

Global perspectives on assistive technology

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Volume B – Day 2

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Global perspectives on assistive technology

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Volume B – Day 2

Foreword

The World Health Assembly recognizes the need for improving the access to assistive technology across the world and, through its resolution 71.8, has commissioned the World Health Organization to prepare a global report on effective access to assistive technology by 2021. The development of the Global Report on Assistive Technology (GReAT) is led by a Steering Committee with representatives from the WHO Secretariat, the Global Cooperation on Assistive Technology (GATE) and UNICEF, and an Ad-hoc Advisory Group of Experts on Assistive Technology. The work is carried out in collaboration with international experts and stakeholders in assistive technology.

As a first step to inform the development of the Global Report, WHO Headquarters in Geneva hosted the GReAT Consultation on 22-23 August, 2019. Over 260 participants from 60 countries representing academia, civil society, users of assistive technology, global assistive technology stakeholders, States and UN agencies participated in this global consultation.

There was an overwhelming response to the call for contributions addressing the objectives of the Global Report, which are to highlight the current need, demand and supply of assistive technology, as well as to outline good practices for innovation and recommendations to improve access. More than 130 abstracts were submitted, and following a review process considering the relevance, quality and geographic representation, over 80 manuscripts or illustrative contributions were subsequently invited to be developed into full manuscripts for presentation at the GReAT Consultation.

Contributions were sought to illuminate the range and breadth of assistive technology and to recognise the diversity of stakeholders within the complex system of assistive technology. An encompassing view of evidence ensured that evidence-based practice, practice-based evidence, and situated knowledges were recognised and considered. Submitted manuscripts were reviewed from academic, technical and accessibility perspectives. These Proceedings represent the first foundation for the Global Report. Its 76 sections comprise 72 manuscripts and four abstracts, and are presented across eight themes:

1. Needs and supply
2. Access
3. Outcomes
4. Policies and programmes
5. Procurement and service provision
6. Capacity building
7. Innovations
8. Enabling the sector

Many sections are authored by international groups of authors, and a substantial proportion were received from author teams who had not previously published. All authors are to be congratulated on sharing their knowledge and perspectives. The sections present a 'state of the science' for the assistive technology sector in 2019 at a time of great need and great opportunity.

Work will now continue to identify and fill knowledge gaps, collect data and listen to unheard voices to further inform the development of the Global Report. Our sincere wish is that the spirit of the GReAT Consultation – great things happen when great people meet – will inspire us to continuous concerted efforts to improve the access to assistive technology worldwide.

Natasha Layton and Johan Borg
Editors

Acknowledgements

We would like to thank all authors whose rich and diverse contributions have made these proceedings into a valuable resource for years to come. Recognition is also due to the Co-Chairs of the GReAT Consultation, Mac Maclachlan of Maynooth University and Rosangela Berman Bieler of UNICEF, and the GReAT Consultation moderators Arne Eide, Desleigh DeJonge, Lynn Gitlow, James Rwampigi Aniyamuzaala, Claude Tardif, David Constantine, Catherine Holloway and Patanjali Nayar. Across sessions and throughout the two days, their skill and commitment wove a coherent narrative from the diversity of presentations.

Ultimately, tribute must be paid to Chapal Khasnabis for guiding the programme development and for an encompassing approach to contributions. His visionary leadership over many years has led to this pivotal moment for assistive technology access globally.

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A distribution strategy for driving product diversity and demand creation

