Technology for People With Intellectual/Developmental Disabilities and Their Families

NASDDDS' National Policy Workgroup Subcommittee

Summary of Discussions, Promising Practices, and Considerations for State I/DD Agencies

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Executive Summary

NASDDDS member agencies seek solutions to today's challenges and tomorrow's opportunities in providing quality supports and services for people with intellectual and developmental disabilities (I/DD) and their families. With direct support workforce shortages, changing demographics, and dynamic shifts in the landscape of long-term services and supports, technology solutions are rapidly emerging as valuable tools to promote quality of life, inclusion, and increased autonomy for people with I/DD and their families. These tools have become even more pressing during the COVID 19 pandemic. While the work of the paper preceded the nationwide health emergency, the elements contained herein will serve states well during continued efforts to support individuals while social distancing remains essential.

Importantly, NASDDDS members have quipped that they have made 15 years' worth of progress on the use and deployment of technology in 4 months during the pandemic, so in many ways the result of the National Policy workgroup provide a remarkable baseline of pre-pandemic technology use. NASDDDS commits to follow up activities to ascertain the breadth and depth of technology use during the months and years to come.

To examine the role of technology in supporting people with I/DD through member states, NASDDDS partnered with the State of the States in Intellectual and Developmental Disabilities, Project of National Significance at the University of Colorado on the *Technology Solutions State Survey* in the Spring of 2018. The high survey response rate affirmed NASDDDS member agencies' interest in quality technology solutions; strategies to expand new and emerging technology; building strong practices; and furthering the infrastructure for increasing technology to support people with I/DD in the community.

The NASDDDS National Policy Workgroup (NPWG) initially formed the Technology Subcommittee composed of state I/DD agency technology leaders from Connecticut, Colorado, Minnesota, Missouri, Ohio, Tennessee and Washington state. Dr. Shea Tanis, Ph.D., University of Colorado, also joined the subcommittee as a key partner and subject matter expert.

Through the members' collective and individual expertise and discussions, the subcommittee offers state I/DD member agencies this topical brief, composed of state experiences, reflections, and considerations as technology services rapidly gain momentum in community support systems.

Foundations for a Technology Agenda

The subcommittee identified four overarching areas as foundational for development, implementation, and to bring a state's technology agenda to scale. Insights and experiences in these areas are outlined throughout the paper.

These four foundations are:

1. Setting clear expectations as to the role of technology in the lives of people with intellectual/developmental disabilities and their families;

2. Identifying policies, practices, and information that both internal and external stakeholders need for technology adoption and use to be successful;
3. Identifying barriers, considerations, and solutions that advance the use of technology; and
4. Building a nimble policy process, given the accelerated advancements in the use and types of apps and devices.

Identifying The "Whys": The State's Purpose for Expanding Technology Solutions

The Technology Subcommittee stressed the importance of establishing the "whys" of embarking on statewide technology implementation; anchoring in core values first, then moving into the important mechanics of "what" and "how."

The group established three key "whys" to invest in technology at both the state I/DD agency and individual levels:

1. In order to implement creative ways to support people's autonomy, inclusion, and quality of life;
2. As a means to identify strategies to help address the direct support professional workforce shortage; and,
3. As a path to explore cost-effective solutions for providing quality care and outcomes.

The three whys form a foundation for an effective technology strategy. The workgroup explores the significance of each why in depth along with things to consider pertaining to each element.

As noted earlier, the work of this subgroup preceded the COVID 19 pandemic. Post-COVID, NASDDDS anticipates that another significant reason states will increase opportunities for technology use in supporting individuals will be to ensure health and welfare by minimizing the risk of infection spread, when necessary and appropriate for the individuals supported.

1. Implement creative ways to support people's autonomy, inclusion and quality of life

The subcommittee emphasized the importance of ongoing communication and outreach to stakeholders through structured public relations and communications plans. Stakeholder workgroups have been helpful for building trust and working creatively to expand technology into family homes, employment settings, and the community.

The subcommittee identified the benefit of having a technology "champion" within the state I/DD agency. The state champion is someone available to answer questions, is a problem-solver, keeps abreast of technology advancements, and stays close to opportunities to further the use technology within the Medicaid supported service system. The champion establishes relationships of trust with self-advocates, families, support coordinators, and providers.

2. Identify potential strategies to help address the direct support professional workforce shortage

The subcommittee emphasized the potential for technology solutions to address a portion of the direct support professional (DSP) shortages in meaningful ways, safely, and with improved outcomes. This could be in the form of reducing reliance on the physical presence of DSPs 24 hours per day through means such as telehealth and teletherapies; remote job coaching; and wayfinding and transportation technologies to assist people in navigating safely in their community without continual staff supervision.

3. Explore cost-effective solutions for providing quality care and outcomes

Subcommittee members shared numerous circumstances where technology provided real cost savings in supports for people with I/DD. Some members in specific states had concrete examples of cost savings in homes featuring technology use. Others shared experiences with increased cost efficiency when individuals had opportunities to manage their own time or have intermittent staff throughout their day. Different models of cost efficiencies should be investigated at the systems, provider, and individual levels.

The subcommittee shared a collective interest in learning how best to capture the financial impact of employing technology in several areas. There are multiple facets as to what could be studied, including reduced turnover, direct savings related to needing less direct support professionals, administrative management costs, and associated training costs.

As state I/DD agencies find strong practices to track technology's use and associated cost savings with concomitant consumer satisfaction, the subcommittee noted that states will need to consider how best to reinvest those savings, such as leaving the savings with the provider agency within defined parameters; value based purchasing; targeted investments for DSP wages; training; among others.

Further Study on Outcomes

The subcommittee emphasized the need to explore the impact of technology on outcomes. The National Core Indicators (NCI) project aims to contribute to this knowledge based on information gathered from surveys with people with I/DD. Ohio and Missouri started to add state-specific technology questions to their NCI surveys to ascertain information regarding technology use and access by people who use HCBS services. Based on similar requests from several other states and the emerging and increased use of technology as a support for people with I/DD, NCI revised the 2019-2020 survey with standard technology questions in order to capture similar information for all people participating in the survey. NCI anticipates that the addition of technology questions and the analysis of results will assist to inform the system regarding the impact on individual outcomes. NCI will be able to produce state-specific reports in early 2021 that will include the 2019-2020 results of the standardized technology questions added into the entire survey.

Other innovative studies are being conducts across the US including a user testing study at the University of Colorado. Further study is identified as a key next step in implementing the group's findings.

Policies, Individual Support Planning and Monitoring

The committee identified the importance of ongoing, nimble policy development and deployment, especially related to the person centered planning process to ensure that technology focuses on the interests and quality of life of each person. This highlights the need for case managers/support coordinators to serve as the lynchpin of the planning process and to have access to training and information about technology services.

Work with Federal Partners

The subcommittee encouraged further conversations between NASDDDS, CMS, and the states on increasing technology through funding flexibilities for training and internet access, as well as other policy endeavors. These efforts have been amplified during the COVID 19 pandemic, and NASDDDS has engaged CMS on efforts to both retain those flexibilities granted during the pandemic in regular business and to expand coverage and payment opportunities for technology solutions, including those "off the shelf" devices.

Conclusion

The Technology Subcommittee offers this white paper, with thoughts and considerations to NASDDDS member state agencies and partners in furtherance of the possibilities and promise that technology can offer to people with I/DD and their families to lead more independent, autonomous, and inclusive lives. Technology is a relatively new frontier and we look forward to more conversation and learning together.

Summarizing the recommendations in this paper, the subcommittee highlights the following considerations:

- States should set clear expectations as to the role of technology in the lives of people with I/DD, their families, and the community, with an emphasis on increasing the skills, independence, autonomy, and opportunities individuals with I/DD have to direct their own lives.
- An ongoing communication and outreach plan for and including stakeholders, state agencies providers, and funders is key to the success of technology initiatives and to incorporate technology as a regular part of individual and state plan development and implementation.
- Policies and guidelines need to be inclusive of technology support in the family home, in residential settings, in the community, and in employment services.
- States must consider quantifying and reinvesting cost savings while providing quality supports.
- States must find partnership opportunities to identify strategies to help address the direct support professional workforce shortage.

