A Person-Centered Assistive Technology Service Delivery Model: a framework for device selection and assignment

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Abstract

Background: The introduction of assistive technology (AT) into people’s lives is a deliberative and long-term process, which presupposes teamwork as much as professionalism, time, and experience. The aim of the assistive technology assessment (ATA) process is to suggest guidelines to follow in order to reach valid results during the AT selection and assignment process. Purpose: This paper aims to critically discuss the application of the model of the ATA process developed by Federici and Scherer (2012c).

Method: A cross-cultural comparison of

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AT service delivery systems and discussion of the ATA process model adopted by the Leonarda Vaccari Institute of Rome was conducted. Conclusion: Currently, the wide variety of AT devices on the market opens up new frontiers for the individual’s enhanced functioning, inclusion, and participation. Because the choice for the most appropriate match is often a complex process, a systematic selection process such as the ATA process described in this article can help practitioners to efficiently achieve successful outcomes.

Keywords: Assistive technology assessment process; Assistive technology service delivery; Matching person and technology; ICF; Rehabilitation technology; User-centered delivery process; Assistive technology abandonment.
1. Introduction

The process of matching assistive technology (AT) with a person requires a well-designed and researched sequential set of assessments that are administered by professionals with different areas of expertise in specialized service delivery within rehabilitation technology (Scherer, 2002, 2005; Corradi, Scherer, & Lo Presti, 2012; Federici & Scherer, 2012a). In the field of rehabilitation technology, service delivery refers to “the set of facilities, procedures and processes that act as intermediaries between the AT product manufacturers and AT end-users” (Stack, Zarate, Pastor, Mathiassen, Barberà, Knops et al., 2009, p. 28).

A more broad and complete meaning of service delivery is offered in the United States Assistive Technology Act (United States Congress, 2004) which, in order to disambiguate and clarify the general term “service delivery” which could refer to any platform, even one providing architecture in telecommunications, refers to it by the more suitable nomenclature “assistive technology service”. The Assistive Technology Act, indeed, better specifies the variety and nature of the services provided by an AT service, listing seven different services:

- “(A) the evaluation of the assistive technology needs of an individual with a disability, including a functional evaluation of the impact of the provision of appropriate assistive technology and appropriate services to the individual in the customary environment of the individual;
- (B) a service consisting of purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by individuals with disabilities;
- (C) a service consisting of selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, replacing, or donating assistive technology devices;
- (D) coordination and use of necessary therapies, interventions, or services with assistive technology devices, such as therapies, interventions, or services associated with education and rehabilitation plans and programs;
- (E) training or technical assistance for an individual with a disability or, where appropriate, the family members, guardians, advocates, or authorized representatives of such an individual;
- (F) training or technical assistance for professionals (including individuals providing education and rehabilitation services and entities that manufacture or sell assistive technology devices), employers,
providers of employment and training services, or other individuals who provide services to, employ, or are otherwise substantially involved in the major life functions of individuals with disabilities; and

- (G) a service consisting of expanding the availability of access to technology, including electronic and information technology, to individuals with disabilities” (United States Congress, 2004, p. n. a.).

Having made the term service delivery clear, we also wish to clarify the use of the term AT in this paper. According to A Glossary of Terms for Community Health Care and Services for Older Persons, we use AT as “an umbrella term for any device or system that allows individuals to perform tasks they would otherwise be unable to do or increases the ease and safety with which tasks can be performed” (United States Congress, 2004, p. 10). This broad meaning of AT is more commonly attributed to the term “Assistive technology device”, as stated in the Assistive Technology Act (United States Congress, 2004) and acknowledged by the WHO and World Bank in the World Report on Disability, defined as follows: “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 individuals with disabilities” (WHO & World Bank, 2011, p. 101).

The purpose of this study is to critically discuss the application of a model of the assistive technology assessment (ATA) process, developed by Federici and Scherer (2012c), in a service delivery system. In the first section, we will present the service delivery features including the assessment of and matching with persons when AT was provided; a subsequent section will describe the model of the ATA process adopted by the AT service delivery team.


