

## **ATOMS Project 2002-2003: Assumptions, Projects & Discoveries (Version 1.3)**

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As the ATOMS Project activities progress, we have been watching our preliminary and interim findings. To summarize the soft and empirical findings, we created two documents. The first document relates to the ATOMS Project assumptions, combining where we were as our work commenced and the assumptions that we have identified during our investigations. The second document summarizes the ATOMS Project discoveries as they link to some of our specific research activities. They are presented here consecutively.

The charge from NIDRR provides the backdrop for the assumptions and discoveries. NIDRR suggested that the research a) perform a needs assessment pertaining to outcomes measurement in AT, b) explore available and new outcome measures and strategies for AT outcomes, and c) perform abandonment investigations related to the previous activities.

### **Assumptions**

- Assistive Technology (AT) devices serve as one intervention for people with disabilities within a set of many interventions they typically receive.
- In a natural environment, AT use is often used concurrently with a variety of other interventions and services
- Devices and services are two different components of AT interventions.
- There also exists a group of AT users that are not part of a service system. Collecting outcome data for this group would be particularly challenging. They are, however, stakeholders of AT outcomes.
- Despite a federal law mandating the consideration of AT, little evidence suggests that all students with disabilities have access to AT.
- AT devices and services cross service delivery systems, including the vocational rehabilitation, the educational, the medical and the independent living systems.
- The context in which the device is used and the AT services obtained are covariates that can confound and even reverse the outcomes of AT interventions.
- A variety of outcome dimensions contribute domains to the overall outcome. These include self-satisfaction of products and services, costs, participation in activities, task performance, goal achievement, AT device use, and quality of life.
- By convention and by definition, AT device use can result in a negative outcome.

- There are many measurement and research methodologies that are not typically used for AT outcomes (e.g., goal attainment scaling, dynamic norming subjective elicitation of data, MAU and Bayes) that we need to understand for their potential contribution to an outcomes system.

<b>ATOMS Project Activities &amp; Discoveries 2002-2003</b>		
	<b>Projects</b>	<b>Discoveries</b>
<b>Field Scans</b>	AT Instrument Update and Review	While dozens of assistive technology (AT) measurement instruments exist, few have been devised with outcomes in mind. Most have been created as part of the process to identify and select devices to match a need to an individual AT consumer.
	Treatment of AT in Current/Emerging Health & Rehabilitation Outcome Measures	Health & rehabilitation functional performance & related outcome measures rarely include AT as a co-variate. Many treat AT as an impairment that lowers performance scores, and even fewer instruments isolate the impact of AT in the outcome score (Rust & Smith, 2004a, 2004b).
	Outcome Measures Used in AT Research & Development	Product developers of AT devices report substantial interest in AT outcomes, measurements and potential use of valid outcome measurement instruments (Rust & Smith, 2004b, 2003a).
	Next Generation Data Collection Technology	Handheld computers provide a dynamic and efficient mechanism for collecting large & individualized amounts of outcomes-related data. The newer hardware & software components available open many doors for naturalistic data collection (Kennedy, 2003).
		As AT outcomes & data will likely require a multi-dimensional representation of data, new multi-dimensional data displays must be considered as a part of AT outcomes instrumentation.
Use Multi-attribute (MAU) and Bayes Approaches in Outcomes Data Collection	Decision analysis data collection & models, such as Bayesian estimation & multi-attribute utility techniques are heavily used in related fields. These may provide new strategies for measuring key components of AT outcomes.	

	Review of Taxonomies of AT Outcomes Instruments	Considering traditional measurement theory & methods, the task/activity may provide the best conceptual vehicle for efficiently measuring AT outcomes.
	Legal Implications of AT Outcomes Instruments	Legal issues surrounding AT outcomes data collection & application are significant & more integral to AT outcomes instrument development than initially considered. Further attention must be targeted on the ethical & legal implication of AT outcomes (Mendelsohn, Schwanke, & Smith, 2004).
	History of AT Outcomes	AT outcomes research & outcomes measurement research are relatively new areas of inquiry. Interest has only been documented over the past 20 years or so (Smith, Rust, Lauer, & Boodey, 2004).
	Methods to Identify AT Device Use	AT outcomes research to date has not identified a method to identify the frequency and intensity of AT device use (Whyte, Smith, Fennema-Jansen, & Edyburn, 2003).
	Implications of Qualitative Research Methods and Qualitative Data on AT Outcomes	Qualitative data provides a depth of information in technology acquisition and may have important applications within a future AT outcome measurement system (Harris, 2004).
	Comparison of Cost Outcome Methods	Where cost analysis methods are maturing in health care, applications and strategic methods that specifically address AT are still in early conceptual development (Harris & Sprigle, 2003; Sprigle & Harris, 2004).
	Negative Aspects of AT	The use of multi-focal/bifocal eyeglasses and walkers may have a negative impact on gait speed & quality, suggesting that AT may be a significant contributor to falls (Joerger, 2003).
	Satisfaction with AT	"Satisfaction" should never be used without a qualifier. In the field of AT there can be satisfaction with the device, satisfaction with the service, or satisfaction with performance. Only the latter appears to be outcome. The first two appear to be outcome-precursor variables (Rust & Smith, 2004c).
Focus Groups	Service Program Administrators Focus Group	Service program directors identify 10 primary areas of outcomes consistent with previous literature.

	Consumer Focus Groups	Consumers of AT devices hold a unique perspective on what AT outcomes mean. AT “outcomes” depict terminology and a concept created by the service delivery and funding stakeholders (Taughner, 2003, 2004).
Town Halls	Legal Issues Town Hall	This topic specific town hall identified 27 issues that all met a high priority when ranked. The discussion was not able to generate consensus on priorities. Issues were specific to service delivery models.
	AT Outcomes Town Halls	Participants voiced the universal need for better AT outcomes measurement instruments and reporting systems regardless of AT service perspective.
Database Projects	Service Delivery System	Service and delivery program records and data contain little to no outcomes data. Service delivery records & data remain widely variable & inconsistent from program to program (Schwanke & Smith, in press; Schwanke & Smith, 2004a).
	Vocational Rehabilitation	The Rehabilitation Services Administration database (named 911) exists as one of the largest disability-related databases that contains relevant AT device & service information for outcomes analysis. This database might provide a foundation for examining AT outcomes in the vocational rehabilitation sector (Schwanke & Smith, 2004b).
	NHIS	The NHIS (National Health Information Survey-Disability) provides a large database that might serve as a basis for AT outcomes analysis. However, the NHIS database contains numerous problems in its design, reducing the potential usefulness of the database to measure AT outcomes (Moser, 2004a; Moser, 2004b).
	Ohio Schools	Public school systems have a significant need for tracking AT outcomes. A web-based centralized system seems to be a feasible data collection medium (Fennema-Jansen, 2004a, 2004b; Wilson, Smith, Fennema-Jansen, & Edyburn, 2003).

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