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Abstract

Background and objectives: This commentary will present the experience of Consolidating Logistics for Assistive Technology Supply and Provision (CLASP) - a USAID-funded project designed by UCP Wheels for Humanity (UCPW) - in incentivizing assistive technology (AT) product innovation, including discussion of challenges and opportunities and the relevance of emerging best practices in establishing global product quality standards. **Approach:** UCPW will present commentary on its experience designing and managing the CLASP project, and in particular its multidisciplinary Product Advisory Council (PAC) and its role in driving innovation in the global AT marketplace. CLASP uses innovation competition and tailored feedback from the PAC to encourage manufacturers, both large and small, to innovate and improve their products, and uses the CLASP platform to reward suppliers of innovative product of high quality and reasonable price with access to new markets. **Expected findings:** CLASP is a supply chain solution that consolidates a diversity of AT products from a range of suppliers at its product distribution center in China. The CLASP catalog offers buyers the ability to make large or small orders of mixed products and sizes, and because CLASP keeps a consistent supply in stock at its distribution center, buyers can receive their products more quickly than if they were to order directly from manufacturers, which typically manufacture to order. CLASP is therefore able to deliver AT products that best suit users' individual needs faster and more efficiently. CLASP has provided more than 40,000 products to 30 countries and has sold products to multiple major donor agencies and governments. After four years of operation, CLASP is realizing its potential as an AT innovation engine and a global platform for LMIC product development and supply. The CLASP experience has shown that this platform is not just a tool for buyers to access a range of product types quickly and easily; the more it is used, the more it can be a tool for encouraging product innovation. CLASP has established the peer-nominated, competitively selected PAC to review and recommend products for inclusion in the CLASP catalog. The PAC was formed under advisement of the International Society of Wheelchair Professionals (ISWP) and is composed of a mix of clinical, technical, and wheelchair-user experts. CLASP uses the WHO's Priority Assistive Products List as guidance when determining product categories and issues an open Invitation to Bid (ITB) on a periodic basis to solicit product submissions. The PAC and CLASP have developed standardized scoring criteria for the AT

product categories, including product specifications, product quality requirements (e.g. ISO-compliant manufacturing processes, ISO durability testing), operations thresholds, price parameters, and product support and promotional materials. Products are screened to meet minimum thresholds for product quality and market viability, and if met, an in-person product review and several rounds of Q&A are conducted by the multidisciplinary PAC team. The products ultimately selected for inclusion in the catalog are marketed to buyers, who are able to test out new products from CLASP—a supplier they can trust to assure quality and appropriateness. Because CLASP itself is market driven, it balances its responsiveness to the demands of the current immature, dislocated market with its anticipation of new market potential for improved products, thereby resulting in selection of the widest variety of quality AT products that the global market will support. **Challenges and opportunities regarding greater access to quality, affordable AT for all:** People with mobility impairments have a right to appropriate wheelchairs and other mobility enhancing AT. However, the appropriateness of an AT product will vary according to the user’s environment, health and lifestyle. When diverse users all receive the same kind of wheelchair regardless of individual needs, the impact can be damaging. Research shows that an inappropriate wheelchair, provided without support services, can result in negative outcomes for the user, including product abandonment or resale, increased risk of life-threatening secondary consequences, and reduced cognitive and physical development as a result of restricted mobility. There is, therefore, an indispensable need for diversity in the global AT marketplace. Governments and organizations procuring assistive products have historically faced complex challenges in sourcing a diverse and appropriate range of AT products in Low- and Middle- Income Countries (LMIC). The AT industry globally is dominated by manufacturers that design products for high-income countries, often operating under a high-margin, low-volume model. In countries where local production does exist, products are often low-quality, do not meet global standards, and are comparatively high cost. The relatively small market in any LMIC for a particular type of AT product makes it difficult for in-country manufacturers to benefit from economies of scale. For LMICs that import AT products, limited financial resources and a small variety of available products mean buyers tend to procure from a single supplier with limited, often low-quality options and long lead times to manufacture and ship. These challenges both inhibit product innovation and inhibit innovative products from reaching LMIC markets. The history of low investment in products designed for LMIC means there is significant opportunity for substantial, disruptive product innovations, in addition to the continuous product improvements needed in any market. Still, for LMIC countries to take advantage of the opportunity, there must be demand for AT, which will require a total market and whole of population approach. Within the context of these challenges, there is opportunity for an innovation competition mechanism to incentivize small and large manufacturers alike to enter the market, while also establishing global benchmarks for product quality. The more such a mechanism is used by global buyers, the more potential it will have in catalyzing product innovation. By stabilizing volume, and by raising product visibility and accessibility for selected suppliers, such a mechanism can offer

an attractive incentive to improve product quality and design. Though this may create short-term barriers for domestic manufacturers that may not be able to meet global standards, this will ultimately generate innovations that best serve user needs and will establish uniform global product criteria that can be contextualized to meet national procurement protocols.

Keywords

Assistive technology product design, innovation, global distribution, demand creation

Introduction

People with mobility impairments have a right to appropriate wheelchairs and mobility-related assistive technology (AT)¹ (1). However, the appropriateness of an assistive product (AP)² (2,3) will vary according to the user's environment, health and lifestyle. Particularly with regard to wheelchairs, when diverse users all receive the same kind of product regardless of individual needs, the impact can be damaging. Research shows that an inappropriate wheelchair, provided without support services, can result in negative outcomes for the user, including increased risk of life-threatening secondary consequences, reduced cognitive and physical development as a result of restricted mobility, and product abandonment or resale (1,3,4). There is, therefore, an indispensable need for diversity in the global AT marketplace.

