

MATCHING PERSON & ASSISTIVE TECHNOLOGY: Beyond Access to Participation




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Assistive Technology & the Labour Market

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Overview of Session

- 
- Processes used to identify technology needs for work
 - Process of selecting & using technology
 - Acknowledging consumer priorities



How do we go about choosing & purchasing new devices?

AT is a complex field:

The technologies can be overwhelming

- The equipment is often complex
- Technologies change frequently
- Difficult to find experts who understand the full range of technologies e.g. mainstream vs assistive technology

AT is a complex field:

AT resources are difficult to navigate

- There are multiple services & sources of information
- AT team may involve many people with widely varying skills, experiences, beliefs, backgrounds
- AT processes can take a long time

AT is a complex field:

Decision making is

- complex
- time consuming
- often resulting in compromises

AT is a complex field:

AT is expensive

- Limited funds available
 - to purchase equipment
 - for assessment, trial & training
- Limited resources & funding to support effective use of equipment once acquired

Difficulties Encountered in Choosing & Using Technology for Work

- Bewildering array of options
- Devices are often complex
- Fragmented information & service system
- Limited understanding of resources & options
- Decision making is complex & involves compromises
- Limited funding & acknowledgment of ongoing support needs



How do we address this complex interaction in a systematic way?

Process needs to:

- recognize that people are unique & have different needs
- focus on both employer and employee concerns & assist them in defining their needs
- address employer and employee concerns utilizing existing strategies & supports
- introduce employer and employee to additional strategies & supports
- identify barriers in the environment
- address the barriers & provide structures to ensure continued success

Identify the technology that best fits needs of the person, task & environment

Good technology - environment fit



Consumer centred process:

Empowers both employer and employee to understand:

- what is technically possible
- the process
- the AT system & how to use it effectively
- how to identify their requirements & evaluate devices
- Access funding for equipment & ongoing support

Process for Identifying The Best Option

I'll discuss those in purple text in detail today

1. Develop a vision
2. Discuss employer & employee goals
3. Define individual's specific preferences and requirements
4. Establish device criteria
5. Seek Information on technology
6. Identify potential devices & resources
7. Develop a funding strategy
8. Trial a range of devices
9. Discuss compromises & trade offs
10. Purchase the device



Process for Utilising Technology Effectively



11. Integrate with other technologies
12. Customise for comfort & efficiency
13. Learn to use technology
14. Maintenance & repair
15. Insure device
16. Evaluate effectiveness - process & outcome
17. Review ongoing effectiveness
18. Monitor need for upgrade

Process

- Begins BEFORE initial contact with a service provider
 - Continues BEYOND an encounter with a particular service
- Service providers need to ensure users understand the process & how their services can contribute to this process

Steps 1-6:

Establish the vision, goals
preferences, appropriate
technology...



Provider Goal for Recommending AT

Restore functional independence to individuals with disabilities by using appropriate assistive technology devices in vocational training, the workplace, and in all performance areas of their lives.

Yet, consumers often see AT differently and some stop using it

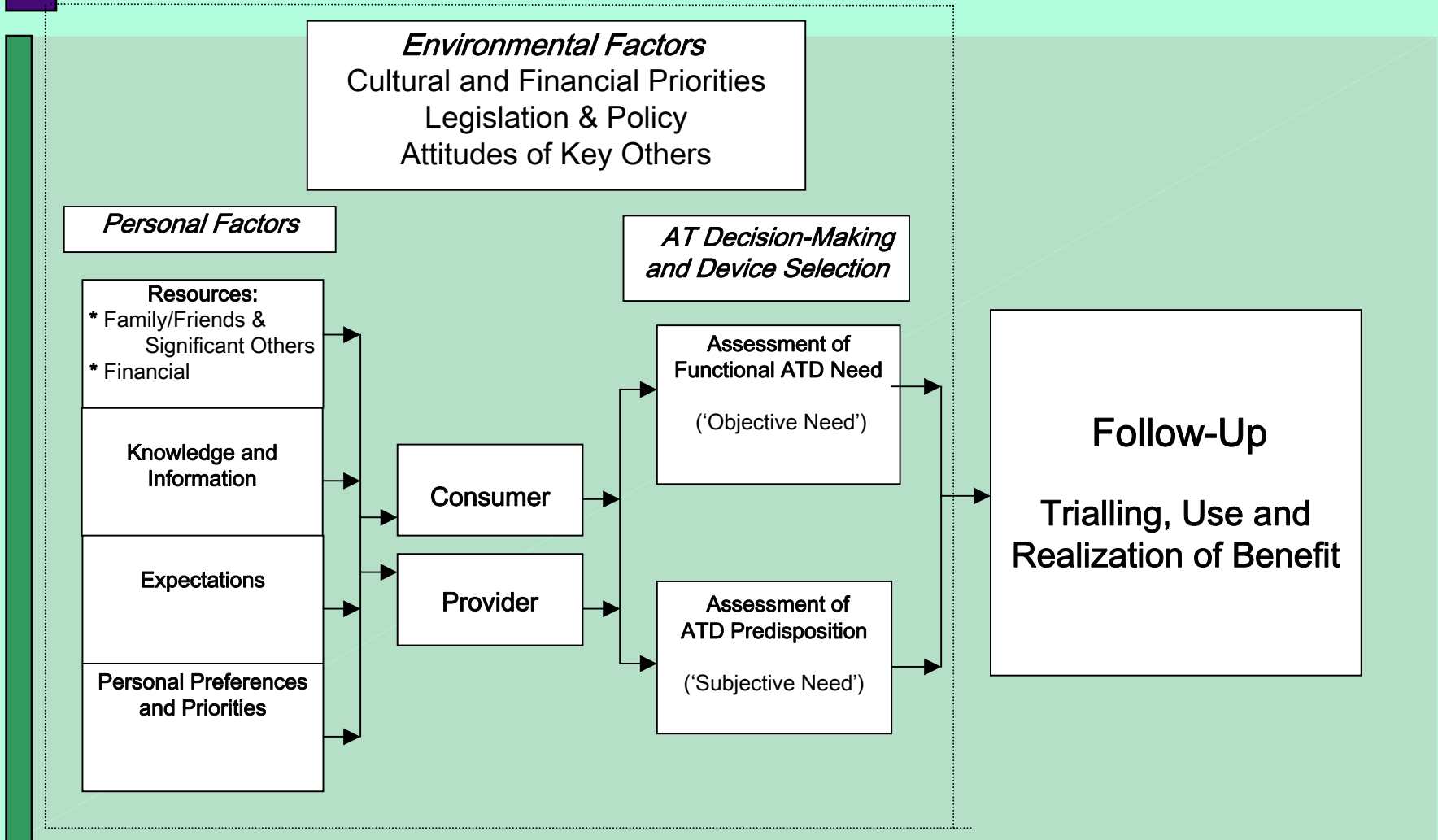
Some reasons for non-use include...

- Device isn't what the consumer wanted
- It was wanted, but did not meet user expectations
- Adequate training in use was not provided
- Device use did not result in a gain
- Device was too inconvenient or complex to use
- Device use caused pain, strain, or fatigue
- Device was not perceived as ***socially acceptable***



A successful outcome (**match of person and technology**) begins with choosing the most appropriate AT for a person. How can we best do that?

ATD Selection Framework



Scherer, M., Jutai, J., Fuhrer, M., Demers, L. & DeRuyter, F. (2007). A framework for modeling the selection of assistive technology devices (ATDs). *Disability and Rehabilitation: Assistive Technology*, 2(1), 1-8.

