Expanding Opportunities

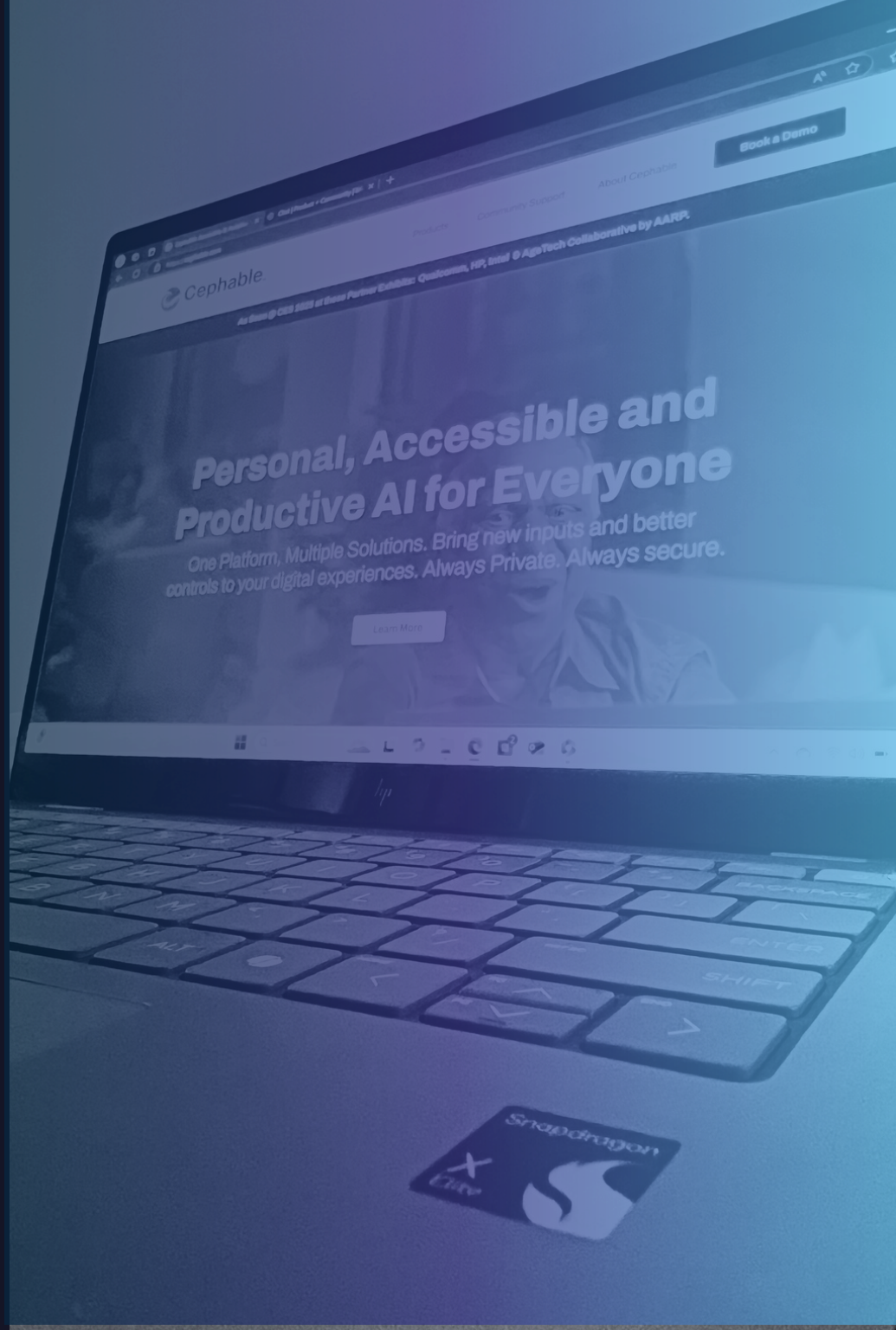
The Power of On-Device AI for Digital Success

This partnership between the Amputee Coalition, Cephable, and Qualcomm Incorporated, explores how adaptive digital tools boost productivity by providing secure personalized features on PCs in employment, education, and daily life.

Cephable™

Qualcomm

amputee coalition™



Executive Summary & Introduction

In the ever-evolving digital world, access to technology is more than a convenience—it's a bridge to opportunity in our professional, educational, and personal lives. This project collaboration, formed by the Amputee Coalition Workforce Development Program, Cephable, and Qualcomm Incorporated, centers around a shared commitment to utilize innovative technology to build greater digital independence, job readiness, and productivity for everyone. The white paper highlights the experiences of 40 adults living with limb loss and limb differences who integrated Cephable's software and on-device AI-powered PCs. Integrating secure on-device AI into employees' daily routines doesn't just lower barriers - it unlocks transformative opportunities in the workplace. By automating repetitive tasks, AI empowers workers to focus on creative problem-solving, leading to enhanced productivity and job satisfaction. On-device AI on PCs has showcased that data privacy and high-performance compute are achievable and embraced by all.