The Global Cooperation on Assistive Technology (GATE), the WHO's global initiative to improve access to high-quality affordable AP globally, has encouraged national governments to ensure access to a diversity of products and details the 50 most essential assistive devices in its Priority Assistive Products List (APL). As governments commit themselves to global ambitions such as Universal Health Coverage, the Convention on the Rights of Persons with Disabilities and the Sustainable Development Goals, they will need structures that can readily facilitate their uptake of a range of appropriate AP.

Governments and organizations procuring AP have historically faced complex challenges in sourcing a diverse and appropriate range of AP in Low- and Middle-Income Countries (LMIC). The AT industry globally is dominated by manufacturers that design products for high-income countries, often operating under a high-margin, low-volume model (1,3,4). In countries where local production does exist, it is often at insufficient scale, and products may be low-quality and fail to meet global standards (1,3,5). For LMICs that import AP, financial constraints, complex and costly importation requirements, and inadequate expertise on the need for a variety of products mean buyers are led to procure from a single

¹ Assistive technology refers to "assistive products and related systems and services developed for people to maintain or improve functioning and thereby promote well-being," as defined by Holloway et al (1).

² Assistive product refers to any product (including devices, equipment, instruments, and software), either especially designed and produced or generally available, whose primary purpose is to maintain or improve an individual's functioning and independence and thereby promote their well-being, as defined by Khasnabis et al (2).

supplier with limited, often low-quality options and long lead times to manufacture and ship. These challenges inhibit availability of product diversity and have the net effect of inhibiting innovative products from reaching LMIC markets.

This paper provides commentary on this topic, derived from the Consolidating Logistics for Assistive Technology Supply and Provision (CLASP) project, which was designed by UCP Wheels for Humanity (UCPW) with funding from the United States Agency for International Development (USAID). CLASP is a global AP distribution mechanism which includes an international competitive bidding process to ensure that the products offered by CLASP provide the greatest value to the consumer. Greatest value is secured by a diversity of products competing within a single category. However, a dearth of designs and manufacturers competing in this space means consumers have historically been availed limited product. Unlike other open competitions with established markets and existing demand for like-product, in the LMIC wheelchair market, competition paired with a global distribution mechanism serves to mitigate start-up risk while simultaneously calibrating towards a global standard for the market. The more the CLASP mechanism is used by global buyers, the more potential it will have in catalyzing product innovation through its demand creation potential. By stabilizing volume, and by raising product visibility and accessibility for selected suppliers, this mechanism can offer an attractive incentive to improve product quality and respond to design gaps.

The need for disruption in the mobility AP market

The history of low investment in assistive products designed for LMIC creates significant opportunity for substantial, disruptive product innovations, in addition to the continuous product improvements needed in any market. Still, for LMICs to take advantage of the opportunity, there must be demand for AP, which will require a total market, population-based approach. Specifically, integration of rehabilitation services and associated AP into health systems, financed through Universal Health Coverage for LMIC consumers, will dramatically increase access to appropriate product and services. Combined with state legislation and policies establishing standards for product and service, state-led procurement will, over time, drive demand for AP.

Meanwhile, as systems in LMICs catch up to consumer AP needs, there is a potential global wheelchair market of up to 75 million people, and a need for a broader range of AP in the hundreds of millions. But the global market is immature and fragmented, and it has been obfuscated for decades by well-meaning charities that have donated large numbers of unregulated products of variable quality that have often been inappropriate for the environments in which they have been donated (1,3-6). Further, the scarcity of personnel trained to provide AT within LMICs results not only in poor, potentially unsafe provision, but also in a lack of local awareness of the need for product diversity and quality (1,3-5).

International non-governmental organizations, with the support of influential donors, have addressed product-related inefficiency in part by shifting from small-scale local workshops

to mass production in countries with industrial manufacturing capacity. While this has led to improved designs, greater quality assurance, and lower costs per wheelchair, there are still few product styles available, limiting the product options for users and service providers.