What information do you want?

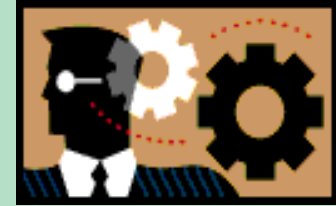


- User's goals and expectations as well as those of the employer
- What the user tried that worked out well
- What the user tried that did NOT work out well
- The desirability of a no-tech, low tech or high tech intervention – or other form of support.

A good match of person and AT results from **foresight** and **insight**...

Get to Know the User

- Achieve a partnership
- Enjoy brainstorming together
- Share tasks and responsibilities
- Allow procrastination and failure -- then explore lessons learned
- Re-visit goals
- Reinforce small steps



What information users and employers want

- Available AT choices and their quality
- How to master use
- How well the AT is likely to perform

To obtain good information ...

It is important to:

- Involve the user at the outset
- Inventory challenges, goals, and potential interventions
- Focus on choice and goal satisfaction

Steps in User-Focused AT Assessment

1


2

3

4

5

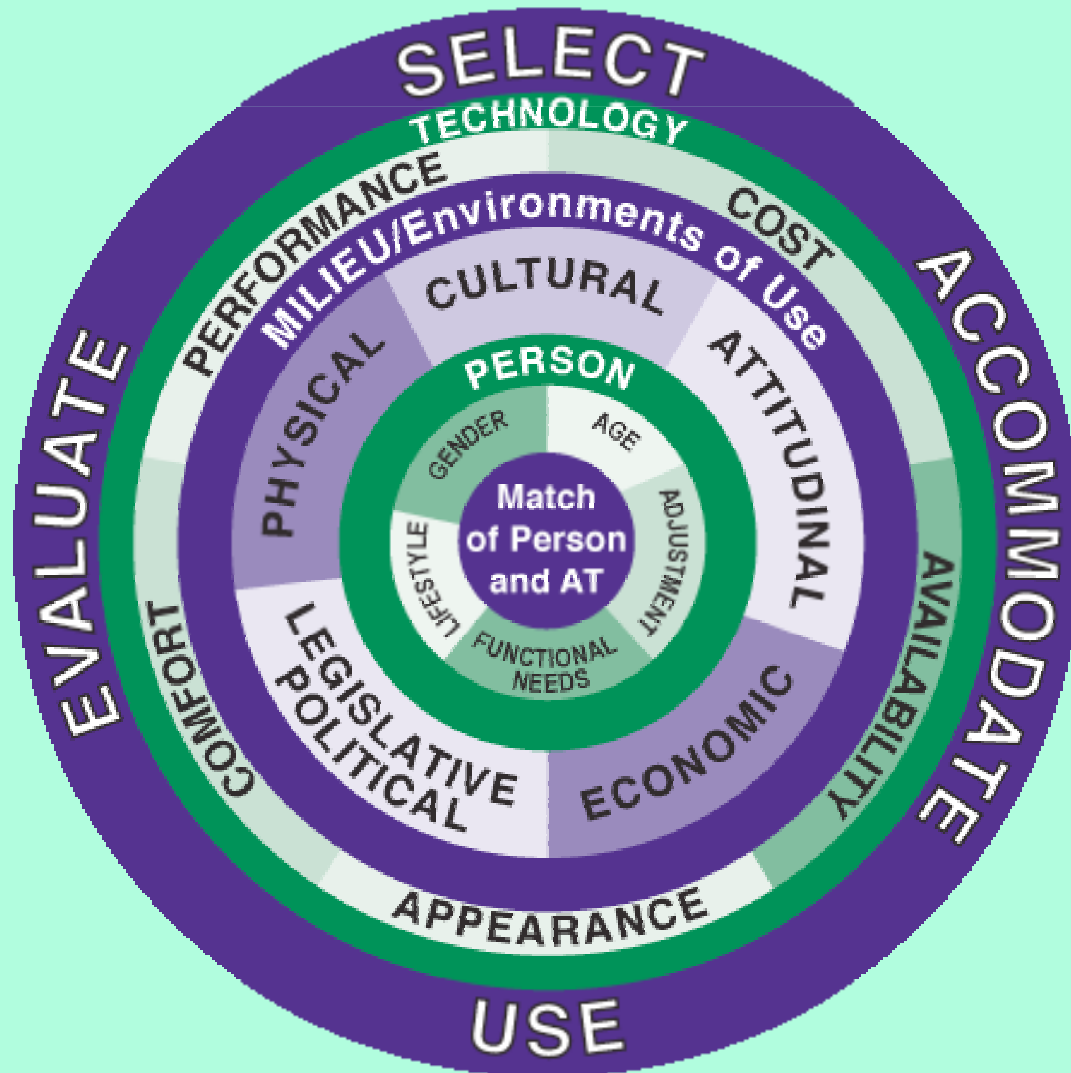
Goals & dreams	Need for AT	Readiness for AT	AT and lifestyle fit	Comfort with use
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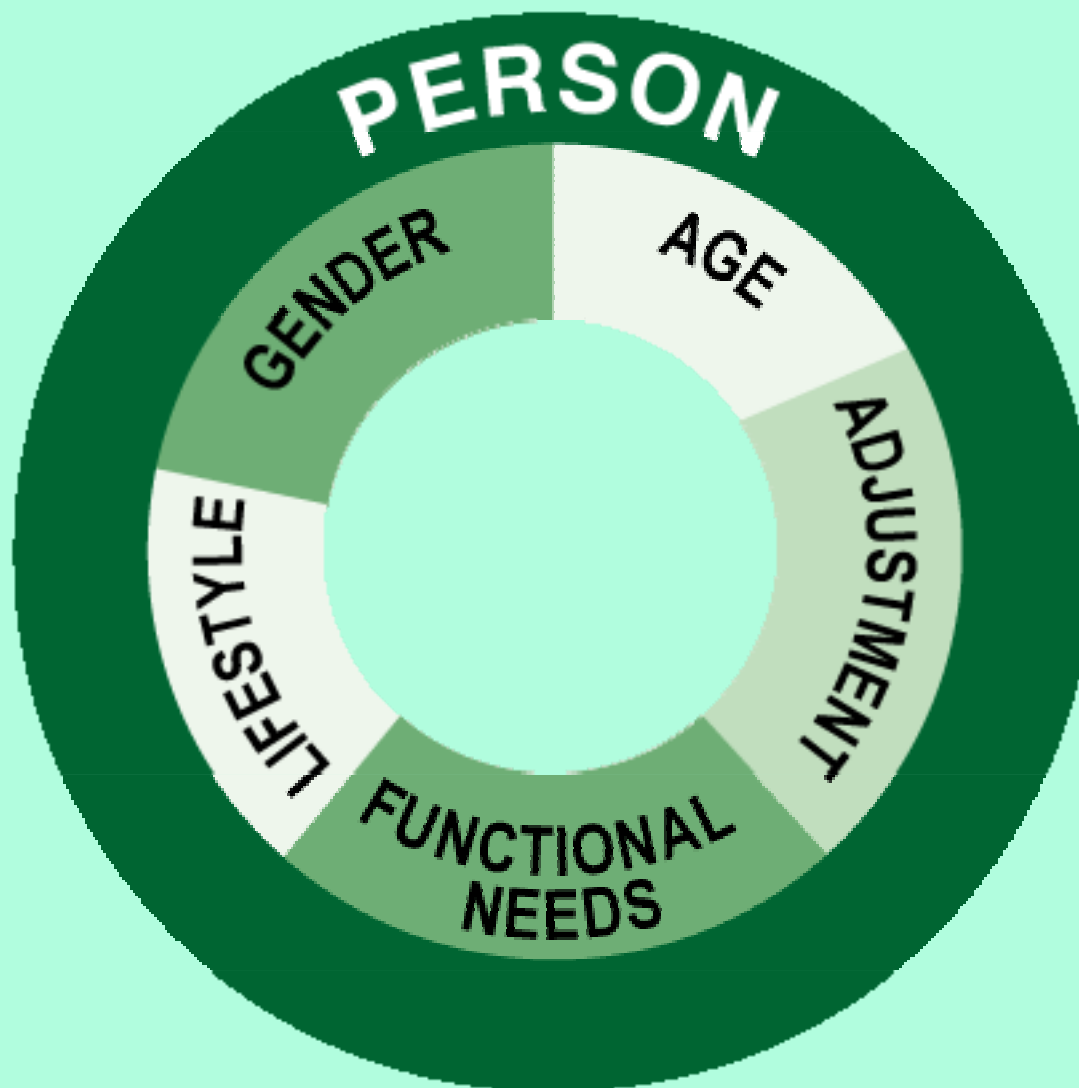
M*atching* **P***erson &* **T***echnology*