Findings at a Glance:

- **Boosts productivity and efficiency:** 65% of participants reported faster task completion within four weeks.
- **Reduces physical strain and fatigue:** 70% experienced increased comfort using Cephable's adaptive controls.
- **Enhances workplace readiness:** 79% of participants indicated they would continue using Cephable post-project, with 88% likely to recommend it to others.

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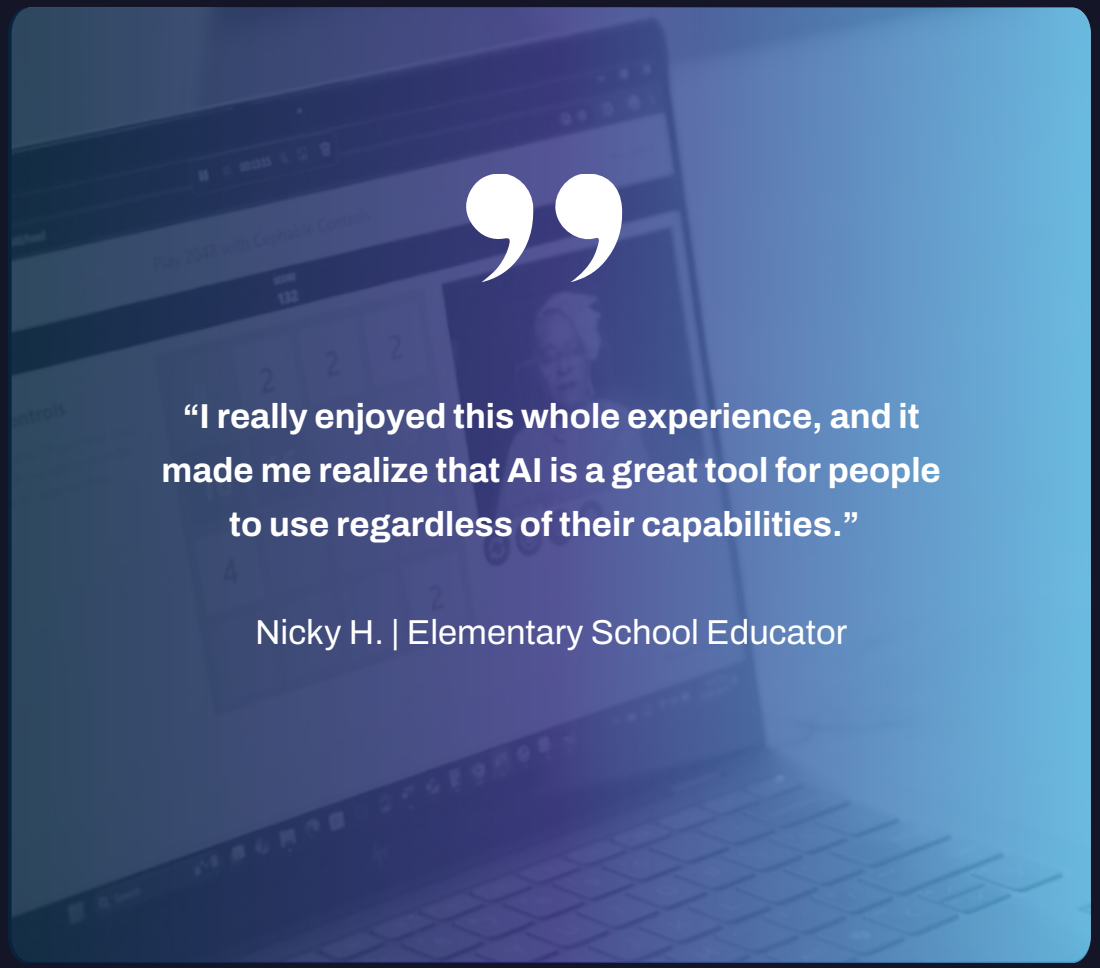