The PAC: Driving quality and innovation through open competition and product feedback

CLASP selects the products included in its platform based on the recommendations of its multidisciplinary Product Advisory Council (PAC), a peer-nominated, competitively selected group of clinical, technical, and wheelchair-user experts. The PAC—which was formed under advisement of the International Society of Wheelchair Professionals (ISWP) and is composed of volunteers representing broad geographies—is responsible for desk and in-person product evaluation against established criteria, product testing review, and ultimately product recommendation to CLASP. Following PAC’s recommendations, CLASP’s management makes final product selection, places an initial order of the selected products for inclusion in the CLASP system, and utilizes its marketing platform and personnel to market, sell and deliver the new products.

The PAC and CLASP issue an open Invitation to Bid (ITB) on a periodic basis to solicit product submissions for each product category. CLASP uses the WHO’s APL as guidance when determining product categories, though its product categories are more specific than the APL. CLASP breaks product categories down to the level of material or terrain use; for example, an active rough terrain wheelchair is classed differently than an active urban terrain wheelchair. The PAC coordinator and CLASP have developed standardized scoring criteria for the AP categories, including product specifications, product quality requirements (e.g. ISO-compliant manufacturing processes, ISO durability testing), manufacturing capabilities, market-based price parameters, and product support and promotional materials. Products are screened to meet minimum thresholds for product quality and market viability, and if met, an in-person product review and several rounds of Q&A are conducted by the multidisciplinary PAC team.

It is through this open competition and the ensuing feedback process that the PAC influences product quality and design, implicitly. This is done, in part, through establishing minimum thresholds required for inclusion in the CLASP catalogue. As the PAC’s product selection criteria becomes more widely known, it can influence new product development in line with its standards. A positive ISO 7176 test report, for example, is a minimum threshold for inclusion. This in turn improves quality assurance for buyers and users alike. Meeting testing standards is particularly important for AP destined for LMICs where terrain may be rugged and environments unforgiving to products poorly or inappropriately designed for the context.

Further, during the review process itself, product designers receive feedback that can inform product improvements. The PAC provides the bidders with questions, photos and videos indicating product concerns. In some cases, the questions asked, followed by a rejection of the bid, will implicitly inform the bidder of the area of improvement needed. In

other cases, the PAC makes offer for inclusion in the CLASP platform contingent on advised changes to the design. Currently only the bidders whose products have been recommended by the PAC for inclusion in the CLASP catalog have received direct recommendations for design improvement—and even then, it is a limited version of the very detailed product evaluation that is completed by the PAC.

When the PAC was formed, it was intended to standardize the quality of product, and the product selection process, for the CLASP platform, without conflicts of interest. It is an unintended consequence that having this expert committee review products also generates valuable information for bidders on their designs. The role of the PAC in improving product design has evolved organically through the feedback process from the multidisciplinary expert committee to the designers. This could be commodified, though it is not currently part of the PAC's role.

The PAC can also identify product design deficiencies that can inform future ITBs and more directly solicit product innovations. For example, through the ITBs conducted to date, the PAC has determined that there is a need for active manual wheelchairs that are lighter, for wheelchairs with postural support that are lighter, transportable, and more user friendly, and for good quality and affordable high-pressure relief cushions. The PAC can use the data collected through its product reviews from past ITBs to issue subsequent ITBs with even more detailed product criteria to solicit designers to address these product gaps.

CLASP: Encouraging innovation by linking products with new markets

While the PAC serves as a neutral arbiter of quality, implicitly incentivizing product improvements, CLASP uses its marketing platform to reward suppliers of PAC-vetted products with access to new markets.

Market entry for new products is difficult; new products face significant barriers including but not limited to, lack of familiarity among service providers, concern about spare parts availability, lack of product performance data, and lack of brand recognition and brand loyalty. Together these factors contribute to lack of demand for unknown product. CLASP uses its marketing platform and online marketplace to de-risk market entry for suppliers.

CLASP's product catalog provides buyers the ability to make large or small orders of mixed products and sizes, and because CLASP keeps consistent stock levels at its product distribution center in China, buyers can receive their products more quickly than if they were to order directly from suppliers, which typically manufacture to order.

The products selected for inclusion in the CLASP platform are marketed to buyers, who are able to test out new products from CLASP—a distributor they can trust to assure quality and appropriateness. Because CLASP itself is market driven, it balances its responsiveness to the demands of the current immature, dislocated market with its anticipation of new market potential for improved products, tactically resulting in selection of the widest variety of quality AT products that the global market will support.