A Series of Assessments for Evaluating
Predispositions to and Outcomes of
Technology Use in Rehabilitation,
Education, the Workplace &
Other Settings

Focusing on the Person, Milieu, and Technology




Focusing on the Person





Characteristics of the person

- 
- Mood
 - Background experiences
 - Judgment and preferences
 - Outlook
 - Abilities and aptitudes

Characteristics of the person's disability and need for an AT

- Type
- Severity
- Perceived functioning
- Age at onset
- Pain and discomfort

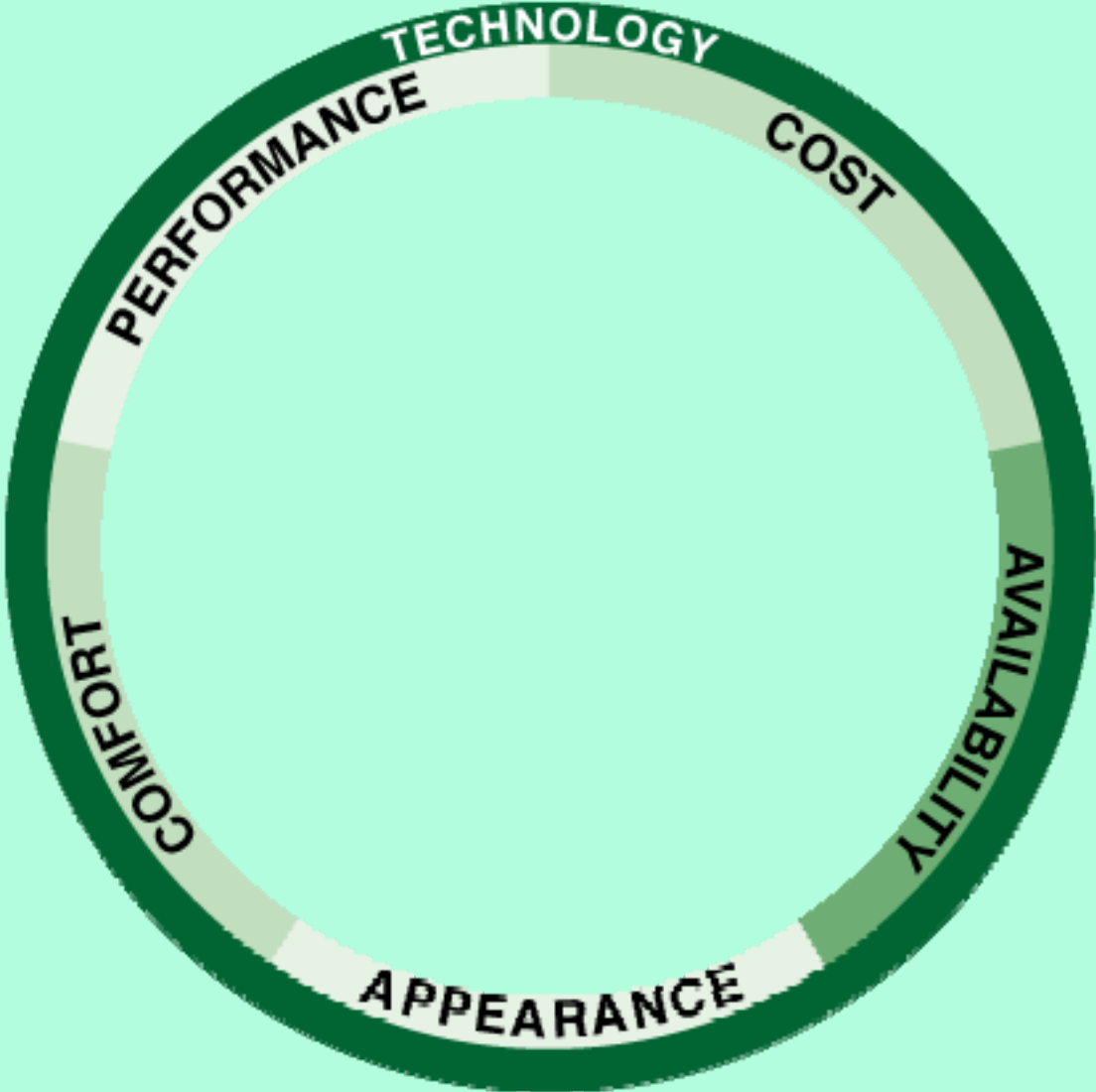
Focusing on the Milieu



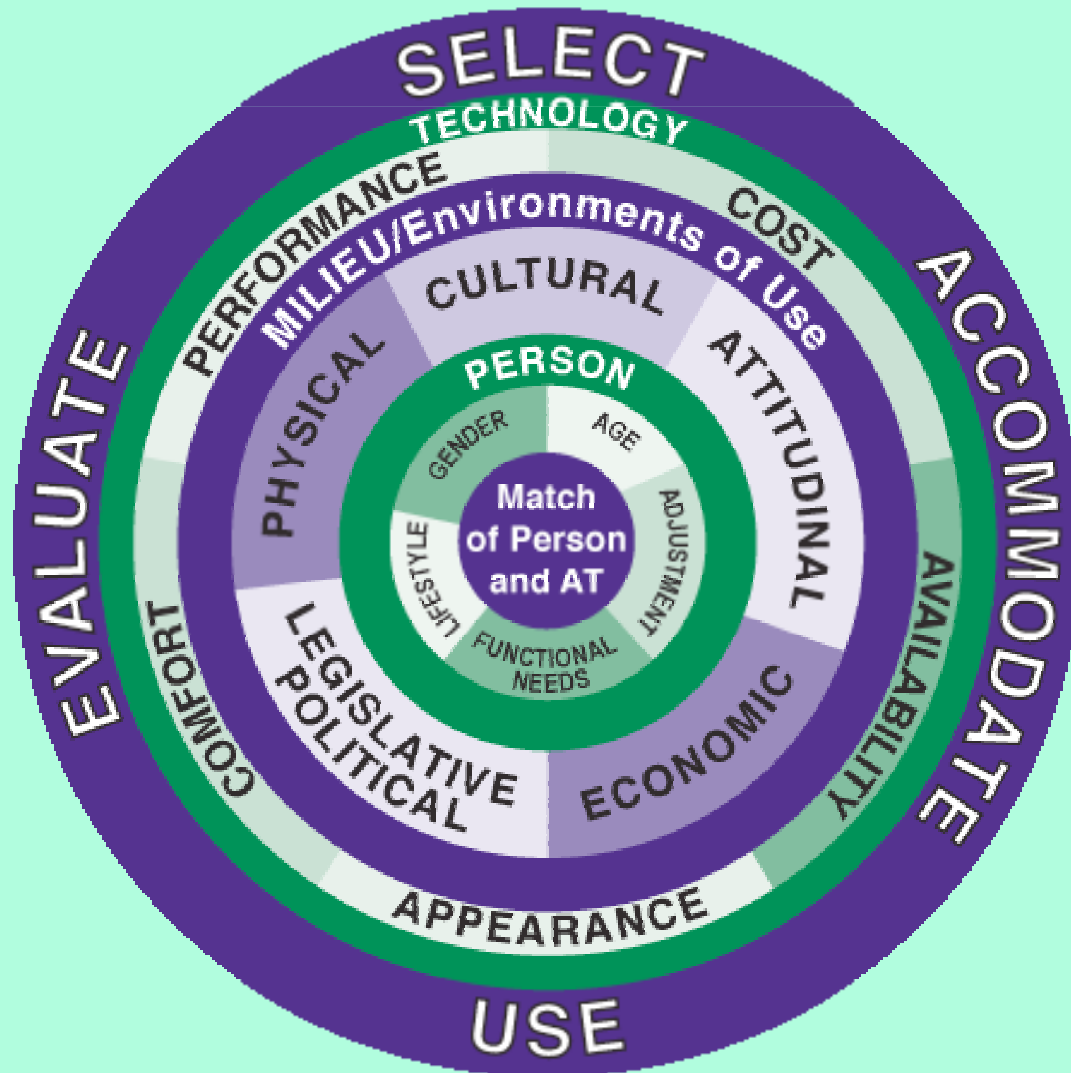
Characteristics of the *milieu*

- Exposure and opportunity
- Social support
- Resource availability
- Cultural expectations

Focusing on the Technology



Focusing on the Person, Milieu, and Technology



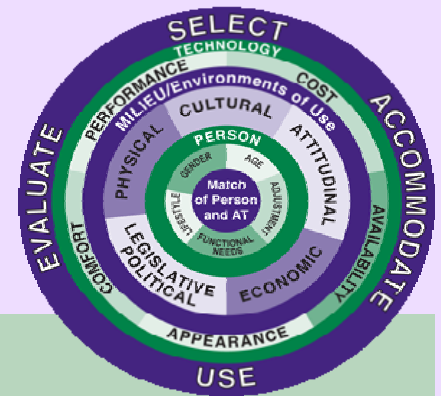
HISTORY OF SUPPORT USE: TECHNOLOGIES, SPECIAL PURPOSE DEVICES, AND PERSONAL ASSISTANCE FORM 2

In which areas does the person (a) use, (b) have past use, and (c) need a technology or other support? Write the name of the support in each relevant domain, and then record the information requested under the one most appropriate column.

Reason Name of Support	SUPPORT CURRENTLY USED			SUPPORT USED IN THE PAST (not listed under currently used)			SUPPORT NEEDED		
	Months Used	% of Day Used	Satisfaction with support (1=very dissatisfied, 3=neutral, 5=very satisfied)	Months Used	% of Day Used	Satisfaction with support (1=very dissatisfied, 3=neutral, 5=very satisfied)	Reason for No Longer Using	Need and Want, but Does Not Have	Need, but Does Not Want
Speech/communication									
1.									
2.									
3.									
Mobility									
1.									
2.									
3.									
Dexterity, hand control									
1.									
2.									
3.									
Eyesight									
1.									
2.									
3.									
Hearing									
1.									
2.									
3.									
Reading/Writing									
1.									
2.									
3.									

Steps One and Two: Record goals. *History of Support Use* is used to identify technologies used in the past, satisfaction with those technologies, and needed technologies.

The MPT Process...



Includes the *Assistive Technology Device Predisposition Assessment*

1. **66 self-report items** on a 5-point scale and yes/no questions -- all mapped to the ICF
2. **Initial/baseline** data collection about consumer's view of capabilities, subjective well-being, mood, support, & readiness for technology use.