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Introduction

NASDDDS member agencies seek solutions to today's challenges and tomorrow's opportunities in providing quality supports and services for people with intellectual and developmental disabilities (I/DD) along with their families. With direct support workforce shortages, changing demographics, and dynamic shifts in the national health and long term services and supports (LTSS) landscape, technology supports and solutions are rapidly emerging as valuable tools to promote quality of life outcomes for people with I/DD and their families. These efforts were accelerated by necessity throughout the COVID 19 national health emergency, making the observations and recommendations by the committee contained herein both more prescient and more urgent as technology has rapidly expanded as a necessary part of our supports continuum.

Data derived from the National Core Indicators® Staff Stability Survey in 2018 indicate an average direct support professional (DSP) turnover rate of 51.3% which is further impacted by vacancy rates and low wages (median wage $12.00) for DSP's[1]. Further, life expectancy for people with I/DD is approaching the national average of 78.6 in the United States all while approximately 24 percent of the nearly 5.4 million family caregivers are age 60 or older. [2][3][4] These factors require novel solutions to ensure quality care and increased opportunities for people with I/DD and their families. Existing, innovative, and emerging technologies can provide these desired creative solutions.

Technology has long opened doors for increased autonomy and community inclusion for people with I/DD and those that support them. Assistive technology for communication and mobility, personal emergency response systems, durable medical equipment, home modifications, adapted vehicles and others comprise a wide array of technology solutions bridging the gap so that individuals can live, work, and play in their communities. More recently, technologies such as remote supports, smart home sensor technologies, and the internet of things (IoT) are emerging as tools to support individuals. As an indication of exponential growth and the economic impact of innovative technologies, the North American IoT consumer electronics market is predicted to increase from $90 billion in 2017 to $180 billion by 2022.[5]

Concomitantly, there is a growing awareness of the right of people with cognitive disabilities to access technology and the obligation of mainstream technology companies to ensure their

[1] National Core Indicators. (2019). *National Core Indicators 2018 Staff Stability Survey Report.* Retrieved from the National Core Indicators website. https://www.nationalcoreindicators.org/resources/staff-stability-survey/

[2] Murphy SL, Xu JQ, Kochanek KD, Arias E. Mortality in the United States, 2017. NCHS Data Brief, no 328. Hyattsville, MD: National Center for Health Statistics. 2018.

3 Heller, T., Stafford, P., Davis, L.A., Sedlezky, L., & Gaylord, V. (Eds.). (Winter 2010). Impact: Feature Issue on Aging and People with Intellectual and Developmental Disabilities, 23(1). [Minneapolis: University of Minnesota, Institute on Community Integration].

4 Tanis, et. al. (2020). State of the States in Intellectual and Developmental Disabilities: 2017. Aurora: University of Colorado, Department of Psychiatry.

[5] Statista (2018).

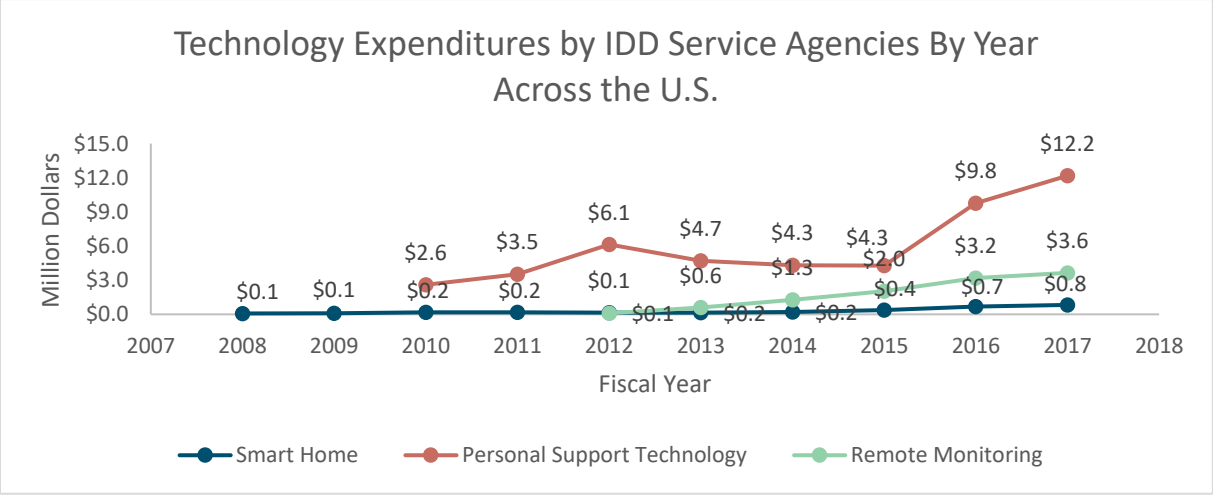
products and services are universally designed, addressing the needs of users with disabilities. The application of mainstream technologies can be seen in products that not only support but also drive our daily activities. Delivery services; conveniences in financial tracking; health and task reminders; remotely supporting connections with family and friends; or checking on one's house are now commonplace technology solutions only recently recognized as essential tools in designing holistic supports for people with I/DD.

States of the States in Technology

The State of the States in Intellectual and Developmental Disabilities Project (SoS) has tracked available data provided by state I/DD agencies on technology expenditures since 2007 (the State of the States in Intellectual and Developmental Disabilities Longitudinal Project of National Significance funded by the Administration on Disabilities, U.S. Department of Health and Human Services). The State of the States has established a 40-year record of revenue, spending, and programmatic trends in the U.S. demonstrating impact over time of federal, state, and local government fiscal policy for I/DD services and supports. The project relies upon the support and cooperation of state I/DD agencies for fiscal and programmatic data. Thus, the data provided to the project comes directly from the states with secondary source validation.

In 2017, states reported spending just over $12 million on personal support technology (see Figure 1). This spending represents less than 1% of the $72.64 billion spent on I/DD services in the United States in FY expenditures by I/DD services agencies.[6] Smart home systems reached $827,285 in 2017, compare this to the $103 billion in U.S. consumer spending for smart home systems in 2019.[7] In recognition that initial expenditure reports by I/DD state systems underrepresented actual activity, State of the States sought to perform a deeper analysis of the investments in technology solutions across the states.

Figure 1:



[6] Tanis, E.S., Lulinski, A., Wu, J., Braddock, D., & Hemp, R. (in preparation). State of the States in Intellectual and Developmental Disabilities: FYs 2016-2017. Aurora, CO: Department of Psychiatry, University of Colorado Anschutz Medical Campus.

[7] Statista (2020). Consumer smart home spending worldwide: 2014 -2023. Retrieved from: https://www.statista.com/statistics/693303/smart-home-consumer-spending-worldwide/

In the spring of 2018, the State of the States in Intellectual and Developmental Disabilities Project of National Significance at the University of Colorado partnered with NASDDDS on the Technology Solutions State Survey.

The purpose of this survey was threefold:

Perform an in-depth analysis of State I/DD administrative data on financial investments and users of technology solutions collected since 2007 in the State of the States Project. This data included creative funding mechanisms to support the purchase of technology;

Examine current and future investments in specific technology solutions (i.e. remote supports, tablets, environmental modifications, etc.); and,

Examine state support structures that facilitate the adoption, use, and maintenance of technology solutions.

Forty-five states and the District of Columbia responded to the first survey in 2018 and thirty-two states responded in 2019. The high survey response rate is a strong indication of state I/DD agencies' interest in technology solutions and applications.

The 2018 analyses identified five leading states, which were defined as funding ten or more technology services and supports, predominantly through Home and Community-Based Services (HCBS) waivers. Of the surveyed states, eight states funded six or more technology solutions not traditionally covered by Medicaid. The analyses also identified high impact areas of future investment (i.e. remote supports, health technologies, smart homes, hardware, and transportation technologies) set forth by the states.