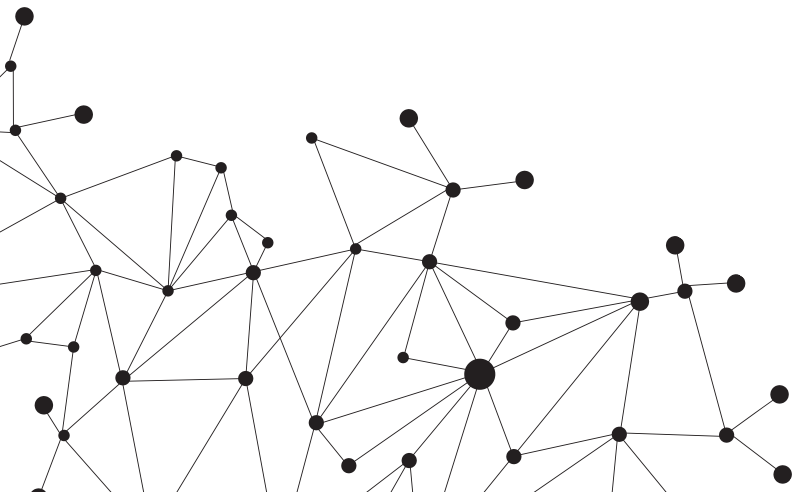
“I really enjoyed this whole experience, and it made me realize that AI is a great tool for people to use regardless of their capabilities.”

Nicky H. | Elementary School Educator

Disability is All of Us

Disability is a Shared Human Experience

Disability is shaped by context, emerging when inaccessible physical or digital environments create barriers to participation and connection. Disability can be understood as the space between a person's abilities and an inaccessible environment around them. Not all disabilities are visible or apparent.



Disability Examples

Present at Birth:

- Lifelong experience with disability
- Ex. Down syndrome, cerebral palsy

Acquired During the Lifetime:

- Aging, accident, or health conditions
- Ex. spinal cord Injury, arthritis

Time Spectrum of Disability

- **Permanent Disability: m**uscular dystrophy, autism

- **Temporary Disability:** broken arm or loss of voice from an illness

- **Situational Disability:** navigating a computer in direct sunlight or an accent while visiting a new region

One in four of today's 20-year-olds can expect to be out of work for at least a year because of a disabling condition before they reach the normal retirement age.

(Council for Disability Awareness, 2021)

Technology Everyday

What are Accessible & Assistive Technologies?

When people face barriers to their digital touchpoints, accessible and assistive technologies (AT) ensure access. These tools bridge the gap between individual abilities and the environments they interact with, enabling greater efficiency and ease of use. Most people who use AT rely on multiple solutions, making integration and collaboration essential. While these technologies are designed to support people with disabilities, their benefits extend far beyond—enhancing productivity, reducing effort, and streamlining workflows for everyone.

Digital Chores vs. Digital Ease

Just as disability is a shared experience, so is technology. Regardless of disability, we all share the experience with the often-unrecognized concept of “digital chores”. Tasks like managing files, navigating menus, writing emails, or sorting notifications. For those facing barriers accessing technology, these tasks can pose additional compounding challenges – especially on time, one of our most valuable resources.

AI has the power to change that. This project sought to not only provide more personalized digital independence but also to simplify workflows by automating tasks with AI-powered tools that adapt to us, making technology an ally rather than a barrier.

As Golden Krishna, who first coined the concept of “digital chores,” says in T*he Best Interface is No Interface*, the best technology integrates so seamlessly into our lives that it enables us to live more fully and purposefully.

AI Meets Adaptive Technology

Benefits of On-Device AI

Cephable's accessibility tools operate efficiently on the dedicated AI Neural Processing Unit (NPU) brought by the Snapdragon® X Elite platform, freeing up CPU and GPU, traditional computer resources, to ensure programs run smoothly and extend battery life.

On-Device AI & Privacy

NPU processing enhances performance and prioritizes user privacy by keeping data localized, reducing reliance on cloud-based systems. Cephable's LLMs are loaded on the NPU chip so no data is sent to the cloud.

Cephable's Technology

Replaces traditional inputs with on-device AI adaptive controls using voice, facial expressions, and movement. It allows individuals and teams to work more efficiently, reducing strain and creating a more flexible, intuitive digital experience.

Cephable's AI-driven Tools

Customizable inputs for diverse abilities- bringing personalized control to everyone through:

- Head Motion
- Voice Controls
- Face Expressions
- Virtual Buttons
- Physical Switches
- Motion Control

From Concept to Connection

Program Development & Methodologies

Each participant was given a new AI PC laptop powered by the Snapdragon® X Elite platform chip. We wanted to see how we could level up workforce readiness and productivity with the use of this new hardware paired with Cephable's innovative software. Participants integrated their new digital setups into daily routines, sharing insights and experiences as they worked and played.

Recruitment

40 participants were selected from within the Amputee Coalition's Workforce Development program.