3. A form to compare expectations of up to three competing devices/products and **assess person-device match**.
4. **Follow-up** forms as well as a form inquiring into reasons for stopping use of an AT.

Assistive Technology Device Predisposition Assessment



Initial

Assistive Technology Device Predisposition Assessment

Form 4-1
Person

Name _____ Date of Birth _____
 Primary Goals (6 months): _____ Today's Date _____
 Primary Goals (1 year+): _____ Form completed by _____

A. How are your capabilities *today* in the following areas *with AT* (or other support)? Circle the best response for each and write in the name of the primary device or support you use where relevant. Then, put a plus [+] for any device or support needs that you believe will *increase* over the next 12 months. Put a minus [-] for any that you believe will *decrease* over the next 12 months.

	Poor		Average		Excellent	Name of Support	Need increase [+] or decrease [-]
1. Eyesight	1	2	3	4	5	_____	_____
2. Hearing	1	2	3	4	5	_____	_____
3. Speech	1	2	3	4	5	_____	_____
4. Understanding, remembering	1	2	3	4	5	_____	_____
5. Physical strength/stamina	1	2	3	4	5	_____	_____
6. Lower extremity control	1	2	3	4	5	_____	_____
7. Grasping and use of fingers	1	2	3	4	5	_____	_____
8. Upper extremity control	1	2	3	4	5	_____	_____
9. Mobility	1	2	3	4	5	_____	_____

B. How satisfied are you currently in the following areas? Circle your response to each. Then, circle the number of the item(s) you most want to see improve over time. If more than one is circled, indicate under the column labeled *Importance*, the item that is #1 in importance, #2, etc. For circled items, indicate if the primary obstacle you face is due to environmental barriers [E] or to your disability [D].

	Not Satisfied		Satisfied		Very Satisfied	Importance	Primary Obstacle [E], [D]
10. Personal care and household activities	1	2	3	4	5	_____	_____
11. Physical comfort & well-being	1	2	3	4	5	_____	_____
12. Overall health	1	2	3	4	5	_____	_____
13. Freedom to go wherever desired	1	2	3	4	5	_____	_____
14. Participation in desired activities	1	2	3	4	5	_____	_____
15. Educational attainment	1	2	3	4	5	_____	_____
16. Employment status/potential	1	2	3	4	5	_____	_____
17. Family relationships	1	2	3	4	5	_____	_____
18. Close, intimate relationships	1	2	3	4	5	_____	_____
19. Autonomy and self-determination	1	2	3	4	5	_____	_____
20. Fitting in, belonging, feeling connected	1	2	3	4	5	_____	_____
21. Emotional well-being	1	2	3	4	5	_____	_____