2.1. The Centre for AT Evaluation of Rome, Leonarda Vaccari Institute

The model of the ATA process developed by Federici and Scherer (2012c) with contributions by 55 researchers from five continents, is not the result of mere academic exercise, but emerges from evidence-based data provided by applied research on the model (Müller, 2012). Beyond the practical experiences of each contributor in developing the ATA process
(Federici & Scherer, 2012c), the ATA ideal model has been tested in the Center for AT evaluation of Rome, thanks to the scientific and clinical collaboration and economic and operational support of the Leonarda Vaccari Institute - which, in turn, is part of the Italian Network of Centers Advice on Computer and Electronic Aids and cooperates with the Institute for Matching Person & Technology. The Leonarda Vaccari center (hereafter Center) for AT evaluation offers non-commercial advisory services and support for AT and computers for communication, learning, and autonomy. The service is free of charge for users who access it through the Italian National Health Service.

According to the definitions of the Assistive Technology Act (United States Congress, 2004), the Center for AT service covers five (A, C, D, F, and G) of the seven services characterizing an AT service, as quoted above in the previous section. According to a trans-cultural taxonomy as stated by the United States Congress, we acknowledge how much the Italian AT service delivery system permeates the Center model with features that might remain hidden in a cross-cultural viewpoint of other health and service delivery systems. We agree with Smith who compared service delivery in the field of rehabilitation technology to an iceberg (Smith, 1987).

Before exploring the ATA process, we will now dive a little deeper into the model of the Center (next sub-section) by turning to the more systematic modeling of service delivery according to Smith (1987). Smith gives six considerations or variables affecting service delivery - (1) purpose and mission; (2) functional areas; (3) geographical catchment area; (4) population served; (5) internal operation; (6) method (Smith, 1987, p. 13) – and seven models in service delivery in rehabilitation technology – (1) durable medical equipment supplier; (2) department within a comprehensive rehabilitation program; (3) technology service delivery center in a university; (4) state agency-based program; (5) private rehabilitation engineering/technology firm; (6) local affiliate of a national nonprofit disability organization; (7) miscellaneous types of programs (Smith, 1987, pp. 15-19).

The first variable regards the “purpose and mission” of a service delivery program.

“For example, some service delivery programs are based primarily as evaluation centers, where clients come from all areas within a fairly substantial geographical region for the purpose of receiving a comprehensive evaluation and recommendations. Ongoing treatment and therapy is not a part of the mission of this type of program. On the other hand, some rehabilitation technology programs are based on a consulting
model. The nature of these programs is based on a short-term relationship between the provider and the user” (Smith, 1987, p. 13).

In order to understand the purpose and mission of the Center, we have to take into consideration that AT devices in Italy are mainly provided through the National Health Service that underpins specialist healthcare. AT devices are prescribed by certified physicians (physiatrist, or doctor in rehabilitation medicine). The prescription must be approved by the local health agency (Azienda Sanitaria Locale: ASL), who can also refuse the prescription or require further documentation if the ASL is unsure as to the suitability of the AT prescribed or because the AT requires a specialized assessment process (Estreen, 2010). In the latter case, the ASL makes use of an accredited AT service delivery operating within the National Health Service via contract with a single ASL. However, users can also access an accredited AT service delivery center before accessing the ASL’s physician. For the user/patient, the assessment by an ASL and/or by an AT service delivery center is free of charge. Only AT services that are not included in the National Health Service list (document drafted and regularly updated by the Ministry of Health) or in the National Insurance for Labor Accidents (INAIL) system must typically be paid for by users themselves. Because the Italian health care system consists of three levels – national, regional, and local – regional and local laws provide several ways to obtain partial or complete reimbursement (Estreen, 2010).

