

# Stanford Assistive Technology Faire

Mary DuCharme

Natural Transitions Consulting, LLC





# Natural Transitions Consulting, LLC

*Educates Service Providers*

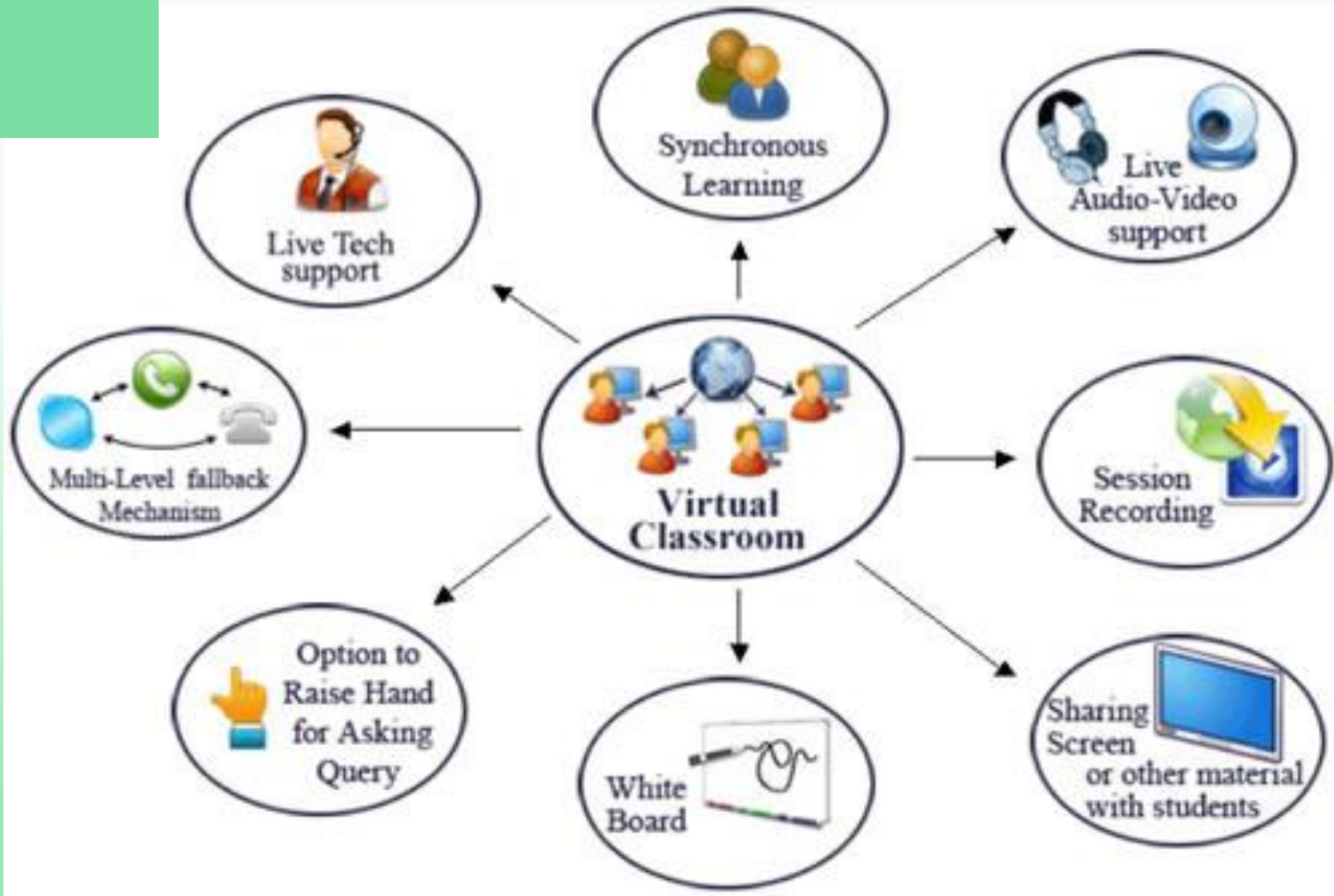
*with purpose and passion*

*to improve quality of life for  
People with Disabilities*

**Founder, Mary L. DuCharme, OTR ATP BSE**

# Educate Service Providers

- Direct care providers
- Rehabilitation providers
- School personnel
- educational institutions
- Advocacy clients
- Humanitarian aid workers
- Durable medical equipment suppliers