Selected Individuals

- Focused on improving their workforce readiness goals in school, applying for jobs, or within their current roles.
- Use computers frequently
- Found exploring alternative inputs valuable
- Had a curiosity for learning and exploring

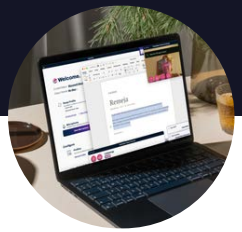
Onboarding & Training

- In-depth digital entrance survey: established baseline demographic data & identified current tech challenges, goals, and expectations.
- Multi-modal onboarding & training: written program briefings plus a structured virtual onboarding session

Active Use / Feedback & Support

- Integrated the use of new technologies into their daily workflows for 4 weeks.
- Weekly check-ins completed via digital surveys capturing insights on usability and impact
- Multiple support channels: email, Discord chat, virtual office hours with Cephable team members
- A smaller subset of participants provided 1-1 virtual interviews to share deeper stories and personal experiences
- Methodology blended qualitative and quantitative data collection

Before the Program: Participant Goals



Progress Towards Meaningful Employment

I would love to find a remote position with a local company.

Charles C.

Discovering New Tools

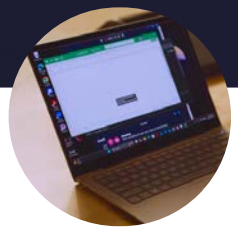
I don't know what is out there to use. So, learning to use new programs and tools would be great.

Martina S.

Efficiency & Productivity

I hope to be able to work smarter, not harder.

Remeja M.



Pain & Overuse Prevention

I want to learn all the new tools and tricks to make life easier and hopefully prevent pain.

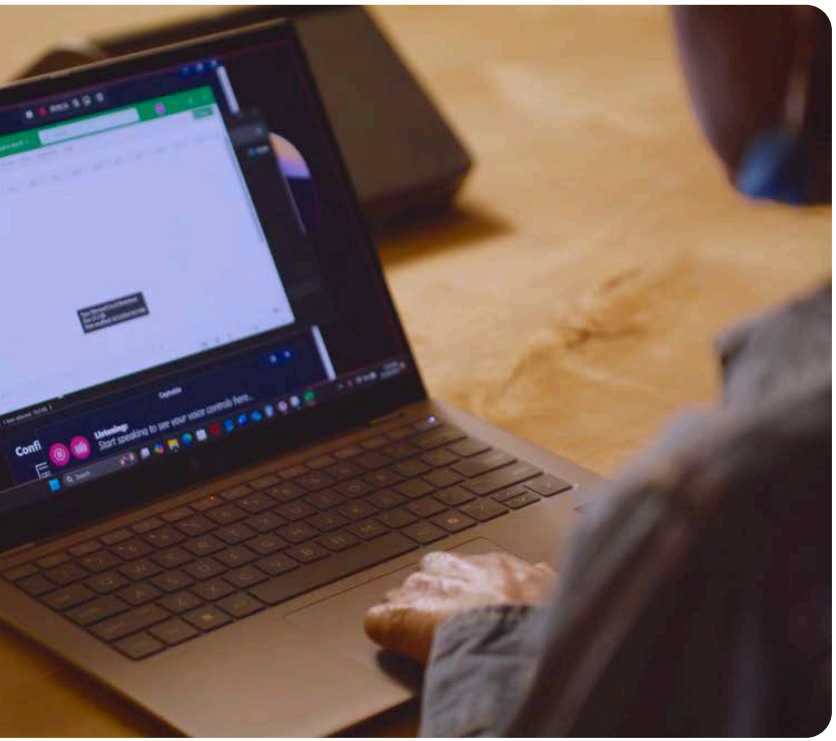
Irina B.

Personal Growth & Quality of Life

I'd love to not need to use my one hand to type or use the mouse as an input device. I also hope this program helps me learn more about possibilities & options and get equipped to use them effectively.

Harleen C.