In view of the situation, an Italian center for AT service delivery never sells the product chosen by the user or assigns it directly to the user, thus freeing centers from bias towards any particular product or vendor. The device provision must be made later by the ASL. Therefore, in an accredited Italian AT service delivery center, the individual who utilizes it will always be a user, never a client; sometimes a patient, never a purchaser (Federici & Scherer, 2012b). This health care system gives major autonomy to the service delivery center in evaluating and choosing an AT as there is no conflict of interest between AT evaluation of a user’s needs and AT manufacturing and distribution market (Stack et al., 2009). This characterizes well the purpose and mission of the Center as an evaluation center, where users/patients come from all sectors within a fairly substantial geographical region for the purpose of receiving a comprehensive evaluation and recommendations for a device. The Center also offers on-going treatment and therapy (e.g., logo-therapy, cognitive therapy, pediatric neuro-psychomotricity therapy) and subsequent follow-ups to check the AT use and the assistive solution appropriateness over time.
The functional areas addressed and the populations served by the Center are children and adults with communication disorders and learning disabilities. The internal operations of the assessment process are always conducted by a multidisciplinary team, employees or consultants in the Vaccari Institute which in turn is accredited by the regional ASL who finances both the Institute’s programs and each user.

After clarifying the nature and services of the Center by taking advantage of Smith’s (1987) six considerations of variables affecting service delivery, the difficulty remains of identifying one among seven models within which to classify the Center. All seven models in service delivery in rehabilitation technology - even the seventh, “miscellaneous types of programs”, as stated by Smith (1987) – do not align well with the characteristics of the Italian AT service delivery. As already mentioned above, adopting USA taxonomies of service delivery models in a system where 70 percent of the devices are paid for privately, either out-of-pocket or as gifts (Freiman, Mann, Johnson, Lin, & Locklear, 2006; Stack et al., 2009) is difficult as, in Italy, almost the total AT costs are covered by the National Health Service or by the INAIL. Therefore, the incompatibility of Smith’s taxonomy and the Center model is due to the inability to reconcile two radically different systems of healthcare: the American and Italian ones (for an overview of the European service delivery systems see: Estreen, 2010; Federici & Scherer, 2012a).

2.2. The Assistive Technology Assessment Process in the Center

In a recent report, Stack and colleagues (2009) find basic procedural steps common to every service delivery system among 21 European countries:

- **Initiative**: initiation of the overall service delivery process, the first contact between the client and the service delivery system.
- **Assessment**: recognition of the need for an assistive product, evaluation of needs.
- **Typology**: recommendation for a type of assistive product, identification of solution typology, i.e. the appropriate kinds of AT for meeting needs.
- **Selection**: selection of the specific set of assistive devices and services, final choice of the assistive product among the different types available.
- **Procurement/financing**: authorization by the financing body, since private and public funds pay most of the products that are purchased.
- **Usage**: actual delivery of AT to the user, also including installation, personalization and training for the end-user and his/her supporting environment (family, employer, teacher, caregiver, etc.).
- **Follow-up**: subsequent follow-ups. Maintenance and, for the longer term, continuous monitoring that the technical aid is still the appropriate one for the individual requirements of the disabled person” (Stack et al., 2009, p. 29).

Figure 1 - *Flow chart of the ideal ATA process model (Federici & Scherer, 2012c). On the left is the User Action flow chart and on the right are the procedures of the AT Service Delivery; the numbers refer to phases and the small-cap letters designate the steps in each phase.*

These basic procedural steps are also common to the ATA process (Federici & Scherer, 2012c). It outlines an ideal process that provides reference guidelines for both public and private centers for provision of technical aids allowing them to compare, evaluate, and improve their own matching model. The ATA process borrows a user-driven working
methodology from the Matching Person and Technology Model (Scherer, 1998; Corradi et al., 2012, p. 52). Furthermore, the ATA model embraces the *International Classification of Functioning, Disability and Health*'s (ICF) bio-psycho-social model (2001) aiming for the best combination of AT to promote a consumer’s personal well-being.

The ATA process can be read either from the perspective of the user or from the perspective of the Center (Fig. 1).

Because the ATA process is a user-driven process, any activity in an AT service delivery center must find correspondence to a user action and vice-versa. The user’s actions in the ATA process can be grouped into three phases.