C. Please circle all the statements below that describe you.

- | | | |
|---|--|--|
| 22. I have the support I want from family | 33. I'm usually calm and patient | 44. I find technology interesting |
| 23. I have the support I want from friends | 34. My life has purpose, meaning | 45. I'm cooperative |
| 24. I feel encouraged by therapists, caregivers | 35. I'm self-disciplined | 46. I prefer a quiet lifestyle |
| 25. I feel the general public accepts me | 36. I'm often angry | 47. I often feel isolated & alone |
| 26. I aspire to go to school or work | 37. I'm often depressed | 48. I accomplish what I set out to do |
| 27. I have many things I want to accomplish | 38. I prefer to be left alone | 49. I'm not sure who I am now |
| 28. I do what my therapists say without question | 39. I'm often discouraged | 50. I want more independence |
| 29. I think of my therapist(s) as my friends, too | 40. I'm quite resourceful | 51. I have a good self image |
| 30. I'm often frustrated or overwhelmed | 41. I like having a challenge | 52. I often feel insecure |
| 31. I'm curious & excited about new things | 42. I'm responsible & reliable | 53. I feel as if I have little privacy |
| 32. I'm determined to meet my goals | 43. I'm generally satisfied with my life | 54. My therapist(s) know better than I what is best for me |

COMMENTS:

Assistive Technology Predisposition Assessment



Initial _____

For Comparing Devices to Meet Desired Outcomes

FORM 4-1
Device _____

Assistive Technology Device Predisposition Assessment

Name _____ Date of Birth _____
 Primary AT Goals _____ Today's Date _____
 _____ Form completed by _____

DIRECTIONS: Write the name of each device being considered in the boxes under "DEVICE." Then, read each of the twelve items below (A-L) and circle the letter of the *three* that are most important to you. Rate each device for the twelve items (A-L) according to the following scale and then write the numbers in the appropriate boxes:

- 5 = All the time
- 4 = Often
- 3 = Half the time, neutral or not applicable
- 2 = Sometimes
- 1 = Not at all

- A. The assistance and accommodations exist for successful use of this device.
- B. This device will physically fit in all desired environments (car, living room, etc.).
- C. This device will help me to achieve my goals (including the primary AT goals written above).
- D. I am confident I know how to use this device and its various features.
- E. I will feel secure when using this device.
- F. This device will fit well with my accustomed routine.
- G. This device will benefit me and improve my quality of life.
- H. I have the capabilities and stamina to use this device without discomfort, stress and fatigue.
- I. I will feel comfortable (and *not* self conscious) using this device around family.
- J. I will feel comfortable (and *not* self conscious) using this device around friends.
- K. I will feel comfortable (and *not* self conscious) using this device at school or work.
- L. I will feel comfortable (and *not* self conscious) using this device around the community.

DEVICE	A	B	C	D	E	F	G	H	I	J	K	L	Total <i>(add A-L)</i>

Review each **total score** above. In general, the device with the highest total score is the one most preferred (maximum number of points=60). However, when total scores are close, more weight should be given to the three items circled as being *most important*.

DEVICE SELECTED FOR TRIAL USE:

Vendor _____ Contact Person _____ Phone _____ Fax _____
 Manufacturer _____ Style _____ Delivery Date: _____
 Cost: _____ Payer: _____ Funding request notes: _____
 How long device is expected to meet person's needs _____ (Years) _____ (Months) _____ (Weeks)

Functional Abilities

ATDPA Section A: Abilities

ICF Classification: Body Functions (b)

1. Seeing	b210 Seeing functions
2. Hearing	b230 Hearing functions
3. Speech	b3 Voice and speech functions
4. Understanding, remembering	b144 Memory; b164 higher level cognitive functions; b1670 reception of language
5. Physical strength/stamina	b730, b735, b740 Muscle functions
6. Lower body use	b760 Control of voluntary movement functions
7. Grasping and use of fingers	b760 Control of voluntary movement functions
8. Upper body use	b760 Control of voluntary movement functions
9. Mobility	b770 Gait pattern functions

Subjective Well-Being

ATDPA Section B. Well-Being, QOL

ICF Classification: Activities & Participation (d)

10. Personal care, household activities	d5 Self-care; d630, d640 Household tasks
11. Physical comfort & well-being	b280 (pain)
12. Overall health	b4, b5, b6, b8
13. Freedom to go wherever desired	d4 Mobility; d460 Moving around in different locations, d470, Using transportation; d475 Driving
14. Participation in desired activities	d2 General tasks & demands; d9 Community, social & civic life
15. Educational attainment	d810-d839 Education
16. Employment status/potential	d840-d859 Work and employment
17. Family relationships	d760, e310 Family relationships
18. Close, intimate relationships	d770 Intimate relationships, e320 Friends
19. Autonomy, self-determination	d177 Making decisions
20. Fitting in, belonging	d7 Interpersonal interactions, d910 Community life
21. Emotional well-being	b152 Emotional functions; d240 Handling stress and other psychological demands

Person Factors

ATDPA Section C: Psychosocial factors

ICF Classification: Contextual Factors

Attitudes and support from family, friends

Support from family (e310, 410),
Support from friends (e320,420)

Temperament

Personal, Temperament & personality (b126)

Mood

Emotional functions (b152)

Autonomy and self-determination

Making decisions(d177), Higher cognitive functions (b164), Attitudes (e4)

Self-esteem

Personal, Emotional functions (b152)

Readiness for technology use

Incentive to act (b1301), Forming an opinion (b1645)

Characteristics of the Person-Device Match

ATDPA Section D. Person-Device Match ICF: Products & Technology Matching (e115-e145)

Help achieve goals

General tasks and demands (d2)

Improve QOL

All Activities & Participation (d), Energy (b130), Sleep (b134), Emotional functions (b152)

Knows how to use

Learning and applying knowledge (d1), Support (training) from health professionals (e355)

Secure with use

Psychomotor function (b147), Emotional functions (b152)

Fits with routine

Carrying out daily routine (d230)

Capabilities for use

Specific mental functions (b140-bb180), Neuromusculoskeletal & movement –related functions (b7)

Supports for use

Support and relationships (e3)

Will physically fit

Moving around using equipment (d465), Domestic life (d6), Community life (d910), etc.

Comfort – family

Emotional function (b152), family attitudes (e410)

Comfort – friends

Emotional function (b152), friends attitudes (e420)

Comfort - school/work

Emotional function (b152), peer attitudes (e425)

Comfort - community

Emotional function (b152), stranger attitudes (e445)

When using the **ATD PA**, provider and user work together to:

- ✓ choose the most appropriate technology when there is a choice of several;
- ✓ decide whether a particular technology is the most appropriate choice given the characteristics of the person, technology and environment;
- ✓ decide on the most appropriate training strategies for an individual's optimal use of a technology.