- Medical E-Notes 1-3 hour
- Range of Motion 1 hour
- Sensory Integration 1 hour
- Feeding 1 hour
- Operating Lifts 1-3 hour
- NGO STEM 3d Printing PPE,  
Accessories, O&P 6 hour
- G Suite/ Text Help 1 – 6 hours
- Driving to Learn 1 hour
- Adaptive Recreation 1 hour
- IEE AT Evaluations 1 hour
- ATP Fundamentals 7 (1.5 hour)

# Current Curriculums

# E-Med Notes

- Home health cheat sheet
- Teach various systems



# Review of Systems: Time IN/Time Out

- General
- Skin
- Head
- Sensory
- Endocrine
- Respiratory
- Cardiac/Vascular/Hematological
- Gastrointestinal
- Musculoskeletal/Neurological
- Psychiatric

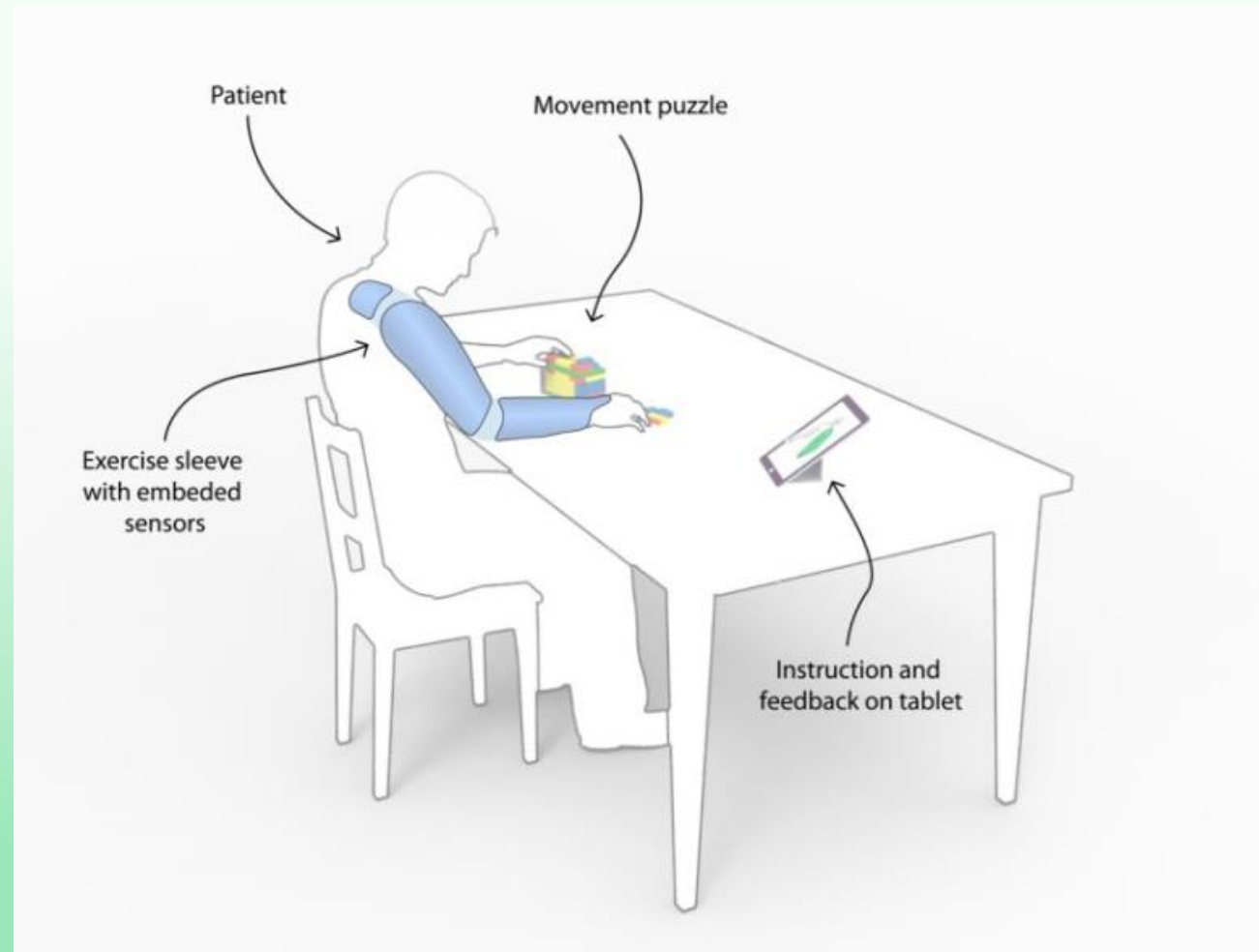


# Home Health Needs

- Dr. last contacted
  - Hospitalized (< 6 mos)
  - Adv. Directive
  - Allergies
  - # ppl in home
  - Anemia
  - Skin Breaks
  - SOB/When
- Appetite  
Diet  
Memory  
Sleep  
ROM  
Pain  
Fire Ext/smoke det  
Falls
- ADLs/IADLs  
Surgeries  
All Dx  
DME  
Needs  
Vital Signs  
Medications/Sharps

# Range of Motion

- Population – active range of motion
- Population – passive range of motion
- Low tech – mat table, passive range of motion vs active range of motion
- Higher tech – arm sleeves, low friction
- Highest tech – e-stim technique stroke





# Sensory Integration and Assistive Technology

- Five Senses
- Low tech – Lycra sheet, theraputty, music, recreation, quiet calm area
- Higher tech – Platform swing with U-Hooks to ceiling safety weight, trampoline and other proprioceptive equipment – CVI
- Highest tech – sensory beds (Boog-a-loo) , environment tools (low lighting)
- VR and AR
- Multisensory Education



# Feeding

- Early intervention
- Pre-School children
- K-12
- Adult Evaluation/Stealing/Gulping
- Low tech – manipulation techniques, pacifiers, chewies
- Higher tech – plate-ware
- Highest tech – feeding machines – incubator feeding tube, g-tube, feeding arm