- **Phase 1:** The *user seeks a solution* for one or more personal activity limitations or participation restrictions and seeks assistance from a center.
- **Phase 2:** The *user checks the solution* by trying and checking one or more technological aids provided by the professionals in a suitable evaluation setting (Center, house, hospital, school, rehabilitation center, etc.).
- **Phase 3:** The *user adopts the solution* after obtaining the technological aid(s) from the public health system (or public/private insurance), and receives training for the daily use of the AT and follow-up.

The actions of the Center can be grouped into four phases.

- **Phase 1:** (a) The AT service delivery center welcomes a user’s request by activating an initial meeting at a time and location suitable for the user/client population. (b) The initial interviewer is focused on gathering the user’s background information and psycho-socio-environmental data. (c) After the user provides data to the center, data are collected and the case is opened and transmitted to the multidisciplinary team.
- **Phase 2:** (e) The multidisciplinary team evaluates the data and user’s request and arranges a suitable setting for the matching assessment.
- **Phase 3:** (f) The multidisciplinary team, along with the user, assesses the assistive solution proposed, tries to find the solution and gathers outcome data. (g) The multidisciplinary team evaluates the outcome of the matching assessment, then (h) proposes the assistive solution to the user. When the assistive solution proposed requires an environmental evaluation, the team initiates the Environmental Assessment Process (Fig. 2).
Phase 4: (j) When the technological aid is delivered to the user, a follow-up and on-going user support is activated and the assistive solution is verified in the daily life context of the user.

There are three general considerations about the phases in the ATA process. First, it is easy to identify within the phases of the ATA process the basic procedural steps identified by Stack and colleagues (2009). Regarding the common step “procurement/financing”, corresponding to phase 4, step (i) “assistive technology provision” of the AT service delivery, the authorization for financing must be given by the ASL. Second, in the ATA process model, AT service delivery does not provide just a device (i.e., AT), but much more – an assistive solution that “does not coincide with assistive technology, since […] it is a complex system in which psycho-socio-environmental factors and assistive technology interact in a non-linear way by reducing activity limitations and participation restrictions by means of one or more technologies” (Federici & Scherer, 2012a, pp. 8-9). Third, keeping the above in mind, it is also clear why in phase 4, step (i) of the AT Service Delivery, the Center identifies an “AT” that will be provided to the user by the National Health Service and not an assistive solution. In fact, in phase 4, we are referring to the provision of an AT device evaluated as instrumental to reach an assistive solution. The assistive solution is the goal of the entire process of matching. Hypothetically, an assistive solution may not require any technological aid, but, for example, changes to fit the environment.

The ATA process model acknowledges that the environment is antecedent to the AT and crucial for determining an assistive solution (Mirza, Gossett Zakrajsek, & Borsci, 2012). According to the ICF biopsychosocial model of disability (2001), Environmental Factors (i.e., products and technology, the natural and constructed environment, support and relationships, attitudes and services, systems and policies) and Personal Factors (i.e., age, sex, race, motivation and self-esteem) belong to Contextual Factors. Therefore, we define the environment in the ATA process as any context in which the AT is used by a person, according to the WHO’s description of the environment as the “world in which people with different levels of functioning must live and act” (2011, p. 5).

Even though an environmental evaluation can occur at any phase of the ATA process and is considered at its inception (during the user data collection phase, Figure 1: AT Service Delivery, phase 1, step [c]), nevertheless the ATA process includes a specific environmental assessment to be activated when, in the matching process (Fig. 1: AT Service Delivery, phase 3, step [f]), the assistive solution proposed requires a more accurate
evaluation of the user’s context of use. The evaluation of cost-benefit balance for the impact of the AT on the environment can lead the multidisciplinary team and the user to proceed either by modifying the environment, changing the AT, or both (Fig. 2).

Figure 2 - Flow chart of the Environmental Assessment Process in the ATA process model (Mirza et al., 2012). The Environmental Assessment Process expands and describes the rectangle in Figure 1, phase 3 of the AT Service Delivery entitled “Environmental assessment process”. On the left is the Environmental Assessment Process flow chart and on the right are the procedures of the AT Service Delivery. The numbers refer to phases and the small-cap letters to steps in each phase.