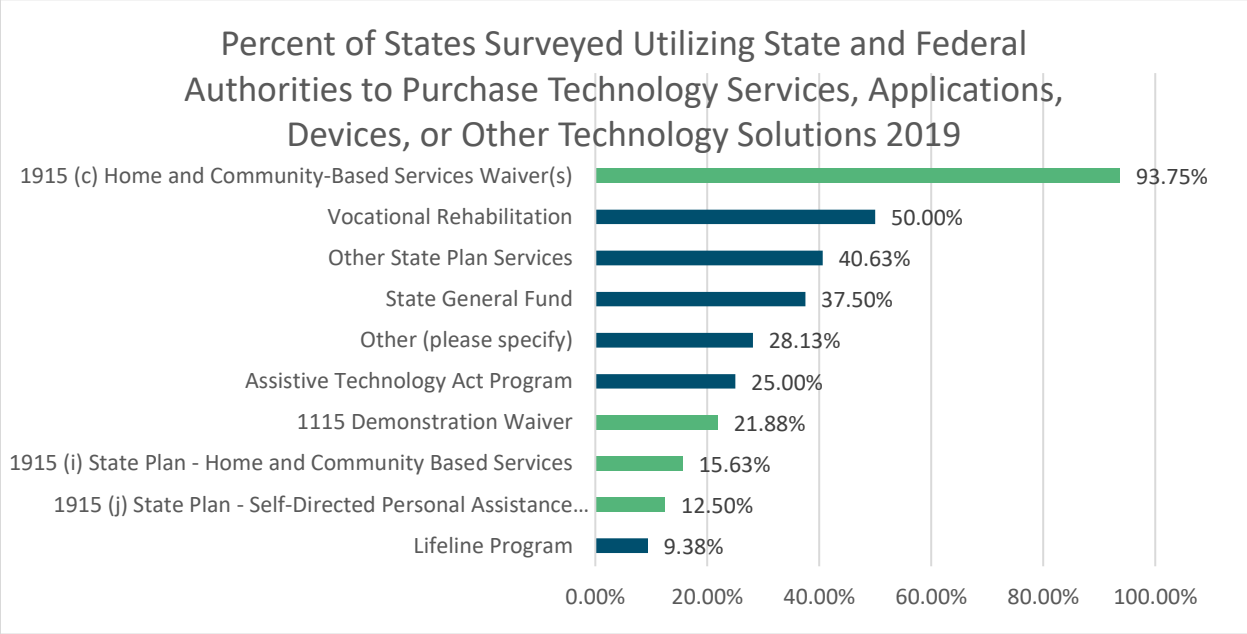
The examination of support structures currently available within states found that fewer than half the states provided funding for ongoing training to learn, upkeep, and update purchased technology. Only 22 states reported consideration of technology supports and services as a requirement within the individual service or person-centered plan. This baseline data collection will provide the beginning for the future tracking of trends in technology adoption and use across the nation for people with I/DD and their families.

The 2019 survey refined technology terminology and added questions relative to the advancement of Technology First. Technology First, which began as a movement, has transformed to become a framework for systems change where technology is considered first in the discussion of support options available to individuals and families through person-centered approaches to promote meaningful participation, social inclusion, self-determination and quality of life. According to the Ohio Department of Developmental Disabilities, Technology First "created through a 2018 executive order, is not a technology-only policy but aims to help people learn more about how to use technology to improve their quality of life and

how they can experience more independence and personal freedom."[8] In 2019, twenty-eight states indicated that they were interested or had already begun the process of becoming a Technology First state. Two states, Ohio and Missouri have advanced legislative statutes naming "Technology First."

After a year of activity from early adopting states, 12 different funding authorities and blended funding sources were utilized to procure technology solutions. Funding for technology varied across states, with most states using 1915(c) Home and Community Based Service Waivers; other Medicaid authorities such as state plan services and 1115 demonstrations; and vocational rehabilitation to finance technology-related supports. In States with general fund revenue available, states utilized this resource to pilot programs and services. (See Figure 2)

Figure 2:



Beyond the funding for technology solutions, state I/DD agencies noted the importance of analyzing:

- Policies and practices for quality technology implementation, and scaling up;
- Assurances around individual support planning that drive choice, autonomy, and quality of life;
- Monitoring and/or licensing standards, privacy guidelines, and planning related considerations inherent in data use and storage; and,
- Short and long-range planning, especially with the rapid changes in technology within the context of publicly funded systems.

These considerations are addressed in greater detail on page 17.

[8] Content excerpted from https://dodd.ohio.gov/wps/portal/gov/dodd/about-us/resources/tech-first/Technology-First/

Technology shines a spotlight on the need for a strong policy foundation and the ability to be nimble, given the accelerated advancements in the use and types of apps and devices, with the concomitant opportunities and cautions inherent in large-scale systems change.

NASDDDS Technology Subcommittee

To analyze how state I/DD agencies currently employ technology supports, the NASDDDS National Policy Workgroup (NPWG) formed a Technology Subcommittee. The NPWG advises the Association's board of directors on various federal statutory and administrative policies that impact the delivery of publicly-funded services and supports. Also, the NPWG conducts special studies and other activities on topics of high priority to member state agencies. Technology was chosen as one such area of study through the formation of the subcommittee.

The subcommittee was composed of seven state I/DD agency technology leaders:

State	Representatives
Colorado	Dianne Byrne, Jennifer Martinez, Colin Laughlin
Connecticut	Amy Blazawski, Jordan Scheff
Minnesota	Mary Lenertz, Anna MacIntryre, Curtis Buhman
Missouri	Marcy Volner, Wanda Crocker, Valerie Huhn, Stacy Collins
Ohio	Kyle Corbin, Jeff Davis
Tennessee	Brad Turner, Jordan Allen, Harold Sloves
Washington State	Jaime Bond, Beth Krehbiel, Evelyn Perez

Dr. Shea Tanis, Ph.D., University of Colorado, joined the subcommittee as a key partner and subject matter expert. NASDDDS staff members, Dan Berland and Barbara Brent, participated as support to the subcommittee.

The Technology Subcommittee was informed by other NASDDDS' work. The State of the States Project worked closely with NASDDDS and state member agencies surveying states on the types of technology in use; existing funding mechanisms; how families learn about technology; and the interest member states have in increasing knowledge.[9]

The survey sparked conversations and discussions during the association's national Directors Forum, a meeting that occurs twice annually with State I/DD directors and staff. These discussions led to cross-state information sharing on Technology First, commonalities, and variances in Medicaid reimbursement for particular technologies and stakeholder strategies.

The subcommittee's work was also informed by the NASDDDS State Employment Leadership Network (SELN) and the Community of Practice for Supporting Families Across the LifeSpan (CoP). Both SELN and the CoP include a focus on leveraging technology to increase meaningful community integration across the country.

[9] How State Technology Efforts can Contribute to Quality Supports November 15, 2019 NASDDDS 2019 Directors Fortum & Annual Conference Alexandria, Virginia. Downloaded from https://www.nasddds.org/uploads/files/Technology.pdf on 08.24.2020

The technology subcommittee formally met three (3) times via webinar. In addition to the formal meetings, subcommittee members were generous with their time and continued contact through sharing written and video resources; ideas for future exploration; sample policies; and making themselves available for follow-up questions.

Through the members' collective and individual expertise and discussions, the subcommittee offers state I/DD member agencies this topical brief, composed of state experiences, reflections, and considerations as technology services rapidly gain momentum in community support systems.

Subcommittee's Three Core Strategies

The subcommittee covered a variety of topics of interest to state member agencies. But with a focus on replicable practices and collective next steps for consideration, three overarching topics emerged as foundational for development and furthering a state's technology agenda:

Setting clear expectations as to the role of technology in the lives of people with intellectual and developmental disabilities along with their families;

Identifying policies, practices, and information that both internal and external stakeholders need for technology adoption and use to be successful; and,

Identifying barriers, considerations, and solutions that advance the use of technology.

Using Simon Sinek's book, *Start with Why*, [10] the group affirmed its purpose as increasing the use of technology for people with I/DD and their families. The subcommittee also established that embedding technology into how services and supports are delivered is foundational. Establishing the "why's" also allows for the anchoring of core values and thought processes before moving into the important mechanics of, "what and how".

Why should states invest in technology solutions- both organizational solutions and individualized technology solutions? The group established **three key "whys"** to invest in technology:

[10] Sinek, S. (2009). *Start With Why: How Great Leaders Inspire Everyone To Take Action*. New York, N.Y.: Portfolio.

1	In order to implement creative ways to support people's autonomy, inclusion, and quality of life;
2	As a means to identify strategies to help address the direct support professional workforce shortage; and,
3	As a path to explore cost-effective solutions for providing quality care and outcomes.

Note: While the areas of health and safety were not addressed as a separate topic, subcommittee members noted the inherent importance of people's welfare throughout technology discussions.

1 Implement creative ways to support people's autonomy, inclusion, and quality of life.

Subcommittee members, consistent with the National Policy Workgroup's insights, emphasized that technology supports should seek to increase the skills, independence, and ability of individuals with I/DD to direct their own lives.[11] When based on each person's preferences, strengths, and support needs in the advancement of quality of life outcomes, technology provides increased opportunities. As quoted by Mary Pat Radabaugh, Director of IBM National Support Center for Persons with Disabilities, "for Americans without disabilities, technology makes things easier. For Americans with disabilities, technology makes things possible."