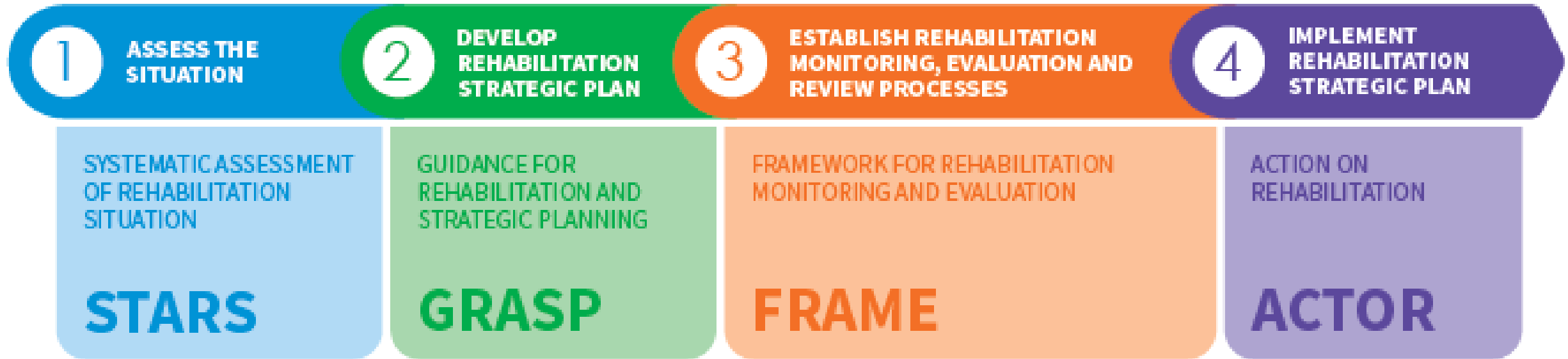


# Lifts and Transfers

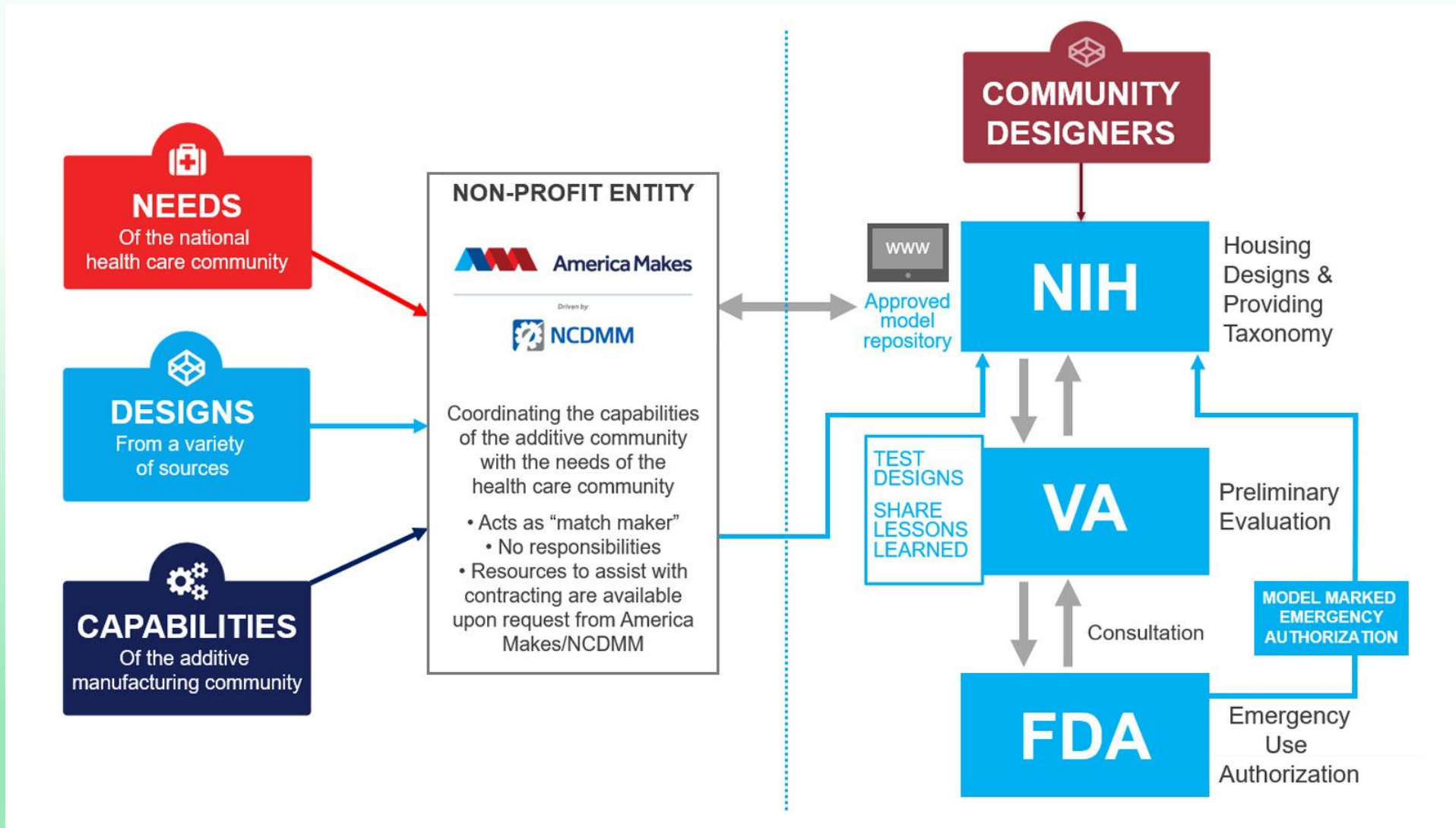
- Low tech – chair, standing
- Higher tech – orthotics
- High tech – lift equipment