Recommendations

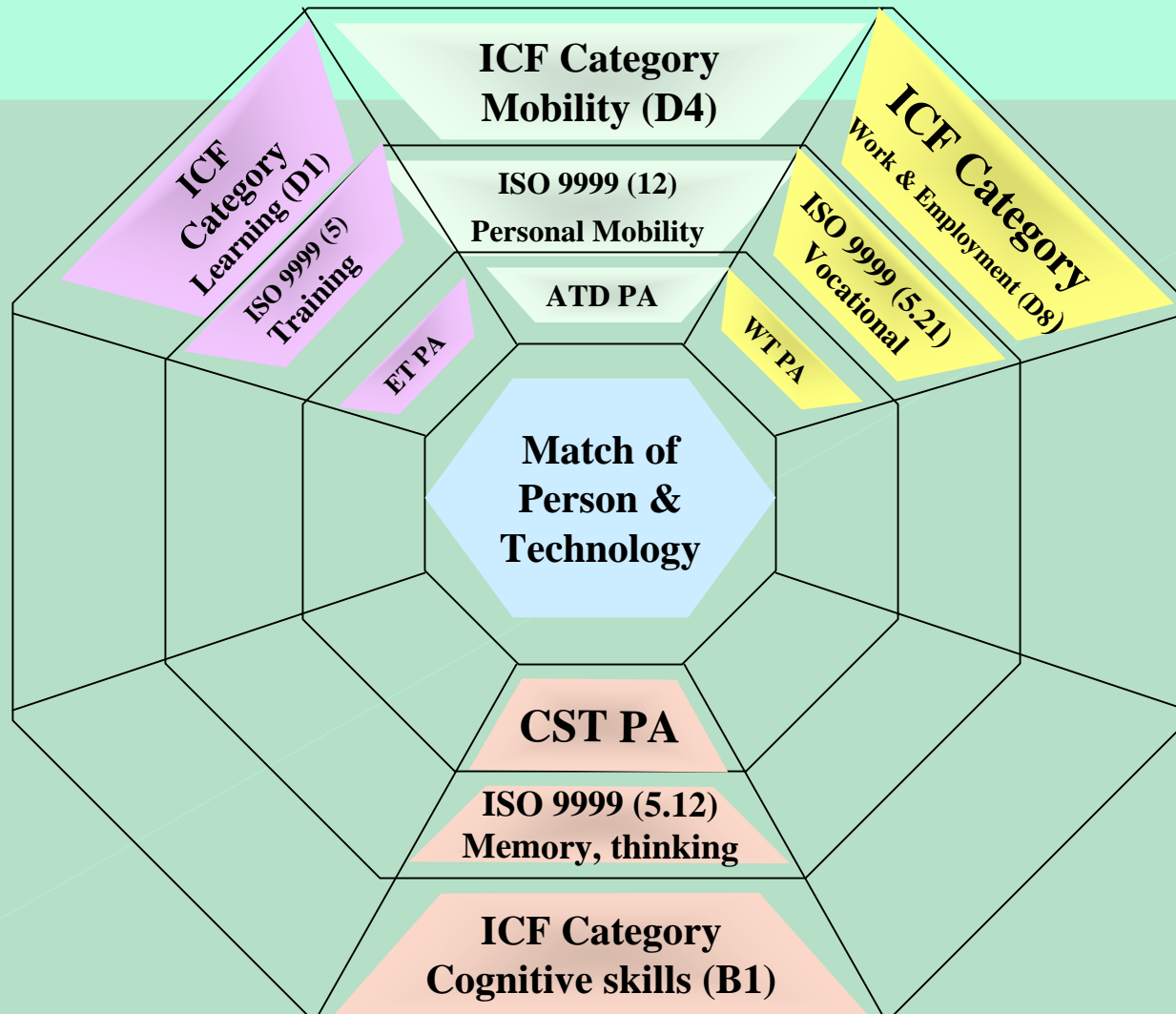
- What needs to be done?
- For whom?
- Who will do it?
- By when?
- Where?
- How will it be done?
- What resources are needed?
- From whom?
- What specific questions do vendors (or others) need to answer?

The ATD PA ...

- ❖ Excellent psychometric properties (reliable and valid). Predictive of a match.
- ❖ Useful when evaluating a person's device expectations and realization of benefit with a specific device.
- ❖ Computerized scoring and interpretations available
- ❖ Requires a commitment of at least 45 minutes to complete (longer if other forms are also used such as History of Support use) and to involving the consumer in the process



Examples of MPT Measures in Relation to ICF and ISO 9999



Examples of MPT Measures in Relation to ICF and ISO 9999

ICF Category	Age	ISO9999 Class	MPT Measure	Book	Environment
1 Mobility	adulthood	Personal Mobility (12)	ATD PA	<i>Living in the State of Stuck, Assistive Technology</i>	Home, community, work
1 Mobility	adolescence	Personal Mobility (12)	MATCH-SV	<i>Connecting to Learn</i>	School
1 Mobility	childhood	Personal Mobility (12)	MATCH	<i>AssistiveTechnology</i>	Home, community
2 Sensory	adulthood	Communication And Information (22)	HT PA, ATD PA	<i>Connecting to Learn</i>	Home, community, work
2 Sensory	adolescence	Communication And Information (22)	MATCH-SV,	<i>Connecting to Learn</i>	School
2 Sensory	childhood	Communication And Information (22)	MATCH	<i>AssistiveTechnology</i>	Home, community

Reliability and Validity of the MPT Assessments

References for the Psychometric Properties of the ATD PA

Reference	MPT form	inter-rater reliability	internal consistency	criterion-related validity	concurrent and construct validity
Scherer & McKee 1992	ATD PA ET PA	√	√	√	√
Goodman, Tiene & Luft 2002; Scherer & Cushman 2001; Vincent & Morin 1999	ATD PA		√	√	√
Craddock & McCormack 2002	ATD PA ET PA SOTU		√	√	√
Brown, 1996; Brown & Merbitz, 1995	ATD PA			√	√
Cushman & Scherer, 1996	ATD PA				√
Scherer & Frisina, 1994; Scherer & Frisina, 1998	ATD PA		√	√	

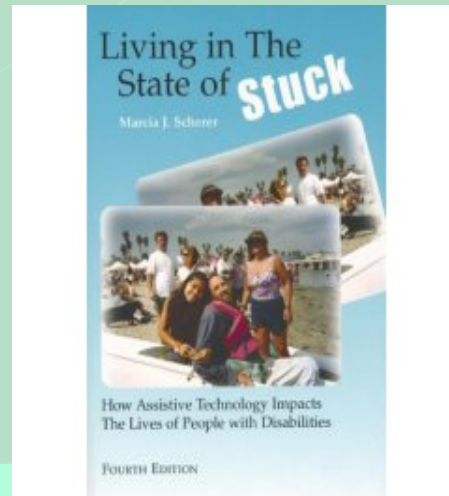
MPT educational resources

- **Print**
- **CD-ROM based**
 - Key Features
 - Short multimedia segments
 - Simple controls
 - Accessibility features
 - English and Spanish versions
 - Etc.
- **Computerized scoring and interpretations**

Consumer Materials

- Workbook developed by ILC
- Appended in the book:

Scherer, M. J. (2005). *Living in the State of Stuck: How Assistive Technology Impacts the Lives of People with Disabilities, Fourth Edition*. Cambridge, MA: Brookline Books.



Outcomes measurement

- Outcomes are measured in terms of changes in being able to get to where desired rather than just by the functional capability to do so. **Participation.**
- The ATD PA has the individual prioritize his or her desired goals then rate over time progress in achieving them.
- It is **idiographic** (person is the unit of analysis and serves as his or her own baseline) **versus normative** (person is compared to a group standard) approach and it embraces a consumer-directed and social, participatory model.

What works?

- A comprehensive assessment at the very beginning
- Inclusion of all stakeholders (employer, trainer)
- Trial use of a technology
- Peer role models
- Integration of varying perspectives

Purpose of Outcomes measurement

- Ensure good outcomes for individuals and employers
- Provide evidence for successful practices
- Augment AT knowledge base
- Document need to payors and policy makers

This increasingly means utilizing the ICF Framework as a common language among these stakeholders.