In a fragmented market with low access to information for buyers and suppliers alike, innovation competitions without direct market linkages won't successfully shepherd new products to market. CLASP's role in engaging buyers thus creates an incentive for suppliers to respond to ITBs. CLASP can incentivize quality and innovation by rewarding suppliers with volume stabilization and market intelligence. By representing the CLASP catalog at trade shows and in direct and online marketing efforts, CLASP is able to leverage its sales and marketing team for the benefit of multiple suppliers, making their initial investments in product research and development more worthwhile.

The more CLASP can become a preferred distribution mechanism, the better it is positioned to consolidate market information that can be used to benefit multiple suppliers to further encourage suppliers' investment into CLASP and to leverage the information that CLASP is able to collect for the betterment of their products, sales, and the industry as a whole. CLASP is able to provide to its Committee of Suppliers (COS) with analysis and data, including sales and product performance data that is disaggregated by manufacturer, product type, SKU and geography, and trend analysis, which includes identification of product gaps, regional trends, and donor preferences. All this dislocated information would be burdensome and near impossible for individual companies to cull and would offer each supplier just a limited view of the market from the vantage point of their own supply chain. This data can further incentivize existing manufacturers, as well as new entrants, to fill design gaps.

CLASP in support of AT market shaping

CLASP is a promising mechanism in an unregulated market; CLASP attempts to harness the market to solve problems of access, but up against a history of charity that has fragmented the market into those who are willing to wait for donated products and those that are willing to pay (1). This has made the market diffused and noisy and has made it difficult to set quality bars for product.

Without market development strategies—catalytic interventions that support the market to become more competitive, accessible and sustainable—the market failures that define the AT sector will continue to inhibit access to appropriate products for marginalized AT users. Market shaping efforts, however, typically presuppose existing market demand, while CLASP operates under the hypothesis that there is some demand—but that demand by and large needs to be *built*. CLASP is working to create demand *and* respond to the demand, to champion high-quality product *and* high-quality service provision within the constraints of the LMIC market.

UCPW's experience designing and managing the CLASP project has enriched our understanding of the global AT marketplace, and the market shaping levers most applicable to the wheelchair sector. In designing the CLASP project, UCPW has drawn from its nearly 25 years of experience with the wheelchair industry—including as a manufacturer and provider of more than 100,000 assistive products, a contributor to the WHO Wheelchair Service

Training Packages, and chair of the ISWP's Wheelchair Advocacy Working Group. This range of experience has allowed UCPW to understand the challenges and potential of today's wheelchair supply chain, as well as stakeholder needs.

The CLASP distribution mechanism is a reasonable approach to building demand for an undervalued, poorly understood commodity. Through CLASP, buyers outsource product vetting to CLASP/PAC, while building their own competency. This can in turn accelerate the establishment of AT procurement processes at the state level. Procurement systems will further contribute to diversifying product design as local manufacturing rises to global standards or competes globally. In both cases, more demand leads to more product diversity.

The establishment of quality standards and the competition for inclusion in the CLASP catalog may create short-term barriers for domestic manufacturers that may not be able to meet global standards. Still, as with other health commodities, regulation will ultimately generate competition, leading to innovations that best serve user needs, and will establish uniform global product criteria that can be contextualized to serve national procurement protocols.

CLASP has the promise of securing larger volumes for its suppliers, potentially reducing prices for consumers and increasing revenue for suppliers which can be invested in new product design. CLASP seeks wholesale pricing from suppliers and offers manufacturer's suggested retail pricing to buyers, wherein suppliers gain the benefits of a global distributor that manages marketing, sales and shipping logistics on their behalf, and buyers benefit from reduced transaction costs through ordering, shipping and import that is simpler, faster and more inclusive of a wider range of products.

It should be noted, however, that CLASP does not have supplier exclusivity, and in some cases to date suppliers have sold directly to buyers at lower rates. This practice dulls CLASP's value proposition, its ability to influence design and the shared interest of greater access. As buyers gain knowledge of the need for a diversity of products, thereby growing demand for a consolidating platform such as CLASP, it is anticipated that CLASP will have more leverage in requiring supplier exclusivity and will be able to offer volume commitments to suppliers, resulting in more competitive pricing for buyers. Further, as governments establish AT regulations that include product and service standards, the donor (and charity) community can reinforce those regulations by coordinating or pooling financial resources directed at product procurement and workforce development to meet the standards. Consolidated donor financing can shift the center of gravity toward appropriate product and thus drive demand.