# World Health Organization Guide to Rehabilitation

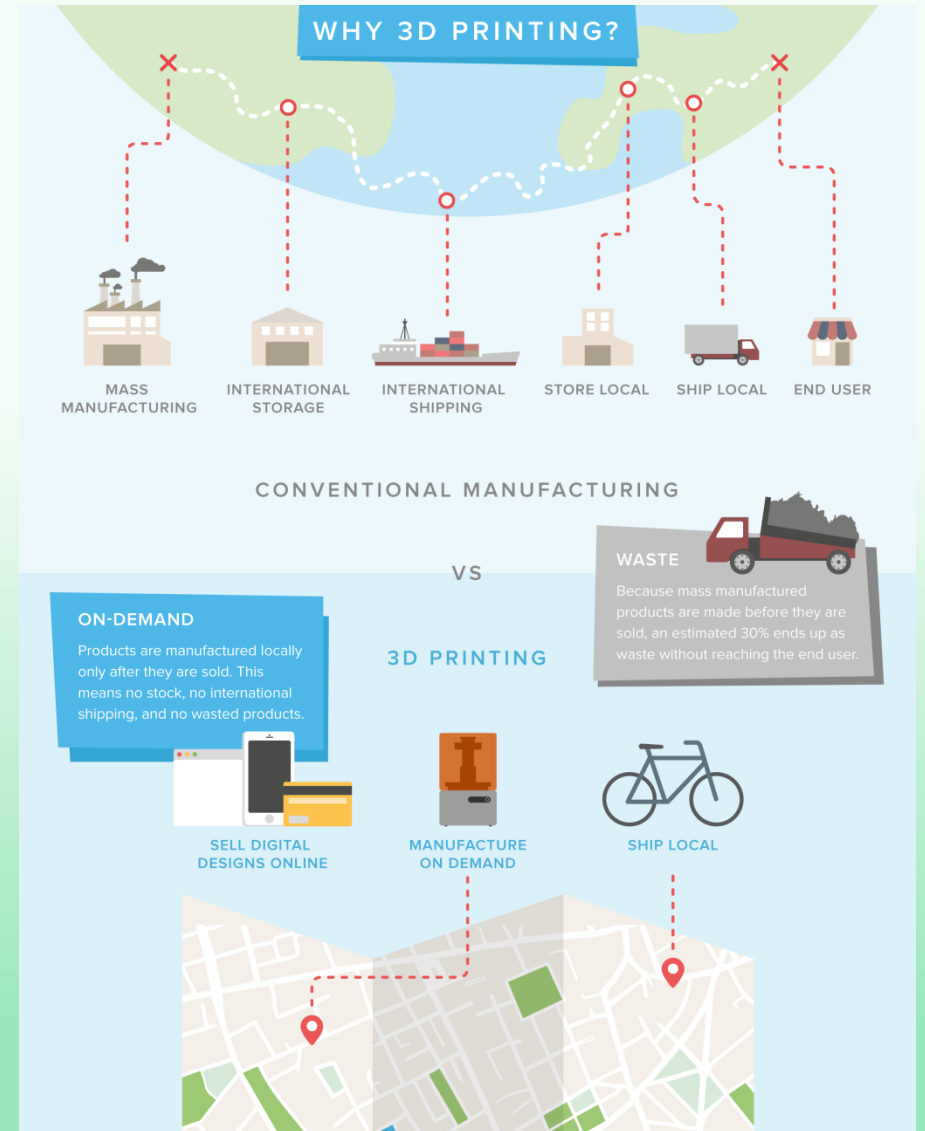


# WHO Needs to design a flowchart similar to US to better understand best NGO placement



# 3d printer, 3d scanner, laser cutter

- ❑ Working with missionaries, experts meet for logistics
- ❑ Some items can be local, but others can't.
- ❑ Training, distributorship involved
- ❑ What is really needed is an international DME to help with providing needed materials and services.
- ❑ 3d printing is good for one-time need but laser cutters more useful for production units



# RESNA International Special Interest Group Proposal Part 1

- Task Force
  1. Educating functional mobility assessment and assistive technology certification to rural and underserved urban areas.

Ultimately the people who have already been educated in ongoing RESNA International projects can in turn educate others to be self-sufficient.