World Health Organization

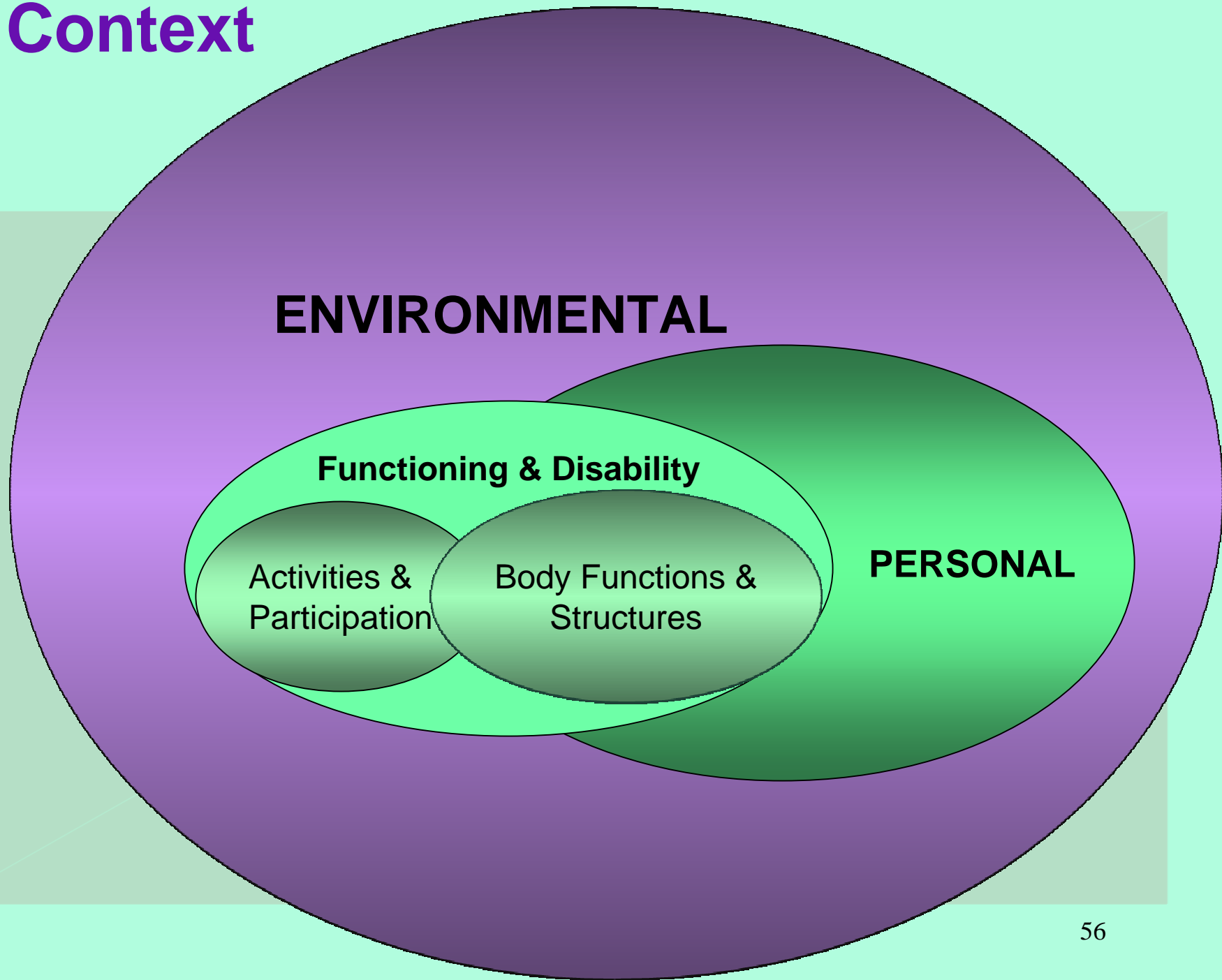
Classification Assessment Surveys & Terminology Group