Participants and Demographics

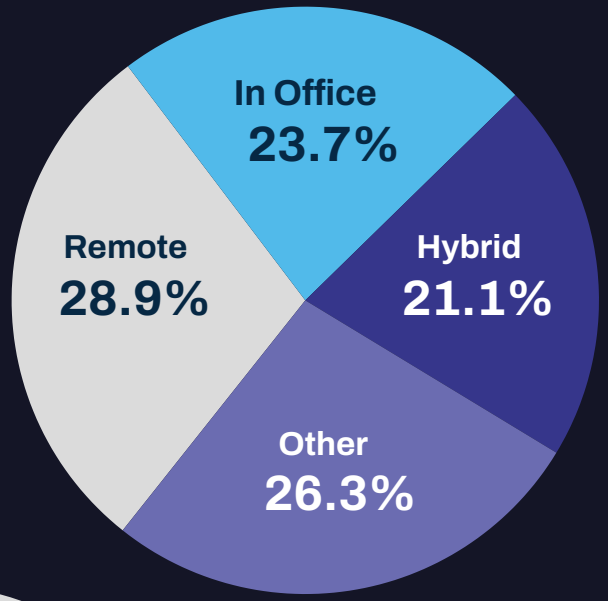


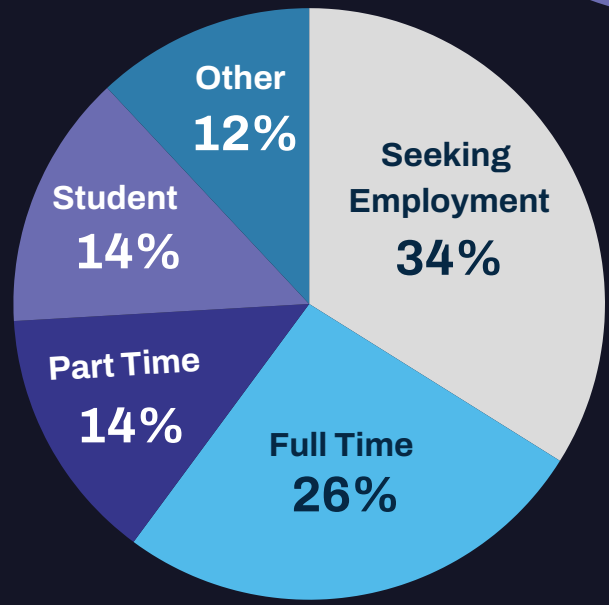
40 Total Participants

Ages ranged from 16-75.
70% of participants between 29-53.
The average age was 41 years old.

Work Setting

It's possible to work from anywhere with innovative solutions creating more inclusive and productive environments.





Employment Status

Flexible and adaptive digital tools to support varied professional pathways.

During the Project

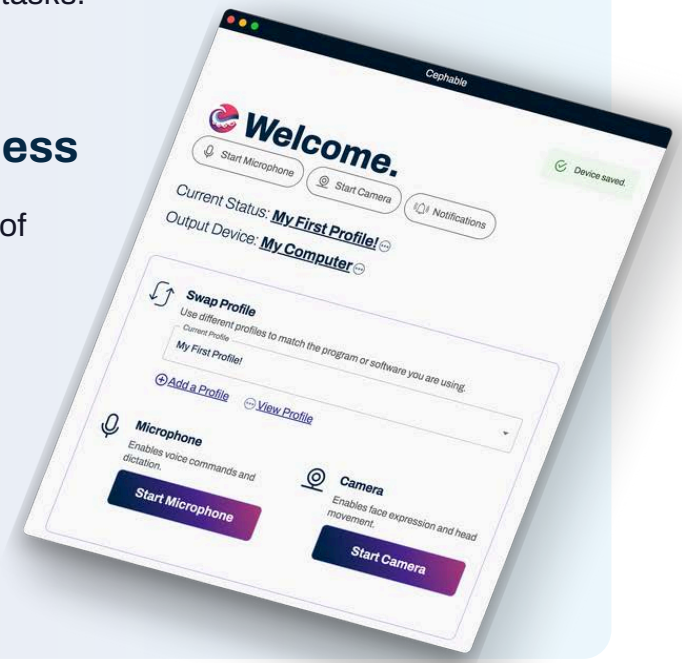
Assistive Technology Usage

Before the project, only 14% of participants used assistive technology during most of their time spent on computer tasks. They reported lack of availability, unfamiliarity of options, or financial barriers.

Throughout the project, 55% of participants used their AI PC + Cephable daily or most days while another 32% reported using their devices several days throughout each week. On the days of reported use, 78% of all participants used Cephable over half the time for their computer tasks.

AI PC Speed & Responsiveness

Each week, over 75% of participants confirmed that their new AI PC delivered better speed and responsiveness compared to their old computer.



Battery Life

Week to week, 90% of participants reported that their new AI laptop's battery life outperformed their previous computer.