Although developed with the best of intentions and available information at that time, a perception developed that remote monitoring was the only or most readily available technology, and was often designed for the surveillance of staff or for staff convenience, rather than for promoting new possibilities for self-direction and autonomy. Bringing stakeholders together along with vendors helped to broaden the purpose (the Why) of technology solutions and introduce other daily technologies beyond remote supports. This allowed space for creativity and trust-building to explore how new approaches might work in different ways and different settings such as residential settings, the family home, someone's own home, or out in the community. Families as partners have been the driving force in the adoption of mainstream technologies like conversational agents, digital memory aids, and health sensors.

As with other system change efforts (i.e. Employment First), subcommittee members found success by identifying a "technology champion" within the state I/DD agency and through embedding technology endeavors as an overall "way of doing business" rather than being seen as a separate initiative. Weaving technology into strategic planning, leadership discussions, individual support plan strategies, Medicaid service structures, and budget development, in concert with stakeholder engagement, was essential for consensus-building and developing successful systems change elements.

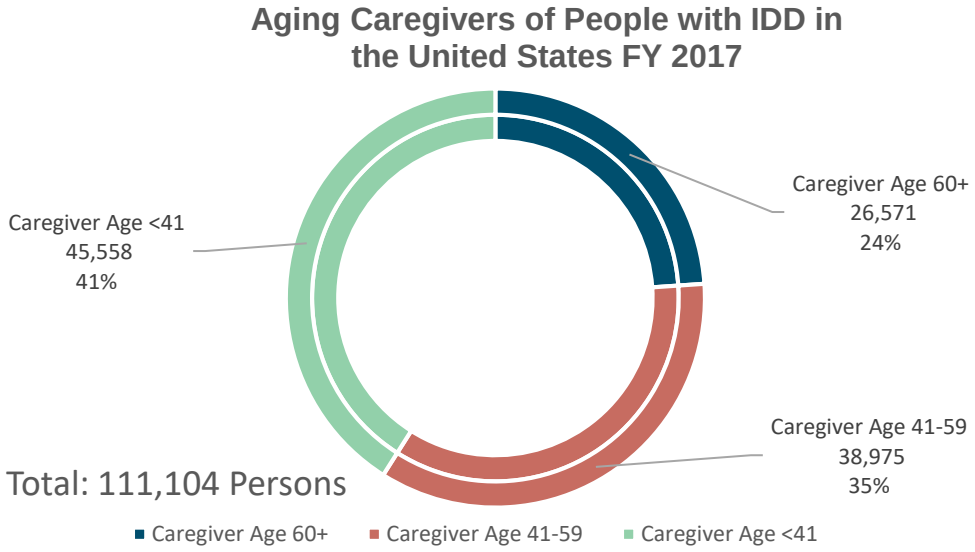
2 Identify potential strategies to help address the direct support professional workforce shortage.

[11] Shogren, K, et al. (2015). Causal Agency Theory: A functional model of self-determination. *Education and Training in Autism and Developmental Disabilities,* 50(3), 251-263.

As for the second *Why*, there are well-documented studies, publications and presentations that call attention to the pressure states, providers, individuals with I/DD and their families face regarding the realities of the direct support professional (DSP) workforce shortage.

The changing demographics of the available workforce numbers for people with I/DD, compounded by the ever-growing number of baby boomers choosing to stay at home (or even moving to assisted living or nursing homes and needing support) are stretching resources thin. According to the State of the States FY17 data, 59% of caregivers for people with IDD are over the age of 41 while 24% of that group is over the age of 60. (See Figure 3).

Figure 3:



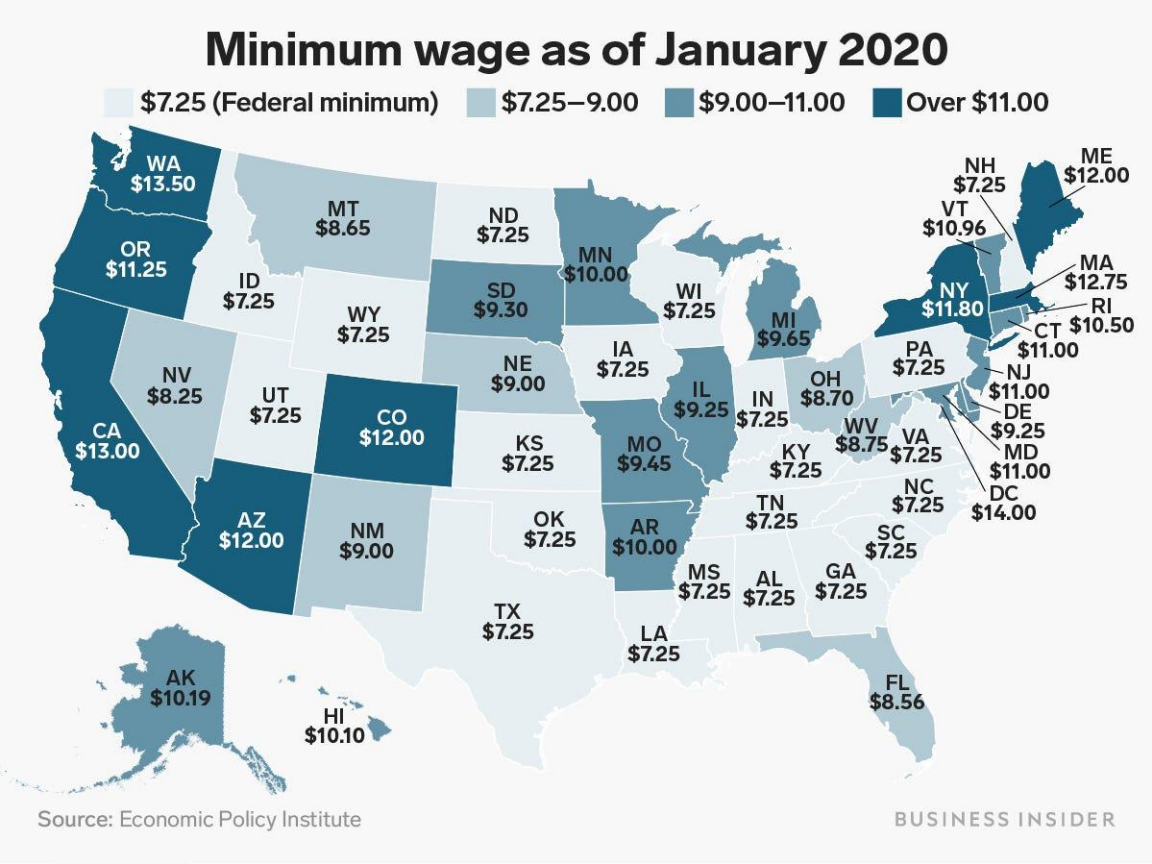
In recent years, the National Core Indicators® (NCI) developed the NCI Staff Stability Survey of the workforce providing direct supports to adults (age 18 and older) with I/DD. This is an effort to provide a means for states to obtain reliable data on turnover, wages, benefits, and recruitment/retention strategies. The goal is to help states benchmark their workforce data to those of other states so they can measure improvements made through policy or programmatic changes. Participation of states in NCI is optional and varies from survey year to survey year. Since its inception, participation has continued to grow.

The 2019 National Core Indicators Staff Stability Survey indicates that the average turnover rate for direct support professionals (DSPs) is 51.3% while the vacancy rate is 11.9% for full-time employees. While some states have been successful in securing service rate increases in DSP wages, the average DSP wage continues to be only $12.00/hour,[12] just above the federal

[12] National Core Indicators. (2020). National Core Indicators 2018 Staff Stability Survey Report. Retrieved from the National Core Indicators website: https://www.nationalcoreindicators.org/staff-stability-survey/ on 08.24.2020

minimum wage of $7.25 (see Figure 4).[13] The 2019 Staff Stability report includes data from 26 states including the District of Columbia. All told, over 4,400 provider organizations are represented in this data set.

Figure 4:



The DSP workforce challenge raised by the National Policy Workgroup and discussed by the technology subcommittee is shared by various disability groups across the country. The groups agree it is imperative to identify technology solutions available to organizations and individuals that help mitigate workforce challenges.

No one strategy dominates relieving the pressures of direct support professional workforce shortages. The subcommittee emphasized the potential for technology solutions to address a portion of the direct support professional shortage in meaningful ways, safely, and with improved outcomes. This could be in the form of reducing reliance on the physical presence of DSPs 24 hours per day; telehealth and teletherapies that can address social determinants of health; and wayfinding and transportation technologies to assist people in navigating safely in their community without continual staff supervision. The goal of using these technologies is decreased reliance on 24-hour shift staffing models, allowing for greater autonomy and quality of life for individuals.