As displayed in Figure 2, we identify three main phases in the environmental assessment procedure:
- Phase 1: Practitioners assess the impact of the environment for supporting or obstructing full participation for the user.
  - If a match between the environment, the user and the AT is obtained, the assistive solution is found, the environmental evaluation ends
and the process proceeds with step (g), phase 3 of AT Service Delivery.

- However, if a match does not occur, a cost-benefit balance is initiated to determine whether either modifying the environment, changing the AT or both is best.

- Phase 2: Practitioners have to check the economic and socio-cultural impact of modifications. The modifications can include the environment, the AT, or both.
- Phase 3: On the basis of the impact analysis, practitioners can take one of the following decisions: (I) modify the environment; (II) change the AT; (III) do both of the preceding.

As a consideration for the environmental assessment process, the job of practitioners involved in an environmental assessment (e.g., architecture, engineer, psycho-technologist, ergonomist, etc.) should never replace the job of control, supervision, and assessment carried out by the multidisciplinary team of an AT service delivery. The environmental assessment, when needed, supports and integrates the ATA process driven by two main actors: the user and the multidisciplinary team. In light of this, it should be clear why it is necessary to restart the environmental assessment process at step (d), phase 2, in AT Service Delivery when the outcome of the environmental assessment process suggests a need to modify or change an AT.

2.3. The relevance of the presence of the psychologist in the multidisciplinary team

Effective team work plays a crucial role in rehabilitation, producing better patient outcomes. However, there is limited published evidence concerning what constitutes the key components of successful teams in rehabilitation programs (Neumann, Gutenbrunner, Fialka-Moser, Christodoulou, Varela, Giustini et al., 2010). Although the structure, level of intensity, and services available for rehabilitation vary widely from one area to another, whether comparing facilities, cities, states, or countries; nevertheless, there is considerable cross-cultural consistency in the view of the composition of the rehabilitation team (Scherer & Federici, 2012) from Singapore (Chua, Ng, Yap, & Bok, 2007) to the USA [Joint Committee on Interprofessional Relations Between the American Speech-Language-Hearing Association and Division 40 (Clinical Neuropsychology) of the American Psychological Association, 2007] and Europe (Gutenbrunner, Ward, & Chamberlain, 2006, 2007). In this framework, the role of the psychologist and psychiatrist is well and universally recognized.
However, we want to call attention to the importance of the psychologist’s role in AT service delivery because we observe that in the field of AT the technical features of a device are often focused upon to the detriment of the psychosocial aspects. A large amount of data on AT abandonment showed the importance and effects of personal and psychosocial factors on the non-use and discontinuance of AT use (e.g.: Phillips & Zhao, 1993; Riemer-Reiss & Wacker, 1999; Riemer-Reiss & Wacker, 2000; Scherer, Sax, Vanbiervliet, Cushman, & Scherer, 2005; Verza, Carvalho, Battaglia, & Uccelli, 2006; Söderström & Ytterhus, 2010; Federici & Borsci, 2011). A recent study carried out by Federici and Borsci (Federici & Borsci, 2011; Federici & Borsci, under review) in Italy shows that users receiving an AT device from the Italian National Health System without both personal support in the initial AT use and a follow-up after the AT assignation are more likely to not use the AT (24 out of 100) compared to those users that are included in a structured and personalized AT assessment process and a well-planned, post-assistance follow-up service. In this latter case, indeed, the AT non-use falls to 13%.

A basic understanding of human behavior is considered sufficient by many in the AT field to assess the personal factors of a potential AT user. Implicitly or explicitly, this seems to be the attitude of several AT service delivery models (Meloni, Federici, & Stella, 2011; Meloni, Federici, Stella, Mazzeschi, Cordella, Greco et al., 2012). However, this behavior carries the risk of under-evaluating the effect of personal factors on effective AT selection, use, and realization of benefit from use because knowledge of personal factors is not equivalent to knowledge of subjective dimensions and individual functioning. Even when assuming team members possess theoretical knowledge of personal factors, this does not provide them with the appropriate skills to acknowledge and manage the psychological and psychosocial facets of an individual’s functioning. The psychologist in an AT service delivery process provides an appropriate psychological evaluation or a precise clinical intervention with the users and/or their significant human context over the course of the whole AT assignment process. Assigning greater importance to personal factors would help dramatically reduce the abandonment rate of technologies by users (Phillips & Zhao, 1993; Riemer-Reiss & Wacker, 1999; Riemer-Reiss & Wacker, 2000; Scherer & Craddock, 2002; Scherer, 2005; Scherer et al., 2005; Verza et al., 2006; Söderström & Ytterhus, 2010; Meloni et al., 2011; Meloni et al., 2012).
Meloni and colleagues (2012) have defined five points in the psychologist’s role and the professional skills of psychologists in the ATA process:

1. **Identify** the user’s personal factors, priorities, preferences, etc. During user data collection, the psychologist analyzes the clinical and psychosocial data in order to identify the greatest number of personal factors that are relevant when matching the user with technology. In addition, the psychologist will identify the user’s preferences and priorities in relation to the objective to be achieved through an assistive solution.

2. **Advocating** the user’s request in the user-driven process by which the selection of one or more technological aids for an assistive solution is reached. Active listening, empathy, and the ability to reformulate in a shared language the user’s requirements are the main tools employed by the psychologist at this step. Advocating the user’s requests is also the psychologist’s task at follow-up.

3. Acting as a **mediator** between users seeking solutions and the multidisciplinary team of an AT Service Delivery center. The presence of a multidisciplinary team, in which each professional carries out his or her values and preferences, might exponentially tend to dis-empower the consumer’s point of view (Brown & Gordon, 2004, p. S13). Consequently, the psychologist should mediate between the user seeking solutions and the multidisciplinary team during the team meeting and the assistive solution team evaluation.

4. Team **facilitating** among members of the multidisciplinary team. As an expert in human relationships, the psychologist plays a key role in making connections easier between the different perspectives of the team professionals.

5. **Reframing** the relationship between the client and his or her family within the framework of the new challenges and limitations and restrictions they face. Families and caregivers also have expectations about AT assignment possibly overestimating or underestimating outcomes, which will affect their relationship with the user and the professionals. During the user agreement step and the support and follow-up steps, the psychologist might help the family and/or caregivers to reframe their relationship with the user.

The role of the psychologist within the ATA process is displayed in Figure 3.
2.4. The psycho-technologist: a new profession in the ATA process

Whereas in the previous section we have stressed the role of the psychologist within the ATA process, here we will introduce a new interdisciplinary profession: the psycho-technologist (Federici, Corradi, Mele, & Miesenberger, 2011; Federici & Scherer, 2012b; Miesenberger, Corradi, & Mele, 2012; Borsci, Kurosu, Federici, & Mele, 2013). The psycho-technologist is an expert on Information and Communication Technologies, in particular Human-Computer Interaction and human factors, and analyzes the relations emerging from the person-technology interaction by aiming to reach a high level of autonomy for people in need and their social participation. The assessment process is critical for the success of assistive solution-seeking and use.

The psycho-technologist differs from a cognitive ergonomist because the main role of the latter is to analyze person-artifact interactions in the working environment by taking into account both the cognitive and
behavioral effects arising from the interaction system, the activities and skills needed to improve productivity and effectiveness and, at the same time, avoid any cognitive or physical overload (Bridger, 2003). Conversely, the psycho-technologist evaluates the interaction between person and technology by following a user - AT - environment model of mutual influence (Federici & Meloni, 2013).

Furthermore, the psycho-technologist distinguishes him/herself from the professional role of the psychologist in AT service provision, as the latter focuses on personal factors, human relationships and communication, connecting the “bio”, “psycho” and “social” components affecting the ATA process, whereas the former may not be a clinical/dynamic psychologist, even though he or she has a background in psychology, specifically in rehabilitation (Miesenberger et al., 2012).

How does the psycho-technologist work in the Center? By following the bio-psycho-social perspective, the psycho-technologist aims to analyze barriers and facilitators to obtain the best combination possible. Specifically, the psycho-technologist analyzes the interaction between three different systems (Figure 4): the person, the technology, and environmental factors, as in Scherer’s Matching Person and Technology model (1998, 2005).