Embracing New Tools

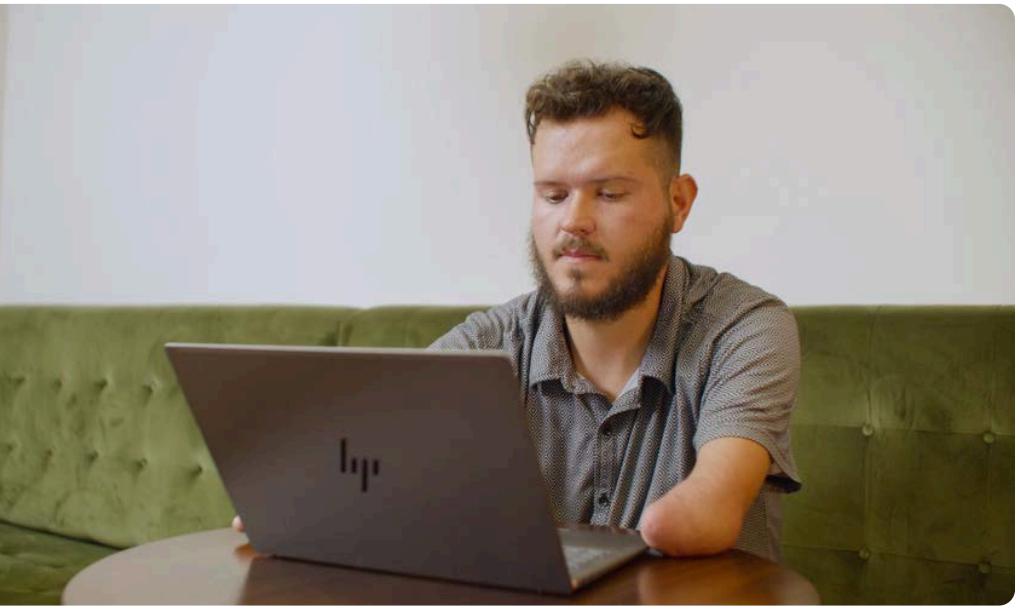
As the program unfolded, participants embraced their new tools, shifting from limited assistive technology before the project to leveraging Cephable and their AI-powered PCs regularly.

During the Project

AI & Privacy

Throughout the project, participants highlighted the importance of privacy-focused design, emphasizing the reassurance that comes from local data processing on the NPU. This approach not only enhances trust but also reduces concerns about cloud vulnerabilities.

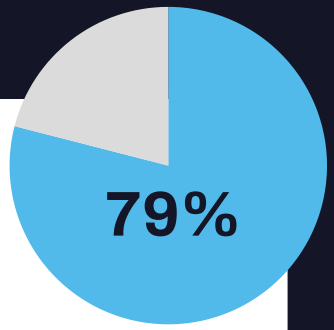
Cephable never sends data to the cloud and leverages the NPU to ensure local performance where cloud processing might otherwise be present.



Apps, Programs, & Task Focus:

Participants embraced their new tools for a wide range of tasks, with work-productivity apps leading the way week after week. **Microsoft Word, Excel, Google Chrome, and Outlook** were staples for writing, data management, and staying organized, while Google Docs facilitated collaboration. Yet, their devices proved to be more than just workhorses—they became hubs of creativity and connection. Apps like **Canva and Photoshop** supported artistic expression, while **YouTube** bridged education and entertainment. Gaming platforms such as **League of Legends** and **Roblox** highlighted the devices' versatility, offering moments of play amidst productivity. **QuickBooks, Zoom**, and social media platforms rounded out the mix, showcasing the diverse applications of these tools in work, communication, and everyday life.

After the Program



Continued Use:

79% of participants reported that they will most likely or very likely adopt Cephable into their digital workflow after the project.

88% of the participants said they will likely recommend Cephable and an AI PC to a friend or family member.

Comfort & Fatigue

70% of participants reported positive sentiment and quotes throughout the program related to physical comfort/fatigue and ease by adding Cephable and their new AI PC to their workflow.

Task Speed & Productivity

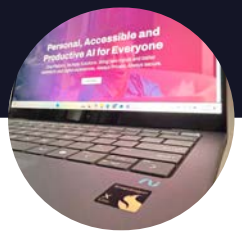
With brand-new, never-experienced software and hardware in week one, **21%** of participants immediately noticed a difference. As familiarity grew over the program, **65%** of all participants reported faster digital task completion by week four.

What began as a focus on workplace improvements revealed a deeper impact: accessible technology helps blur the line between work and play, with time-saving tools opening new possibilities.

By reducing cognitive and physical demands, assistive tools free individuals to focus on what matters most—whether that's excelling professionally by growing new skills, exploring creative pursuits, or enjoying personal connections. This efficiency not only supports sustainable employment and positive workplace experiences but also enhances overall well-being, proving that digital independence is about more than just productivity—it's about living a fuller, more balanced life.