[13] The Balance 2019, *State Minimum Wages. Retrieved from* https://www.thebalancecareers.com/2018-19-/federal-state-minimum-wage-rates-2061043

The subcommittee shared many examples and agreed that the importance of a strong person-centered planning process that carefully takes into account what is important to and for individuals and their families; how technology fits into their vision for a good life; and carefully taking their lead on issues related to rights, privacy, reliability, and social capital were paramount.

The subcommittee provided many examples and participated in thorough discussions regarding the immense potential of technology targeted for individuals with behavior support needs. Through the addition of technology supports/solutions, some people with significant behavior support needs who were served with 1:1 or 2:1 staff ratios have been more successful and satisfied with less staff presence. There are examples of decreased incidents and reduced staffing when careful individual support planning, complete with a positive support plan component; back up planning; and frequent check-ins, resulted in the person's ability to spend more alone time; move about their community; or use tele-presence to talk with a counselor and/or trusted support person when feeling frustrated.

Along similar lines, workgroup members shared experiences in their states that the addition of staff based on behavioral concerns has not always been the best resolution for some individuals. In those instances, behavioral concerns were exacerbated by the lack of privacy caused by bringing in a number of staff. This is an area for further technology exploration. At Northwestern University, researchers have found through the utilization of biometric sensor technologies, environmental situations that lead to frustration and escalation of challenging behaviors can be avoided through the translation of biometric data to caregivers. [14]

Some of the approaches to reducing staff serving individuals with behavioral support needs reported by subcommittee members include:

- Increasing privacy and the opportunity to live alone or in smaller settings through the use of conversational agents like (i.e. Alexa or Siri) to call a remote support specialist; having cameras in their living room; and finding the right balance of support to let someone know they'd like to go out and have company. In some cases support hours have been reduced while still providing increased autonomy;
- Use of voice-activated smart home technology and IoT for safety and security such as closing blinds; opening and closing doors; viewing visitors at the front door before opening; and managing home temperatures; and,

[14] Author not noted (2019); *Avoiding a Meltdown;* Northwestern Magazine; Issue: Summer 2019; https://magazine.northwestern.edu/innovation/avoiding-a-meltdown/

- Ohio has reported excellent results with psychiatry telehealth with certain individuals with autism. [15]

States in the workgroup with these experiences reported that less staff were needed allowing staff time to be utilized more efficiently. Equally important, technology solutions were integrated as a standard component of individual support plans, taking into consideration each person's preferences, goals, support needs, and strengths. In these states, technology is a required area to address in the individual support planning process. Through these mechanisms, there are current and future possibilities to decrease dependence on direct support professional staffing hours within the framework of increasing quality of life.

3 Explore cost-effective solutions for providing quality care and outcomes

Subcommittee members in specific states had concrete examples of cost savings in homes featuring technology use. Others shared experiences with increased cost efficiency when individuals had opportunities to manage their own time or have intermittent staff throughout their day, using technology to bridge the gap of support needs. For example, medication reminders and remote supports in which a Direct Support Professional ensures that a person takes their medications reduces the hours of on-site staffing in some instances. Providers are also accessing new telemedicine services to gauge the need for emergency room visits by virtually meeting with ER doctors before in-person appointments are obtained. Data demonstrate a decrease in ER visits and more people served in their home environments. [16]

Remote supports are defined as "the use of electronic equipment to support and assist people with developmental disabilities in their homes." Remote supports include a broad array of technologies and apps that assist with tasks reducing the need for direct support staff and giving increased autonomy for people who prefer living alone, but still need assistance. Biometric sensors, connected technologies that monitor visitors and environmental controls are all included in the category of remote supports.

Group members offered many examples of these types of technology assistance. One state described a provider that captured significant savings on direct support professional wages by using technology and remote supports. Another state shared wayfinding apps that assisted a person to navigate the community and public transportation system more successfully than traditional navigation and travel support through direct support professional assistance alone.

While there were anecdotal examples of explicit cost savings, the subcommittee expressed interest in NASDDDS or other entities exploring potential data on cost-effectiveness and overall outcomes. Different models of cost efficiencies should be investigated at the systems,

[15] Gentile, J, Cowan A, et al; *Reaching rural Ohio with intellectual disability psychiatry*. Journal of Telemedicine and Telecare 2018, Vol. 24(6) 434–439 https://journals.sagepub.com/eprint/WIPHc9NJVxHx6Dsnhypy/full
[16] Data extracted on 08.24.2020 from https://www.stationmd.com/proven-results/. STATIONMD

provider, and individual levels. Many of the states participating in the workgroup currently measure systems through the addition of specific questions related to technology in the National Core Indicators (NCI) surveys.

Subcommittee Leaders' Insights on Barriers, Strategies, and Considerations in Promoting Technology Use

The subcommittee discussed other topics important to state member agencies engaged in technology implementation and expansion. The group identified potential follow-up activities from NASDDDS and, as appropriate, our partner, the State of the States at the University of Colorado.

These topics below are offered as insights on barriers and considerations, leading to both immediate practical actions and longer-term planning steps.

Quantifying Cost Savings

The subcommittee shared a collective interest in learning how best to capture the financial impact of employing technology in several areas, such as savings in the direct support professional workforce as well as cost efficiencies in health and safety when technology focuses on those support aspects. If such a strategy for potential financial modeling were to take place, the participants on this subcommittee have the experience and knowledge to inform an analysis of this kind. There are multiple facets as to what could be studied, including reduced turnover; direct savings related to needing less direct support professionals; administrative management costs; and associated training costs. The study design will be integral to capture the various aspects of this effort.

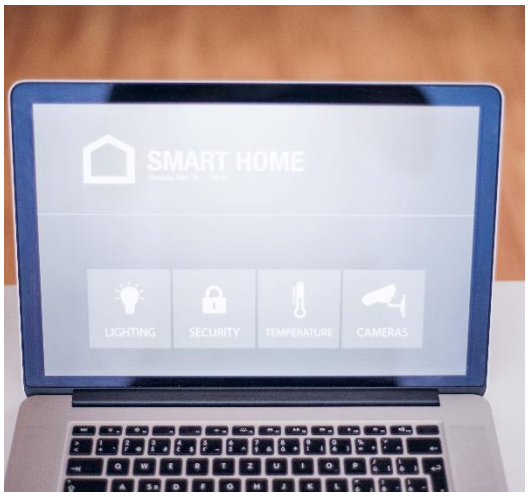
While cost savings will be a major analysis, the subcommittee members also affirmed the importance of exploring the impact of technology on outcomes. NCI questions on technology will assist to inform these outcomes as well as other user testing and innovation studies such as those at the University of Colorado.

The University of Colorado is particularly interested in looking at the impact of technology on overall well-being and the contributions to authentic happiness for individuals and family members. The University of Colorado also plans to validate the results captured by the Survey of Statewide Technology Initiatives Supporting People with Intellectual and Developmental Disabilities by surveying advocate members of the National Self-Advocates Becoming Empowered Organization and providers of services though the American Network of Community Options and Resources (ANCOR).

Determining Savings Reinvestment

As state I/DD agencies find strong practices to track technology use and associated cost savings with concomitant consumer satisfaction, the subcommittee noted that states will need to consider how best to reinvest those savings. For example, when a provider implements remote supports or other technology solutions successfully in line with the support team "whys", multiple questions will need to be considered:

- How will the state I/DD agency set parameters for how savings are reinvested?
- Will the provider keep the saved funding and, if so, what will be the parameters on how funding is used?
- Can incentive payments be used to attract the use of technologies by provider agencies?
- Will there be a target to reinvest in direct support professional wages; increasing technology upgrades; and training and use of the equipment and apps for both the person using the supports and the DSPs?
- What are other ways to reinvest cost savings?
- How will these savings reinvestments be determined and approved?



Through fulfilling the goal of savings and reinvestment/redistribution due to technology use, service providers should be incentivized and not penalized by funding reductions for greater efficiencies through technology solutions. The subcommittee noted that strong attention should be given to these aspects of the technology rollout. As an overall next step, NASDDDS may want to explore possibilities around the efficacy of value-based purchasing strategies and work with states regarding other ideas for parameters that can be used for savings realized through implementing technology strategies.