Conclusion

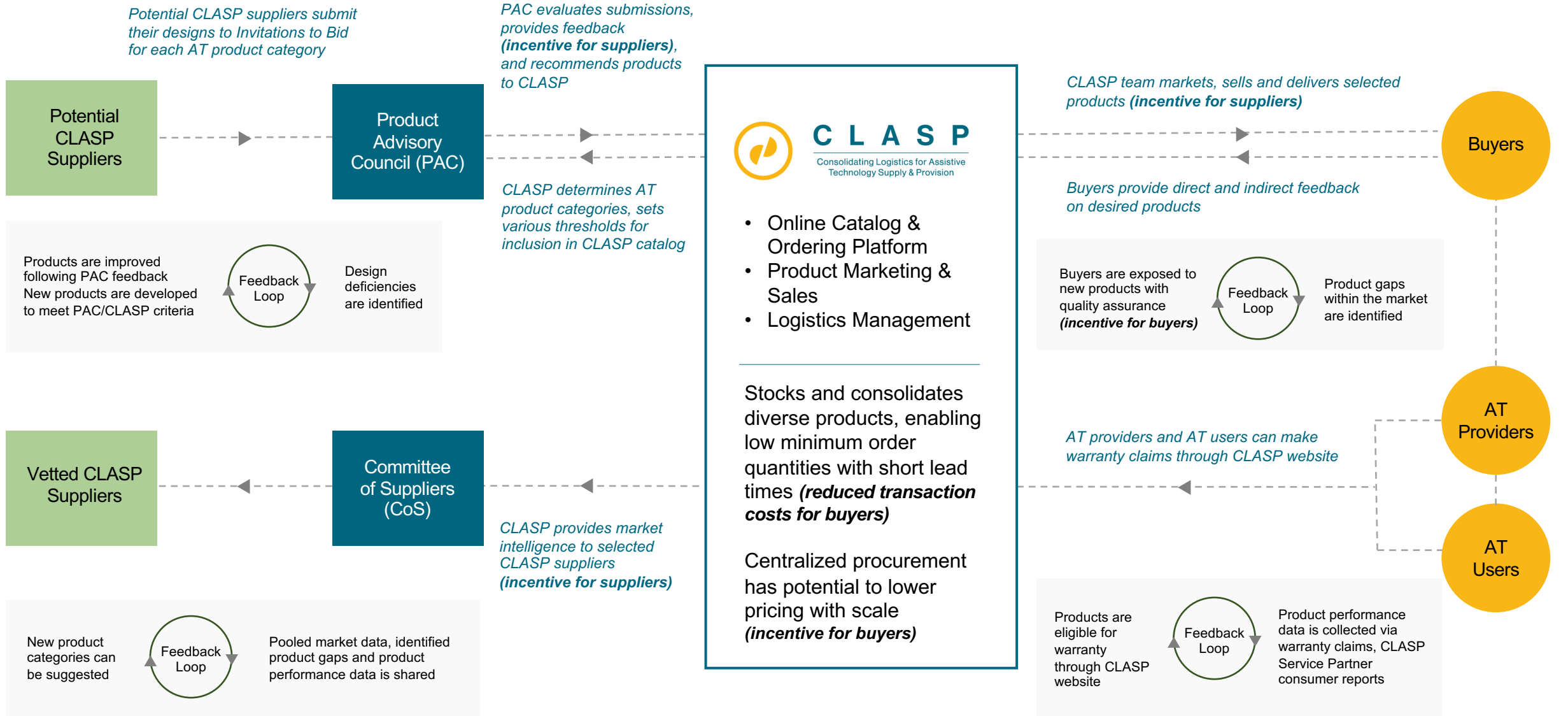
People with AT needs deserve choice, quality and ease of access to products. AT is integral to personal mobility, function and health, and settling for lowest common denominator products is simply insufficient as well as inefficient.

After four years of operation, CLASP is realizing its distinctive potential as an AP innovation engine and a global platform for LMIC product development and supply. The CLASP experience has shown that this platform is not just a tool for buyers to access a range of product types quickly and easily; the more it is used, the more it can aggregate volume, the more it can be a tool for encouraging product innovation. Because CLASP is a relatively small, nimble platform, it can adjust the products offered within its catalog quickly. By refining the CLASP catalog to reflect the most affordable, high quality products available, and by establishing product quality standards that can then be shared with suppliers and buyers alike, CLASP is able to aggregate and steer demand toward an optimized set of products that are vetted by a multidisciplinary, neutral expert committee.

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A distribution strategy for driving product diversity and demand creation





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