Figure 4 - The socio-environmental system according to the bio-psycho-social perspective (Federici & Meloni, 2013; 2001). The psycho-technologist meets the user’s needs by seeking a proper assistive solution (in cooperation with the multidisciplinary team). With the use of different tools (MPT measures (including the ATD-PA), QUEST, SUMI, IPDA, etc.), the psycho-technologist leads the team by observing critical issues and problems.
This process aims to reach a level of autonomy for the person in need (related to contextual factors and technological features and functions). The psycho-technologist verifies if the environmental expectations (such as: family, health, and educational operators) can meet the user’s possibilities of benefitting from the technology. In other words, by the use of different psychometric tools – e.g., the Survey of Technology Use (SOTU) and the Assistive Technology Device Predisposition Assessment (ATD-PA; Scherer, 1998), the Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST; Demers, Monette, Lapierre, Arnold, & Wolfson, 2002), the Software Usability Measurement Inventory (SUMI; Kirakowski, 1998), etc. – the psycho-technologist explores the user’s needs by seeking a proper assistive solution by leading the multidisciplinary team to observe critical issues and problems (Scherer, Jutai, Fuhrer, Demers, & Deruyter, 2007).

**Figure 5** - The psycho-technologist’s actions in the AT Service Delivery flow chart. Button numbered signs depict the steps of participation for the psycho-technologist’s intervention.
As displayed in Figure 5, the psycho-technologist acts in the ATA process in five main steps.

1. The psycho-technologist analyzes the collected user’s data and emphasizes any environmental, personal or technological issues (button chart 1, phases 1-2, steps [c], [d]). In agreement with the multidisciplinary team, he or she studies the medical case by considering: the individual’s predisposition for AT use; previous experiences with AT; the current motivation to use AT; and environmental factors that might affect the matching process (e.g., administering the SOTU and the ATD-PA).

2. The psycho-technologist sets up the assessment setting and checks if the technologies are ready for the matching process (button chart 2, phase 3, step [e]).

3. The multidisciplinary team, along with the user, assesses the assistive solution proposed, tests the solution and gathers outcome data (button chart 3, phase 3, step [f]). The role of the psycho-technologist in this phase is to guide the matching test by introducing and explaining the functions and features of the AT proposed. Then, he or she supervises the interaction between the user and the AT, recording any critical situation(s).

4. The psycho-technologist reports the outcome of the matching process and discusses the solution proposed to the user with the multidisciplinary team on the basis of observations made during the interaction between user and the AT (button chart 4, phase 3, step [g]).

5. When the AT proposed by the AT Service Delivery is delivered to the user, follow-up and ongoing user support is activated. The psycho-technologist, in coordination with the multidisciplinary team, evaluates the outcome of the assistive solution in the context of use (button chart 5, phase 4, step [j]).

In conclusion, the current concept of psycho-technology is related to a neologism for explaining a new professional figure who investigates the psychological and cognitive components involved in the interaction environment, whether it be a physical environment or an information and communications technology one. Here, one can think of other compounds that we use: psycho-therapy, psycho-metrics, and so on.
3. Conclusions

Assistive technology devices (ATDs) can be very important to an individual’s enhanced functioning, task accomplishment and inclusion/participation. With almost 40,000 different ATDs on the market, the wide variety of choices available in products and features can make the selection of the most appropriate match for a person seem daunting and complex. However, when a systematic selection process is followed, such as the ATA process outlined in this article and in Federici and Scherer (2012c), complexity can be made manageable and better outcomes can be achieved.

By following both a user-driven and bio-psycho-social perspective, the ATA model provides practitioners in the AT service delivery field with an ideal and comprehensive set of guidelines to help them to reach effective AT selection and assignment processes and, moreover, to carefully take into account the effects of personal and psychosocial factors on the non-use and discontinuance of AT use. Unused ATDs and ineffective service delivery systems represent waste that our economies cannot afford. Resources today must often be pooled, but this can be accomplished in a beneficial way rather than becoming a hindrance when it results in cross- and multi-disciplinary collaboration and the adoption of processes designed to simultaneously address multiple facets of the individual and ATD match.

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