Policies, Procedures, and Rules

Subcommittee members articulated the need for the state to outline specific guidance through policy, procedure, rule, or whatever vehicle the state uses for providing technology guidance to the field. This is especially important as the use and types of technology supports increase in the family home, residential settings, the community, and employment services.

The policies will need to be reviewed often and be nimble enough to keep up with the rapid advances in technology. As is the case with technology standards, such as Section 508, policies must not focus on specific technology solutions, but rather the process for inclusion adaptation and how the person drives the process.

Technology Evaluations and Assessments

Current Practices

Many states require formal assessments and/or evaluations to access technology solutions. Some states require that formal assessments must be completed by credentialed/licensed personnel, such as occupational, physical, or speech therapists with related specialties when the technology is targeted for specialized mobility and communication devices and highly adapted to the individual. These assessments often come from the state Assistive Technology Act program or other licensed professionals.

These formal assessment requirements are due, in part, to the type of technology historically available. The technology typically was composed of more costly and complex (or individually designed) options such as home modifications, augmentative communication devices, durable medical equipment, and vehicle and home modifications.

Emerging Practices

With the diversity of today's (and tomorrow's) flexible technologies, there are differing practices for assessment and approval of some technologies. States are beginning to make a distinction between a **formal assessment** and **features matching assessment** for technologies. Features matching allows a team to identify a person's strengths and interests and match them to a technology where more advanced assistive technologies such as wheelchairs and augmentative and alternative communication devices may require a formal assessment. Distinctions are made based on each person's individual support plan.

Some of the subcommittee states reported that they work through the individual's team on approving supportive technologies such as medication reminders, remote sensors, and way-finders. The team determines the targets for learning, backup systems needed, and how the technologies comport with the person's vision for quality of life. Individual vendors are an additional resource when identifying and learning about technology solutions.

Developing Protocols for Formal Assessment Versus Team-Based Features Matching

The conversations in the subcommittee included the level of technology professionals required when designing smart home elements such as remote supports with sensors, cameras, integrated equipment, and an overall integrated system.

In some instances, states may give the decision making for specific technology such as mainstream technologies like smart phones and tablets, and remote supports to the person-centered planning team.

Members of the subcommittee from states that conduct full evaluations and assessments for almost all technology support, including "everyday," assistive and applied technologies, shared concerns that there is a paucity of licensed or otherwise qualified evaluators in their service networks. This lack of qualified assessors results in long wait times before a person can receive the formal evaluation, approval, receipt, and training for the device and/or app.

In the case of "everyday" technology, sometimes referred to as Applied Cognitive Technology, and defined as "supports that enable people with cognitive disabilities to successfully function in inclusive environments, to increase participation in tasks and activities in inclusive environments, and to promote social inclusion, self-determination, and quality of life" (Wehmeyer & Shogren, 2013, p. 92), different policies, procedures, approvals, and individual support planning processes would allow for approvals without a licensed assistive technology assessment. Moreover, if the individual support team needs more expertise, it could be made available.

"Everyday" Technology Examples

- Conversational agents that:
  - turn on lights
  - play the TV
  - answer the phone
  - provide the weather forecast
- Home security systems
- Smartphones

Assessment: Next Steps

The subcommittee discussed the next step for NASDDDS, with the University of Colorado as one of the core partners, to assist in the development of suggested guidelines, based on the person-centered planning team process used in some states at the current time, understanding that there will always be variations to fit each state context. This approach would be composed of developing policies and procedures that warrant professional assessments for medical devices, augmentative communication, smart homes, and what might be considered assistive technology, with concomitant individual support team processes for choice and overall quality of life.

States emphasized that clarity is needed for the field as to:

- Who provides assessments?
- When are they necessary?
- What might be needed for approval if anything is necessary beyond the team consensus?
- What is needed for ongoing technical assistance to increase the skills of both those using technology and of those supporting others, with the ultimate goal of getting people access to the right kinds of technology promptly?
- What are the privacy and security policies?
- What training is available to case managers/individuals/support staff/families in the use of technology *and* support for ongoing training?
- What training is available when software and other technology updates occur and/or staff turnover happens?

Technology Definitions: Words Matter

There is broad variability in how technology is defined within and across states. Assistive technology categories often began with broad definitions composed of adaptive equipment, augmentative and alternative communication devices, and durable medical equipment. As an example, calling services remote monitoring may connote the notion of a person being "overseen" with cameras or microphones at all times, with limited privacy. Remote Supports is more accepted terminology and more succinctly describes the service.

Over time, both the types of technologies and the funding categories available through Medicaid authorities expanded. This has led to greater flexibility in designing and funding technologies that align with state priorities and the needs of people with I/DD served in each state.

As is the case in other service categories, definitions of technology supports and services vary across states and waivers. In the initial 2018 survey of Statewide Technology Initiatives Supporting People with I/DD and their families, the most inclusive technology definitions were applied to evaluate utilization. The survey results highlighted not only the discrepancies, but also varying levels of specificity. Differences included variations in subcategories as within "assistive technology" to the methods for assessment and evaluation. There was also the question of overlap between definitions and uncertainty of the categorization of specific technologies under those definitions.

While it is not expected that there will be a universal lexicon applied to emerging technologies, the subcommittee thought state I/DD agencies should consider having an accessible glossary of terms that could be applied in nature and shared with advocates and family members.

Definitions

There are no national definitions for every supportive technology. The University of Colorado, in partnership with NASDDDS, developed surveys that helped to streamline the vernacular.

While no national, unified definition for specific technologies are expected, states should be clear with stakeholders as to the definitions used in their states. For example, a state may use assistive technology as the broad umbrella for all technologies, with remote supports, apps, IPad and others listed underneath it. Another state might list assistive technology as augmentative communication devices and medically-related devices.

The University of Colorado emphasized the utilization of "technology" or "technology solutions" to allow for broad application and inclusion of mainstream ubiquitous technologies used by people with and without disabilities in waiver design and outreach.

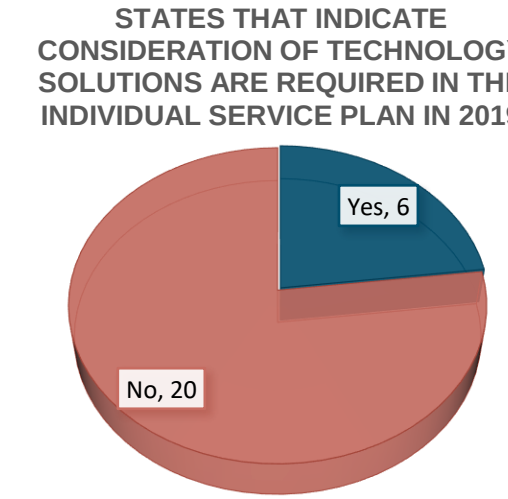
The subcommittee suggested that NASDDDS work with state member agencies, the University of Colorado, other stakeholders, and subject matter experts to keep refining definitions for longitudinal data evaluations of trends in the field.

Individual Support Planning and Monitoring

Individual, customized support planning that fully engages the individual is a key to success in using technology solutions.

The committee identified the following elements as important considerations in monitoring/review tools:

Figure 5:



- Is technology a mandatory component of the planning process? Figure 5 demonstrates that only six states indicated it was in our 2019 survey.
- How can the individual and/or family member identify technology solutions of interest during the planning process? Is there a reference for the case manager to share with the individual and family before the meeting, during the planning meeting, or other resources to support what the person would like to achieve and possible technology to assist in reaching those goals?
- What items can be and are currently funded? Does the case manager have a guide handy for reference, one that can be provided, in user-friendly language with descriptions of how the technology solutions might be used?
- How does the technology bridge the gap between the person's skills and the environment? Does it increase the person's interests, autonomy, quality of life, and overarching goals?
- When is a formal assessment necessary for the procurement of technology support?
- What assistance will be made available to support planning team members to learn about the potential of technologies, the kinds of technology available, and the purpose- the "Why"? Does policy outline how this information will be made available or can be accessed?
- What resources are available for technical assistance and training, both short and long-term? Is this question noted in the support plan? Does the technology policy include these resources, what is available, how a person qualifies, if it varies by the type of technology and other service guidelines?
- How will training to users and family members be provided? Does the support planning document allow for a follow-up discussion on how this will occur?
- What is the protocol for the upkeep and maintenance of technology solutions?
- If remote supports are used, how will privacy be handled?
- How does the support plan address back-up planning? This could be anything from a power outage to a person forgetting to bring their device to a job-whatever requires a backup plan in case supportive technology is not available as planned.