International Classification of Functioning, Disability and Health

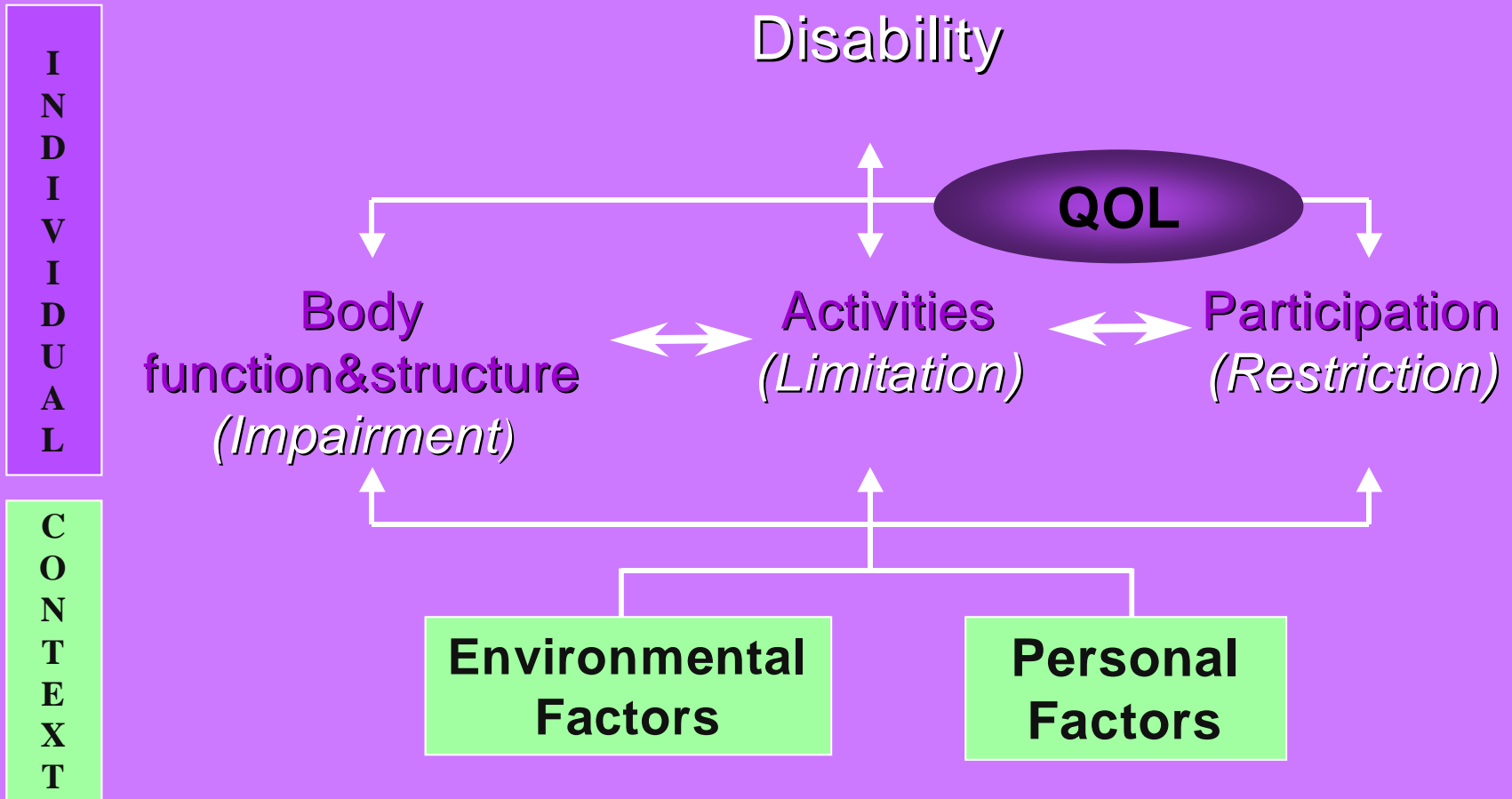
www.who.int/classification/icf

Context



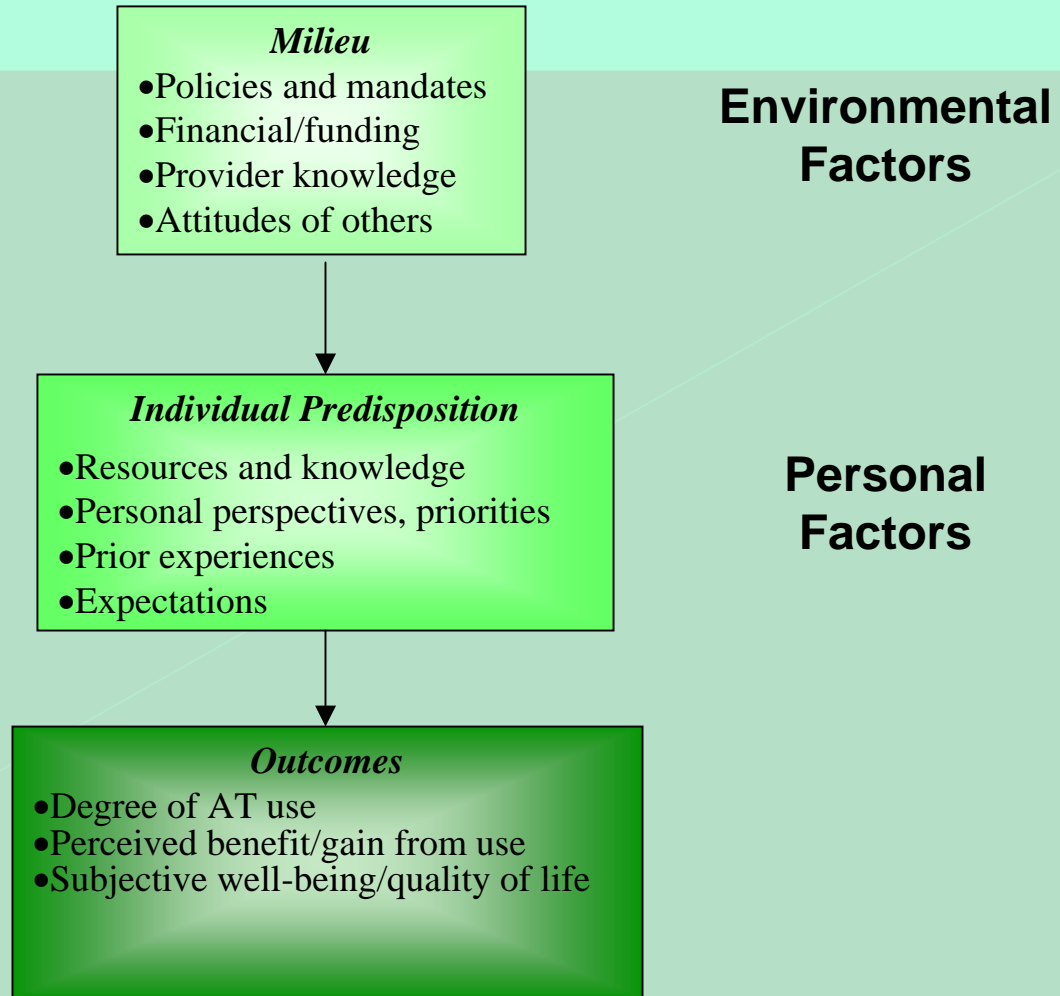
The WHO's ICF Classification

Quality of Life = Performing Activities + Participating in Life Areas



Influences on Activities & Participation: MPT Model and ICF Match

C
O
N
T
E
X
T



The message?

It is no longer sufficient to show we have improved a person's functioning. We must show we have enhanced **participation.**



Integrating AT into the Workplace

- Reliability of the Technologies
- Technology Support
- Individual & Workplace Requirements
- Workplace Environment

Reliability of AT

Issues:

- Incompatibilities – other technologies
- Beta testing underdeveloped technologies
- Variable performance of user
- Upgrades of platform & workplace technologies

Addressed by:

- Forward planning - anticipating other technologies & future changes in platform & workplace technologies
- Utilizing tested technologies & suppliers
- Flexible technologies & use back-up technologies
- Removable hard disk with AT technologies

Technology Support

Issues:

- Accessing people with appropriate expertise
- Over-reliance on informal supports
- User has limited knowledge of technology
- Cost of experts
- Delays – not appreciate importance of AT

Addressed by:

- Purchasing from ONE supplier
- Identifying key workplace supports & suitable experts
- Training user in technology use & maintenance
- Providing support & training to support staff

Individual & Workplace Requirements

Issues:

- Poor fit with environment open office, shared workstation “locked in”
- Technology fatigue & discomfort
- Poor user knowledge of technology features & functions
- Poor efficiency in the workplace

Addressed by:

- Establishing good technology ‘fit’
- Using flexible technologies or alternatives
- Training the user in use – adjusting to meet needs
- Customizing technologies to user ‘s specific requirements
- Allocating TIME to develop familiarity & skill in AT use
- Regularly upgrade AT & mainstream technologies

Workplace Environment

Issues:

- Reluctant to advocate for themselves
- Having to deal with issue alone
- Employer & co-workers unclear of needs & responsibilities
- Needing to initiate requests with supervisors
- Relying on user knowledge of needs & options

Addressed by:

- Providing users with assistance
- Educating employers, co-workers – clarify expectations
- Empowering the user for the long term

Proactive Workplace

- Ensure technologies are adequately installed
- Have workplace consultant (EEO, HR) who:
 - provide support outside line of supervision
 - Investigate suitable technologies
- Anticipate needs in advance of appointment, job change, or technology upgrades in the workplace
- Establish mechanisms for regular review

The system belongs to the USER

Our role is to empower the user to:

- understand the issues
- understand the range of solutions
- make good decisions
- solve problems systematically
- establish good support networks
- equip them to manage long term

Acknowledgements

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For further information about the MPT,
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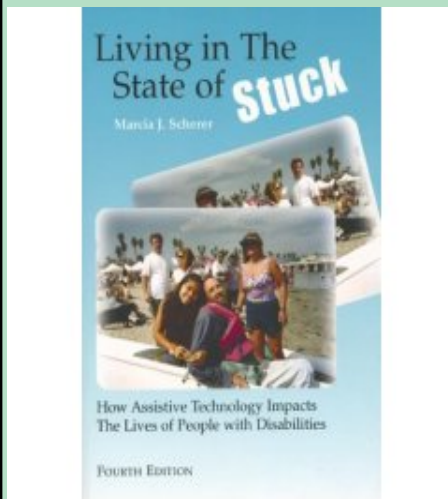
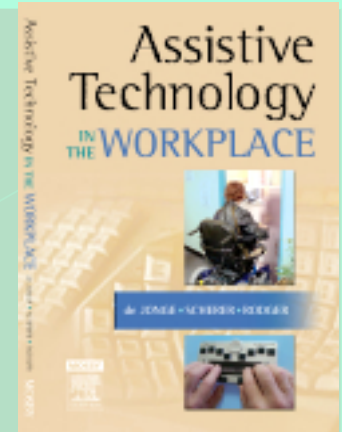


Web Site for the Institute for Matching Person & Technology

MatchingPersonandTechnology.com

More information on consumer experiences and the information discussed today...

de Jonge, D., Scherer, M. J. & Rodger, S. (2007). *Assistive Technology in the Workplace* St Louis, Mosby.



Scherer, M. J. (2005). *Living in the State of Stuck: How Assistive Technology Impacts the Lives of People with Disabilities*, Fourth Edition. Cambridge, MA: Brookline Books.