Versatile & Integrated System for Telerehabilitation (VISYTER)

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Technologies for Supporting Rehab in Natural Environments
Challenges

- Natural environments: home, workplace, hospital?
- Diverse rehab services: cognitive, physical, sensory rehabs
- Service delivery model: assessment, consultation, intervention, & monitoring;
- Consequences:
  - Limited resources (home, independent living): cannot afford expensive VC system
  - Users include consumers, in addition to professionals
- PITT model: scalable, flexible, secure, and cost-effective

VISYTER (Versatile & Integrated System for Telerehabilitation)
VISYTER

• Versatile:
  – Can adapt to the connection speed, can be deployed quickly
  – Does not require complicated and expensive equipment
  – Extensible, can be adapted to support various telerehab services

• Integrated
  – More than just videoconferencing: stimuli presentation, patient response capture, etc
  – Integrated with rehab protocol, documentation/workflow, EHR, archiving, annotation, etc.

• High quality
  – Supporting full-screen, HD, real-time video at 30 fps

• Secure: HIPAA compliant, records are not stored in public place, encryptions, access control, etc.
VISYTER Basic Setting

Face-to-face camera
Observational camera

Clinician Site
Client Site

Tablet stimuli presentation & response capture

Extensible
Other applications: collaboration

Current & Immediate Applications

- Remote Wheelchair Assessment
- ADOS (Adult Autistic Assessment)
- Vocational Rehab services to Johnstown
- Pediatric Physical Therapy Teleconsultation
- Treatment modality teleconsultation after brain injury
- Virtual Observation room for Speech-Language Therapy Clinic
- Chronic Edema/Lymphedema Telerehab
- Home service, DePaul school of Hearing
- Physician Assistant Remote Evaluation
- Home AAC support and services
Lessons learned and challenges from the implementation

• Great potential for various telerehabilitation applications
• Productive interaction with clinicians
• Technical challenges:
  – Uneven qualities of audio and video devices
  – Driver conflicts or incompatibilities: audio is more problematic than video
  – Scalability for users connected to unicast-only networks