As with any emerging set of services and supports, formal administrative vehicles provide a roadmap that includes details, timeframes, and expectations. Equally important are the

underpinnings that result in successful development and implementation of a support plan, inclusive of technology solutions. The technology subcommittee mentioned several factors contributing to the success of individual planning and monitoring.

- How is the support coordinator/case manager provided training/mentorship on technology solutions, both assistive and mainstream technology?
- Does the case manager/support coordinator have someone they can go to with technology questions, authorization procedures, or service definitions?
- How will case managers receive training on guiding the support planning process with the addition of technology in the plan?
- How can staff and users increase their digital awareness/knowledge so multiple caregivers/providers can negotiate and manipulate an array of technology solutions?
- How can validated practices of lending libraries be expanded and enhanced to allow for trial and successful adoption of technology solutions for more individuals?
- What training or overview will be provided to support coordinators to learn about how technology can increase quality of life and autonomy and in what ways are goals/outcomes written in this context?
- What changes will need to occur with monitoring the individual support plan when technology is added?
- Who will review and in what way? Will this include an on-site as well as a paper review? Where will the findings go? If a concern is noted, what will be the next step?
- How often will the application of technology solutions be reviewed?

Defining Provider Roles

When designing policy, guidelines, and expectations for providers using technology to support individuals and their families, there are several areas to address, with the consideration for variation based on the type of technology solution to be used. As an example, the technology subcommittee noted that remote supports that capture video or other personal information would need more specifically outlined policy expectations related to privacy and storage than technology such as stoves with automated shutoff features. Some areas to consider include:

- If there is remote support of any kind, the policy should include the need for an indicator so that the individual knows that the system has been activated.
- What alternative strategies and solutions are available in the event of technology failure? How are direct support professionals trained on these procedures and what happens when there is turnover?
- How are hardware and software solutions maintained and updated? What is the system for verification?
- Training for both the individual and the DSPs on an ongoing basis. Who should be trained on technology solutions?
- How can individuals provide feedback as to satisfaction and use-worthiness of technology solutions? What will happen with the satisfaction data?

Federal support

Subcommittee members expressed appreciation to the Centers for Medicare & Medicaid Services (CMS) and other funders for the commitment to technology as an important service for people with I/DD. More conversations are occurring between CMS, the states, and stakeholders on the benefits and intent of technology solutions. Multiple Medicaid resources for funding technology are available through 1915(c) HCBS waiver, the 1915(i) State plan HCBS, and through the "regular" State plan. For children, EPSDT affords opportunities to use some technologies, as well. States seeking to use or increase use of Medicaid authorities for the delivery of technology-related services should consult with CMS as to the best resource for funding these services.

Another area of importance is CMS funding for training as technology increases into the mainstream of home and community-based services. With the rapid development and adoption of "everyday", nimble technology such as smartphones, conversational agents (Alexa, HomePod), and other devices, training is key for the successful use and integration of technology into community supports. The training is needed both for the supporters as well as for the person with I/DD and their family. In addition, retraining, when the devices and apps are upgraded and when there is staff turnover, should be a component of training, as well.

Funding for broadband and the internet are germane to the success of current and emerging technologies. Whether it be smart home technologies, smartphones, apps or other devices, people with I/DD and those that support them need available funding for connectivity that is considered a core part of the HCBS service.

Subcommittee members suggested that NASDDDS continue with the positive communications held thus far with CMS in furthering these objectives.

National Core Indicators, Technology Questions, and Future Studies

National Core Indicators (NCI) states and project partners continue to work toward a broader vision of utilizing NCI data not only to improve practice at the state level, but also to add knowledge to the field; to influence state and national policy; and to inform strategic planning initiatives for NASDDDS. In that vein, NCI data collection is including optional questions regarding the use of technology in the states.

Sample questions center on the use of technology and types of technology in use (e.g. remote supports, personal emergency response systems, sensors, phone, video systems, smartphones and apps, and assistive technology/communication devices.) Additionally, states are developing

other NCI technology questions, asking survey respondents if the use of technology is increasing their quality of life, meeting their needs, providing training, or if technology is addressed as part of the individual support plan.

As experience is gained in the use of NCI technology questions, more states are anticipated to include technology questions in their NCI surveys. The data will help inform state to state and multi-state trends and identify potential areas for focused technology efforts.

Sharing NCI technology data will provide key information for continued collaboration with NASDDDS, its state member agencies, the University of Colorado, and other community stakeholders in the collective endeavor to increase knowledge and access, explore policy, and disseminate promising practices.

Creating A Communications Strategy

The subcommittee emphasized the importance of ongoing communication and outreach to stakeholders. A communications strategy is essential in spreading the word about growing technologies to promote value-based solutions. Subcommittee members related this strategy to how other community endeavors, such as showing the benefits of integrated employment, supporting families, and positive supports gained acceptance. Thoughtful and robust communications strategies have assisted in alleviating concerns and addressing misconceptions about technology solutions held by both service providers, family members, and self-advocates.

In the state of Ohio, implementation of a dynamic communications strategy contributed to success in increasing the adoption of remote support by over 300 users in a year. Personal stories paired with technology showcase events have been effective opportunities for information dissemination and myth-busting.

Communication tools and strategies utilized and shared by Ohio, Missouri, Tennessee, and other states participating in the workgroup included:

- Communicating with individuals with I/DD, families, support coordinators, advocates, and providers about the positive aspects of technology;
- Posting video demonstrations;
- Demonstrating technology uses and successes extensively on websites, including those of the state I/DD agency and partner agencies, family and self-advocacy groups, and provider associations;
- Sharing of brochures, short videos, and discussing success stories during regular state agency conversations, forums, and stakeholder meetings increased the “everyday” role of technology;
- Targeted products designed to dispel myths and expand understanding of applications of technology solutions beyond organizational management, staff convenience, or surveillance; and,
- Being present and engaged with stakeholders. One member emphasized the importance of “going to talk with anybody that wanted to listen.”

Members of the subcommittee shared that individuals with I/DD, families and providers may have initial trepidations about the use of technology for people to live more independently, live on their own, move into smaller settings, spend more hours alone while living in the family home, or spending time in the community without staff or another family member. Structured public relations and communication plans are helpful to dispel myths about technology and educate those hesitant to use technology solutions, as "seeing is believing." Further ideas shared by workgroup members included:

- Video examples of individuals and family members using technology solutions;
- Newsletters and publications with links to videos;
- Podcasts;
- Adding the topic of technology into town halls, meetings, workgroups, family forums, advisory committees as a standing agenda item;
- Weaving technology into broader discussions and initiatives (i.e. Employment First and Aging support);
- Adding technology components in staff, advocate and family training;
- Technology summits, conferences, and showcases;
- Smart Homes to visit – even better when someone lives in it and allows an occasional visitor versus a model home- one house in a state has a casita in which a visitor can stay in the separate home while visiting;
- Share success stories with local and national media outlets;
- Peer-to-peer training sessions on technology use and adoption;
- Web pages with multiple links to success stories with both higher-tech and everyday technology use; and,
- Having another family or provider to talk with has made the largest difference.

Technology is expanding rapidly and it takes effort to keep up with the changes and improvements. A state technology "champion" can assist the state in many ways including being actively involved in communications initiatives. The state champion is someone available to answer questions, is a problem-solver, keeps abreast of technology advancements, and stays close to opportunities in Medicaid changes. The champion easily talks with self-advocates, families, support coordinators, and providers. This is also helpful when provider agencies have a dedicated "administrative level" staff to investigate personalized technologies for their agency. It is important to note that this is not the IT specialist that one calls when a computer is broken, but a committed technology "evangelist" searching and applying innovative technology solutions.

Conclusion

The Technology Subcommittee offers this white paper, with thoughts and considerations to NASDDDS member state agencies and partners in furtherance of the possibilities and promise that technology can offer to people with I/DD and their families to lead more independent, autonomous, and inclusive lives. Technology is a relatively new frontier and we look forward to more conversation and learning together.

Summarizing the recommendations in this paper, the subcommittee highlights the following considerations:

States should set clear expectations as to the role of technology in the lives of people with I/DD, their families, and the community, with an emphasis on increasing the skills, independence, autonomy, and opportunities individuals with I/DD have to direct their own lives.

- Set out clear guidance regarding the idea that technology should be driven by choice and outcomes based on increasing autonomy and self-direction;
- Engage stakeholders at all levels of planning, development, and technology implementation;
- Stay focused on the dynamic and diverse ways technology solutions can contribute to quality outcomes in an evolving landscape; and,
- Showcase examples of values-based and creative use of technology solutions, ensuring access to 21st-century communities in the same manner as all Americans.