The project's impact is notable in participants' use of technology and their approach to daily tasks. With the integration of on-device AI, many workers transitioned from frustration or neutrality to enhanced efficiency, independence, and creativity. Their experiences underscore how on-device AI has been a game-changer, significantly boosting productivity, confidence, and comfort.

After the Program: Participant Goals



Progress Towards Meaningful Employment

Having a new computer and system, better improves my ability to gain employment and independence.

Charles C.

Discovering New Tools

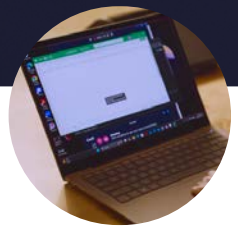
Since my only functioning upper extremity is a battery powered prosthetic, this program assists my computer usage when I have issues with my prosthetic arm. No computer downtime!

Martina S.

Efficiency & Productivity

It's making my job a lot easier. I can do everything much faster. I'm in HR and have to do a lot of typing. Being able to speak into it and dictate and use voice controls is just fascinating!

Remeja M.



Pain & Overuse Prevention

The biggest thing for me honestly is preventing pain for the future. A lot of people that have overuse issues like me are trying to prevent pain for the future and be more independent. This may be small task but when it so repetitive it's nice that I can save my arm from overuse.

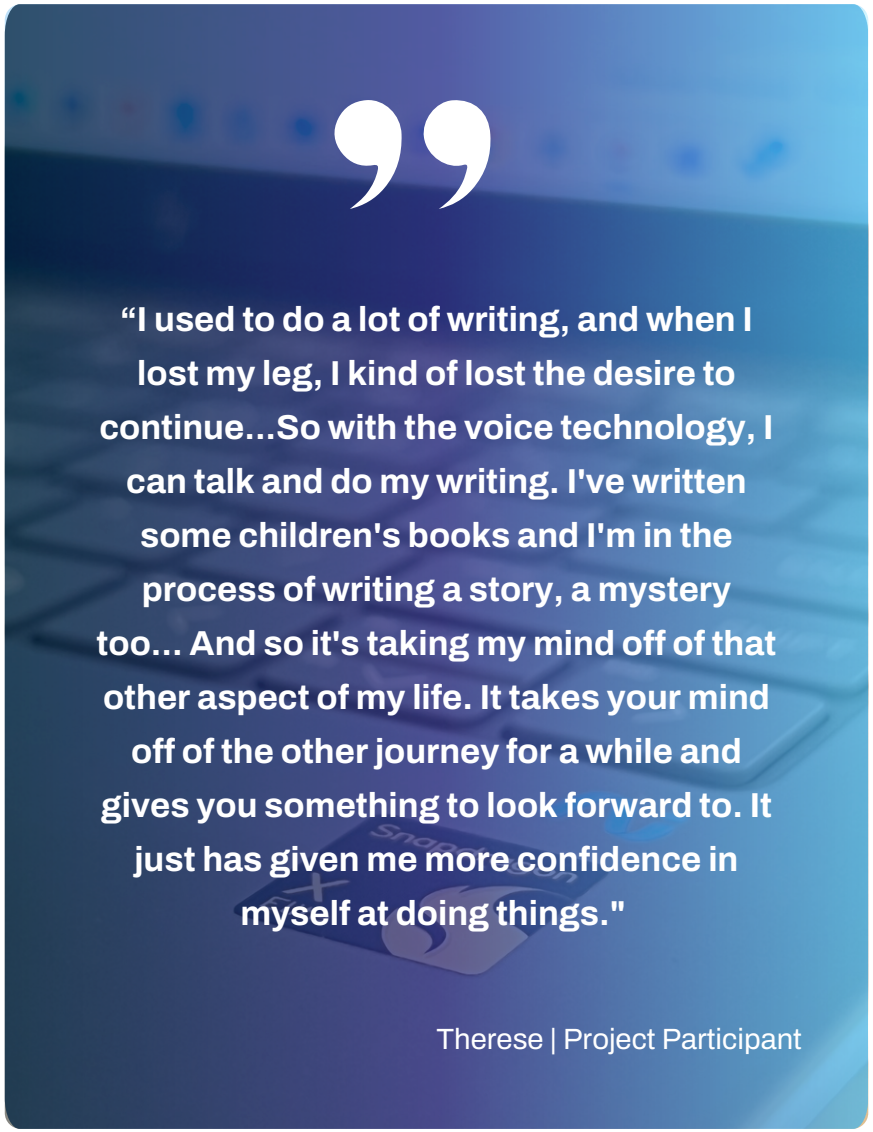
Irina B.

