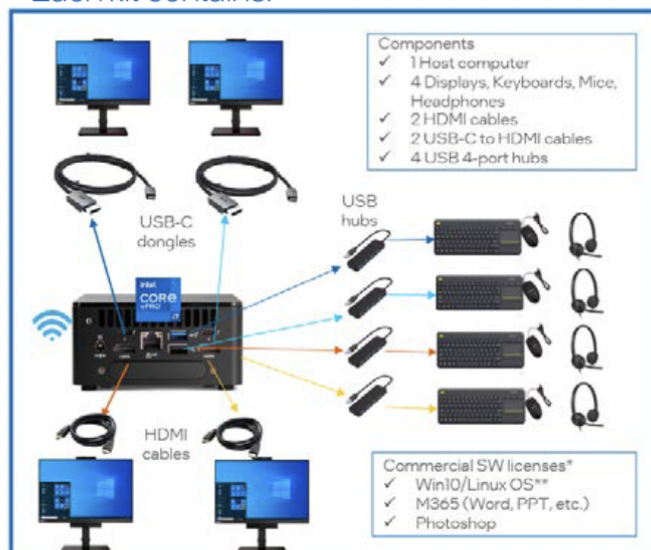


**What is the Lab?** The Virtual Lab, located on Main Street/Highway 395 at the south end of Lone Pine, is equipped with five Intel® Connected Education Kits. Each Kit contains a host computer capable of supporting up to 4 individual workstations with full-sized monitors, keyboards, mice, and headsets. By leveraging this setup, the Virtual Lab can host an array of educational programs simultaneously, from basic computer literacy to advanced coding classes, without the need for extensive physical infrastructure.

In addition to Intel, N50 brought in multiple partners for NüComm and LPPSR such as, the Barbara Bush Foundation and Northstar Digital Literacy, enabling the Virtual Lab to provide the community with an extensive range of digital literacy classes for free. Intel also donated volunteers, all engineers, to work one-on-one with learners virtually. Current digital skills lessons range from basic computer skills to advanced Microsoft 365 programs. Future IBEAP classes will be more specialized technical certification trainings for those looking to advance their careers in IT. The lab ultimately serves as a hub of learning and development.

**How It Works?** The Intel® Connected Education Kits introduce a solution that's been successfully implemented in Asia, leveraging the power of opensource distribution software managed on Ubuntu. This approach eliminates the need for ongoing license fees, making it a cost effective choice for educational institutions. A distinctive feature of the technology is its resource allocation system across four workstations, powered by a single Next Unit of Computing (NUC) host, eliminating the need for 4 separate desktop units. Full-sized peripherals are easily connected via USB hubs to offer a full PC experience for students. Unlike other solutions that depend on offsite servers or constant Internet access, this unique solution stands out by having all the computing resources on-site. This approach not only supports offline work capabilities but also ensures seamless operation in environments with limited connectivity.

#### Each kit contains:



- Host Computer (NUC/Other)
  - Core i7 processor
  - Ubuntu for Host OS
  - Intel-provided open-source SW
- Displays, Keyboard, Mice, Headsets
- HDMI cables, USB-C to HDMI adapters, USB hubs
- Commercial SW based on end user needs
  - Windows 10 OS or Linux OS
  - Will have minimum RAM/Storage requirements
  - Suitable for basic Internet browsing, video streaming, education and productivity applications

**Benefits.** Intel® Connected Education Kits offer several advantages, notably their compact design. Powering four workstations with just one small unit instead of four individual desktop units not only reduces space requirements and energy use but also enhances cost efficiency and simplifies IT management. This is particularly advantageous for Virtual Labs operating without onsite technical staff, making these kits a fitting choice for communities, educational institutions, and centers lacking local IT support.



**LPPSR Virtual Lab**

Furthermore, the system supports working offline, minimizes hardware expenses and offers a full PC experience. It enables efficient use of resources, boosts productivity, introduces operational flexibility, and supports open-source software management without the need for traditional licensing. Its scalability and the ease with which it can be installed or relocated add to its practicality for a wide range of settings.

## **Long-term Vision and Community Values**

The LPPSR community envisions a future where digital literacy and access to technology are universal, enabling its members to thrive in an increasingly digital world. This vision is about more than just technology; it's about sustaining the community's cultural heritage, promoting economic development, and ensuring the well-being of future generations. The potential of the Virtual Lab to serve as a catalyst for job creation, educational advancement, and cultural preservation aligns closely with the Tribe's values and long-term objectives.

In its commitment to improving overall community connectivity and engagement, the LPPSR is also in the process of expanding its permanent fiber-to-home broadband network. This initiative aims to serve as the primary internet source for all Tribal departments, ensuring affordable Internet access for every Tribal member. A crucial part of this endeavor is the ongoing effort to safeguard the LPPSR's digital sovereignty and enhance its cybersecurity measures, ensuring the community's digital assets and communications are protected.

## **Expected Outcome & Impact**

The primary goal of the Virtual Lab is to enhance digital literacy among the LPPSR's Tribal members. By elevating digital literacy, the Lab aims to significantly enhance the quality of life for the community in various respects. For instance, Tribal elders will gain the capability to access healthcare services through virtual appointments, enabling them to receive medical care without leaving their homes. Similarly, Tribal

members will have opportunities to engage in remote education, virtual job interviews, online job searches, and even participate in digital governance activities, such as casting votes electronically. An increase in digital literacy is expected to have a profound effect on the efficiency and effectiveness of government and Tribal administration. By adopting digital processes that were previously underutilized—like electronic signatures, digital document management, and online collaboration tools—the Tribe can streamline operations. This modernization will not only boost productivity but also accelerate the completion of projects, making the administrative functions more responsive and agile.