An ongoing communication and outreach plan for and including stakeholders, state agencies providers, and funders is key to the success of technology initiatives and to incorporate technology as a regular part of individual and state plan development and implementation.

- In addition to sharing success stories, where to learn more about both high tech and everyday technology, and how to develop an individual plan, a primary role of the outreach is demystifying technology and myth busting.

Policies and guidelines need to be inclusive of technology support in the family home, in residential settings, in the community, and in.

- The individual support plan should address the area of technology to assure people are provided with this option
- Individual support plans should primarily center on individual choice and autonomy, and be inclusive of privacy, back-up and ongoing training for the person and supporters.
- Monitoring, licensing, and quality outcomes should be reviewed and updated regularly

States must consider quantifying and reinvesting cost savings while providing quality supports.

The subcommittee shared a collective interest in learning how best to capture the financial impact of employing technology in several areas, such as savings in the direct support professional workforce as well as cost efficiencies in health and safety when technology focuses on those support aspects. These subcommittee participants would like to participate in any such study and analysis.

- State I/DD agencies will need to set parameters on savings reinvestment including how to incentivize providers while keeping a strong focus on individual choice and considerations on how to support the direct support professional workforce through reinvestment.
- There is a need for longitudinal data collection, to track what variables contribute to high-quality community living.

NASDDDS may want to explore possibilities around the efficacy of value-based purchasing strategies and work with states regarding other ideas for parameters that can be used for savings realized through implementing technology strategies.

To assess technology's impact on quality of life, NCI questions on technology will inform these outcomes as well as other user testing and innovation studies, such as those at the University of Colorado. The University of Colorado is particularly interested in looking at the impact of technology on overall well-being and the contributions to authentic happiness for individuals and family members.

States must find partnership opportunities to identify strategies to help address the direct support professional workforce shortage.

- States should focus on gathering promising practices from across the country and highlighting examples of when and how reducing DSP hours has proven successful within the values of quality, self-directed services. Such examples may include teletherapies/telemedicine, reducing multiple staff with positive behavior support strategies combined with technologies and people living alone, or with fewer housemates.
- Leverage the technical knowledge of new and current DSP's and reward/highlight innovative technology applications.

States, along with NASDDDS and University of Colorado State of the States Project, should work with CMS to increase the accessibility of both high and everyday technology solutions. This would include how to consistently fund access to the internet and broadband, developing nimble service definitions, exploring alternative payment models, and strategies to fund training and retraining of both individuals with I/DD and supporters.

The subcommittee expressed a desire to continue its work to cultivate promising practices in the ever-evolving technology landscape, capture stories and continue data collection to demonstrate trends in technology solutions and policy advancements.

National Core Indicators, Technology Questions, and Future Studies

National Core Indicators (NCI) state participants and project partners continue to work toward a broader vision of utilizing NCI data not only to improve practice at the state level but also to add knowledge to the field, to influence state and national policy, and to inform strategic planning initiatives for NASDDDS. In that vein, NCI data collection is including optional questions regarding the use of technology in the states.

Sample questions center on the use of technology and types of technology in use (e.g. remote supports, personal emergency response systems, sensors, phone, video systems, smartphones and apps, and assistive technology/communication devices). Other NCI technology questions states are developing include asking survey respondents if the use of technology is increasing their quality of life, meeting the needs of the person, whether training is provided, and if technology is addressed as a part of the individual support plan. As experience is gained in the use of NCI technology questions, more states are anticipated to include technology questions into their NCI surveys. The data will help inform state to state and multi-state trends and identify potential areas for focused technology efforts.

Sharing NCI technology data will provide key information for continued collaboration with NASDDDS, its state member agencies, the University of Colorado, and other community stakeholders in the collective endeavor to increase knowledge and access, explore policy and disseminate promising practices.

Resources

The number of technology links and publications is large and growing. While no inclusive list of resources is available, the following should prove helpful.

Assistive Technology

AbleData
www.abledata.com
Assistive Technology Industry Association (ATIA)
www.atia.org
Association of Assistive Technology Act Programs
www.ataporg.org
Center on Technology and Disability
www.ctdinstitute.org
National Assistive Technology Act Technical Assistance and Training (AT3) Center
www.at3center.net

Mainstream Technologies

BridgingApps
https://www.bridgingapps.org/
GARI
https://www.accesswireless.org/find-accessible-devices/wearables

Sample of Resources From Technology Subcommittee States

Connecticut Department of Developmental Disabilities
The Connective Department of Developmental Disabilities has a landing page dedicated to assistive technology
https://portal.ct.gov/DDS/General/AssistiveTechnology/Assistive-Technology
There are links for families across the LifeSpan
https://portal.ct.gov/DDS/General/AssistiveTechnology/Assistive-Technology-for-Families
Newsletters
https://portal.ct.gov/-a/media/DDS/Publications/AT/DDS_Assistive_Technology_Newsletter_Issue_1_July_2019.pdf?la=en

Minnesota Department of Health Services
Offers a comprehensive PowerPoint with definitions, links to policies, pathways, case studies and videos.
https://mn.gov/dhs/assets/107-Why-what-how-technology-training_tcm1053-402980.pdf

Missouri Division of Developmental Disabilities
Missouri DDD is a Technology First State. The landing page for technology first includes publications, public announcements, success stories and information from “tech fests”

https://dmh.mo.gov/dev-disabilities/technology-first

Ohio Department of Developmental Disabilities
Ohio is a Technology First State with comprehensive web resources
https://dodd.ohio.gov/wps/portal/gov/dodd/about-us/resources/tech-first/tech-first

The Technology First Council published its first report

Ohio Technology First Council - "Looking Toward the Future" Report

Tennessee Department of Developmental and Intellectual Disabilities
Tennessee's Enabling Technology Program's website has resources on providers, types of technologies, videos and success stories
https://www.tn.gov/didd/for-consumers/enabling-technology.html

Washington state Developmental Disabilities Administration
DDA has a user-friendly brochure that describes the wide varieties of technologies available based on "can help you be more independent and live the life you want to live"
https://www.dshs.wa.gov/sites/default/files/DDA/dda/documents/Assistive%20Technology.pd

Glossary of Terms

Assistive Technology (AT) – "…any item, piece of equipment, or product system whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individual with disabilities. – Assistive Technology Act of 2004

Assistive Technology Programs – State and Territory Assistive Technology Programs are authorized under Section 4 of the Assistive Technology Act of 1998. There is an AT Act program in each state that is focused on improving the provision of AT through comprehensive statewide leadership serving people with all forms of disability across the lifespan (see https://www.ataporg.org/ for more information)

Conversational Agents – a conversational agent is a software program that interprets and responds to the natural language (spoken word) through internet connections. Common examples include Siri and Alexa

Digital Memory Aids – Electronic devices that can support users though daily activities utilizing a variety of memory supports including visual and auditory prompts, alarms, and schedules.

Health Sensors – Digital sensors or wearables that monitor analyze and report biological data such as vital signs, glucose levels, fitness measurements and sleep patterns.

Internet of Things (IoT) – The internet of things is the connection of devises (phone, lights, doors, sensors) to the internet. More broadly, it includes devices or "things" that connect to one another for example connecting a thermostat to a smartphone to provide real-time alerts. For more information, see https://www.wired.co.uk/article/internet-of-things-what-is-explained-iot

Lifeline Program – A program administered by the Federal Communications Commission for low-income consumers that provides a discount on phone services (see https://www.fcc.gov/general/lifeline-program-low-income-consumers for more information)

Mainstream Technologies – Has no statutory definition or precise technical meaning, but is used to differentiate technology that is used by the general public as opposed to technologies designed and used entirely by people with disabilities.

Remote Supports – Allows an off-site direct service provider to monitor and respond to a person's health, safety, and other needs using live communication, while offering the person more independence in their home.

Technology First – Framework for systems change where technology is considered first in the discussion of support options available to individuals and families through person-centered

approaches to promote meaningful participation, social inclusion, self-determination and quality of life.

Telehealth – The provision of healthcare remotely by means of telecommunication technology. (Note- may be defined differently by state policies and waivers).

Teletherapy – The provision of therapy remotely by means of telecommunication technology.

Wayfinding Technology – Information systems that assists with guiding people in and around physical environments

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NASDDDS will continue to refine the contents of this document as additional data and/or information becomes available.

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