Personal Growth & Quality of Life

Using the new computer and software helps keep the energy in my good arm/ hand last longer. That helps in being able to do more tasks around the house and take less help from people. With more usage of the software, I could perhaps go back to hobbies like painting and sculpting which I've had to put on hold to conserve the energy in my good arm for basic tasks.

Harleen C.

Breaking Down Digital Walls for an Accessible Future



Therese’s Story Saving Time = Productivity Gains + Improved Creativity & Mental Health

Assistive technology and her newer, faster laptop reignited her motivation to regain her previous productivity levels, sparked creative ideas, and helped restore her sense of self after experiencing limb loss.

Therese worked in retail management for 30 years before her life changed due to the amputation of her leg. She faced significant life changes, including being let go from her long career. Determined to rebuild her professional life, she only recently started exploring her options for assistive technologies through this project. Not only have the new tools encouraged professional growth and opportunities to take new courses, but she found a newly discovered motivation to explore creativity and connection digitally with her family, friends, and new hobbies.

As We Move Forward

The heart of accessibility is more than just technology—it's about creating connections, fostering collaboration, and designing a future where everyone has opportunities to succeed. Throughout this project, we've seen how accessible AI driven tools have the ability to transform lives by turning digital chores into digital ease, saving time and energy for what truly matters. For some, that's excelling in the workplace or rebuilding professional confidence. For others, it's rediscovering creativity, strengthening personal connections, or simply reclaiming moments of joy.

"When we talk about collaboration, there are so many one-and-done initiatives due to funding or resources. The reverberations may last six months to a year. But where are the long-tenured, three-to-five-year collaborations where the impacts are felt for generations? When organizations and communities come together and ask, 'What trees can we plant that we won't necessarily sit in the shade of, but that we still plant?'—that, to me, is why individuals show up for projects like this. They're part of something bigger than themselves."

Maurice Henson | Amputee Coalition's Workforce Development team

As we move forward, let's prioritize people over short-term goals and checkboxes, and make technology that is private, personalized and works for everyone. When access is no longer limited, and companies and individuals embrace high-performance NPUs, we pave the way for continued innovation. This is just the beginning. Every tool, every advancement, and every story reminds us that creating opportunities for all is a shared responsibility.

Appendix

Qualcomm*

Qualcomm relentlessly innovates to deliver intelligent computing everywhere, helping the world tackle some of its most important challenges. Our proven solutions drive transformation across major industries, and our Snapdragon® X Elite platform power extraordinary consumer experiences. Building on our nearly 40-year leadership in setting industry standards and creating era-defining technology breakthroughs, we deliver leading edge AI, high-performance, low-power computing, and unrivaled connectivity. Together with our ecosystem partners, we enable next-generation digital transformation to enrich lives, improve businesses, and advance societies. At Qualcomm, we are engineering human progress.

Amputee Coalition

The Amputee Coalition is a national 501(c)3 nonprofit organization. There are over 5.6 million people currently living with limb loss and limb difference in the United States. Since 1986, the Amputee Coalition has served members of the limb loss and limb difference community, their families and caretakers. Through the work of our volunteers, partners, and staff we strive to improve the lives of our community through peer support, education, and expanding resources to create a world where our community thrives.

The Amputee Coalition's Workforce Development Program, is designed to assist participants (youth ages 15-17, adults, and veterans) within the limb loss and limb difference community with career exploration, transitioning back into the workforce, or starting their journey into the workforce.

Cephable

Cephable is an AI powered software that utilizes patent-approved technology to change the way we interact with our devices. Individuals can use facial expressions, body gestures, virtual buttons, voice commands, and tilt controls – each engineered to adapt to people's abilities. The software leverages AI, automation, and accessible UX design. Anyone can bypass traditional inputs and more fully use their preferred capabilities.

*Qualcomm and Snapdragon branded products are products of Qualcomm Technologies, Inc. and or its subsidiaries.

References

1.Council for Disability Awareness. (2021, September.) Disability statistics. Disability Can Happen. Retrieved December 3, 2024, from https://disabilitycanhappen.org/disability-statistic/

2.Krishna, G. (2015). The best interface is no interface: The simple path to brilliant technology. New Riders.

3.World Health Organization. (2022, May 16). Almost one billion children and adults with disabilities and older persons in need of assistive technology denied access, according to new report. Retrieved from https://www.who.int/news/item/16-05-2022-almost-one-billion-children-and-adults-with-disabilities-and-older-persons-in-need-of-assistive-technology-denied-access--according-to-new-report

4.World Health Organization. (2024, January 2). Assistive technology. Retrieved December 05, 2024, from https://www.who.int/news-room/fact-sheets/detail/assistive-technology