**LPPSR Digital Skills Orientation**

## Objectives

**Why this Community?** There are a combination of factors that highlighted the LPPSR's unique position to benefit from and maximize the impact of such a technological investment, including the community's notable digital divide, engagement in embracing technology, and the significant potential for impactful outcomes. Recognizing the community's efforts towards improving digital literacy and infrastructure, this donation can be easily viewed as a strategic investment to enhance education, healthcare, and economic development within the LPPSR. The community's proactive approach to virtual governance during the COVID-19 pandemic further highlighted its readiness and need for such technological support. This partnership between N50, Intel and the LPPSR aimed to demonstrate the transformative role of technology in rural and indigenous communities, serving as a scalable model for broader initiatives.

## Preliminary Impact Measurement

The implementation of the Virtual Lab has already begun to demonstrate tangible benefits for the LPPSR community. With the introduction of no-cost, in-person digital literacy classes, there has been a noticeable increase in both participation and enthusiasm among Tribal members. The invaluable assistance of local volunteers, serving as mentors, has significantly enhanced the effectiveness of these educational sessions, providing personalized support and guidance. Furthermore, the lab's provision of high-speed internet and state-of-the-art digital equipment has drastically improved digital access across the community. This initiative is not only bridging the digital divide but is also fostering an environment of continuous learning and adaptation, crucial for thriving in the digital age.

## Portability & Broader Implications

The concept of the Virtual Lab holds significant promise for extension beyond the LPPSR, with neighboring Paiute Tribes standing to gain considerable advantages. Introducing Virtual Labs across these communities could ensure access to essential digital resources, including devices, software, and

instructional classes, thus enhancing technological engagement and proficiency across the board. Such an initiative can bolster job security among Tribal members and fuel sustainable development and growth of Tribal projects.

Moreover, a range of local entities, including Tribal education centers, the Owens Valley Career Development Center (OVCDC), Tribal Employment Rights Ordinance (TERO), California Indian Manpower Consortium (CIMC), Inter Tribal Council of California (ITCC), as well as Cerro Coso Community College and local high schools with predominantly native student bodies, now stand to benefit. These institutions, many of which already offer a variety of training programs, can significantly expand their educational outreach and effectiveness through the adoption of Virtual Lab systems. By integrating virtual learning platforms, they can enhance their educational capacity, leading to increased engagement and participation within the community.

## Next Steps

The LPPSR Virtual Lab initiative is a testament to what can be achieved when you blend innovation, cultural tradition, and collective ambition. The Tribe embarked on this path with a clear direction, propelled by the vision of a sustainable future where digital literacy and certification programs flourish, and now the community has a model for success that other Tribes can follow.

**CHALLENGES**

- Initial technical setup issues
- Frequent manual software updates
- Financial sustainability: Internet and electricity costs
- Bureaucratic delays
- Lack of funding for on-site staff and support

We extend a call to action to other Tribes, organizations, and individuals in the region and beyond, who are driven by a similar mission—to build scalable, sustainable solutions that champion digital inclusivity. Tribes that are interested in leveraging the strength of partnerships such as N50, to deliver comprehensive computer lab experiences across Indigenous territories are encouraged to contact NüComm at [info@nucomm.org](mailto:info@nucomm.org).

NüComm has created a network that spans across multiple reservations and increases bargaining power, resource sharing, and the scalability of initiatives. Such alliances are crucial for the sustainability of digital skills and certification programs, and help ensure a forward path paved with lasting impact. We encourage communities near and far to engage and be part of this transformative journey. It's more than technology adoption; it's about weaving a future that recognizes and celebrates the resilience and innovation of Indigenous peoples. Let's unite in this endeavor, for in our collective action lies the power to inspire, uplift, and empower generations to come.

## About N50 Project



The N50 Project is the Geeks Without Frontiers led initiative that is focused on the next 50% of the planet that does not fully digitally participate. The N50 partners' primary focus is to launch projects for marginalized communities using best-practice playbooks for long-term delivery of ICT solutions. N50 is an open, inclusive ecosystem that is fueling transformation in some of the world's most challenging environments. Our live 'Digital Participation' projects in the field are designed to enable communities to access the education, health, social and financial benefits that flow from affordable and sustainable digital inclusion. To learn more about the N50 Project, visit: [www.n50project.org](http://www.n50project.org)

## About Geeks Without Frontiers



Geeks Without Frontiers (Geeks) is a platform for global impact. An award-winning 501(c)3 non-profit, Geeks' mission is to promote technology for a resilient world including bringing the benefits of broadband connectivity -health, education, poverty reduction, gender equality and the other UN Sustainable Development Goals (SDG's)- to the estimated 3 billion people who remain unconnected.

Geeks aspires to empower the unserved, including the forcibly displaced, creating Smart Communities and helping to catalyze positive global change. It does this by leveraging the benefits of exponential preparedness technologies as well as data, connectivity and other scalable solutions in a resilient, technologically neutral and sustainable manner; by the creation of innovative regulatory and business models designed to democratize and accelerate connectivity and through education and training, thought leadership, advocacy and public and private advisory support. To learn more about Geeks, visit [www.geekswf.org](http://www.geekswf.org)

## About Nü Communications Alliance



Nü Communications Alliance is dedicated to building Tribal Networks that are an asset for Tribal communities. We seek to increase access to Indigenous language and education programs, increase protection of sacred sites, strengthen environmental monitoring, community health, economic development, workforce development and improve the overall quality of life for Indigenous communities by improving broadband infrastructure across reservations, trust lands, and surrounding areas. Our mission is to support the goals of individual Tribes through collective bargaining, advocacy, workforce development, resource sharing and inter-tribal collaboration. To Learn more about Nü Communications Alliance, visit: <https://www.linkedin.com/company/nualliance/>.