RESNA  
International  
Special  
Interest  
Group  
Proposal  
Part 2

## 2. Makerspace Showcase - Underserved

3D Printers, software, electronics,  
craft and hardware supplies, tools





# RESNA International Special Interest Group Proposal

Team – Who will be on the team

Timeline -

- ❖ 18 mos conception to completion  
start up curriculum/webinars for  
teaching

- ❖ 2 hours per week per volunteer

Budget & Funding-

Research potential funding sources to  
underwrite the work on creating the  
Maker Space.

Goal - Pursue a minimum of \$15000 in  
grants by 2021 to support this project.

# RESNA International Special Interest Group Proposal

- v Finalize action times from project
- v Recruit volunteers to learn/teach, ↑ 10;  
Recruit certified instructors
- v Determine target markets
- v Create the curriculum for the training  
portion
- v Create partnerships to help build the  
showcase
- v Elevate awareness of RESNA

# Assistive Technology Databases

- [Trace Universal database](#)
- [Israeli Needs Based database](#)
- [Morphic makes computers easier to use](#)

# 3D Printer State of the Art

- Thermoplastic vs Thermo set
- STL (Standard Tessellation Language) Format vs AMF (Additive Manufacturing Format) (XML-Based Standard) using ASTM Standards
- Solid Modeling vs Surface Modeling (Rendering)
  - No undersurface software on surface modeling with STL
  - Also limitation with data points
- AMF maintains surface mesh structure of the STL file but has added capabilities to reflect advances in design software and 3D printers:
  - Different colors
  - Different types of materials
  - Creation of lattices
  - Other detailed internal structures

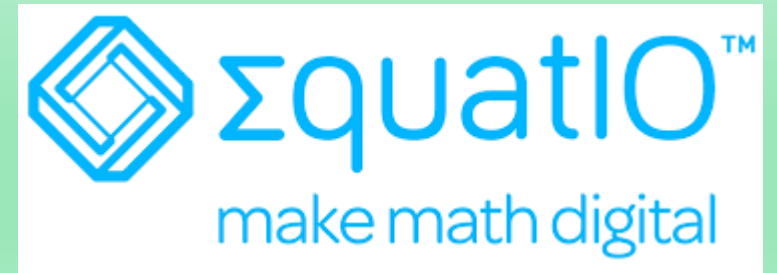
# Current Natural Transitions 3D Setup

- Tinkercad/Thingiverse -> Fusion 360
- Prusa 3d printer
- Various Filaments
- 3D Scanner
- [growth kit prosthetics](#)



# G-Suite tools (Education)

- Virtual platforms
- TextHelp Read n write, EquatIO



# Adapted Recreation

- PVA – Paralyzed Veterans of America
- PMDs – Omeo, \$500 manual all-terrain (?company)
- Dream Adapt – Whitefish, Montana (helmets often required)
  - Teach lessons to improve skill safely (downhill skiing)
  - Sit skis
  - Backcountry Powder, Whitewater Rafting (Vet Program)
  - Cross country skiing
  - Day at the lake with powerboats (sit ski water skiing), w/c paddleboard, accessible kayaks
  - Going to the Sun e-triking/ biking
  - Mountain e-triking/biking



# Driving to Learn – Lisbeth Nillson, Lund Univ

- Cause and effect
  - Increase environmental cues, cognition
- Reduce obliviousness, learned helplessness
- Lisbeth started with PerMobil wheelchair that turned off when you ran into something

I use a modified e-trike

Higashi schools also use e-trikes





# IEE (Independent Education Eval) Assistive Technology Trainings

- WIAT
- SETT
- Daniel Cochrane



# Assistive Technology Fundamentals

- RESNA – if you are near eligibility, can take pre-test course to help you pass ATP certification test.
- Offer comprehensive 7 week virtual course to prepare
- References – Joe McKnight, Senior Mobility Aids



# ATP Implementation Plan

- Assessment of Need
- Development of Intervention Strategies
- Implementation of Intervention
- Evaluation of Intervention
- Professional Conduct
- [RESNA](#)





# Natural Transitions Consulting, LLC

Educating with Purpose and Passion

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