



# ***Telerehabilitation Web-Based Portal for Community-Based Rehabilitation***

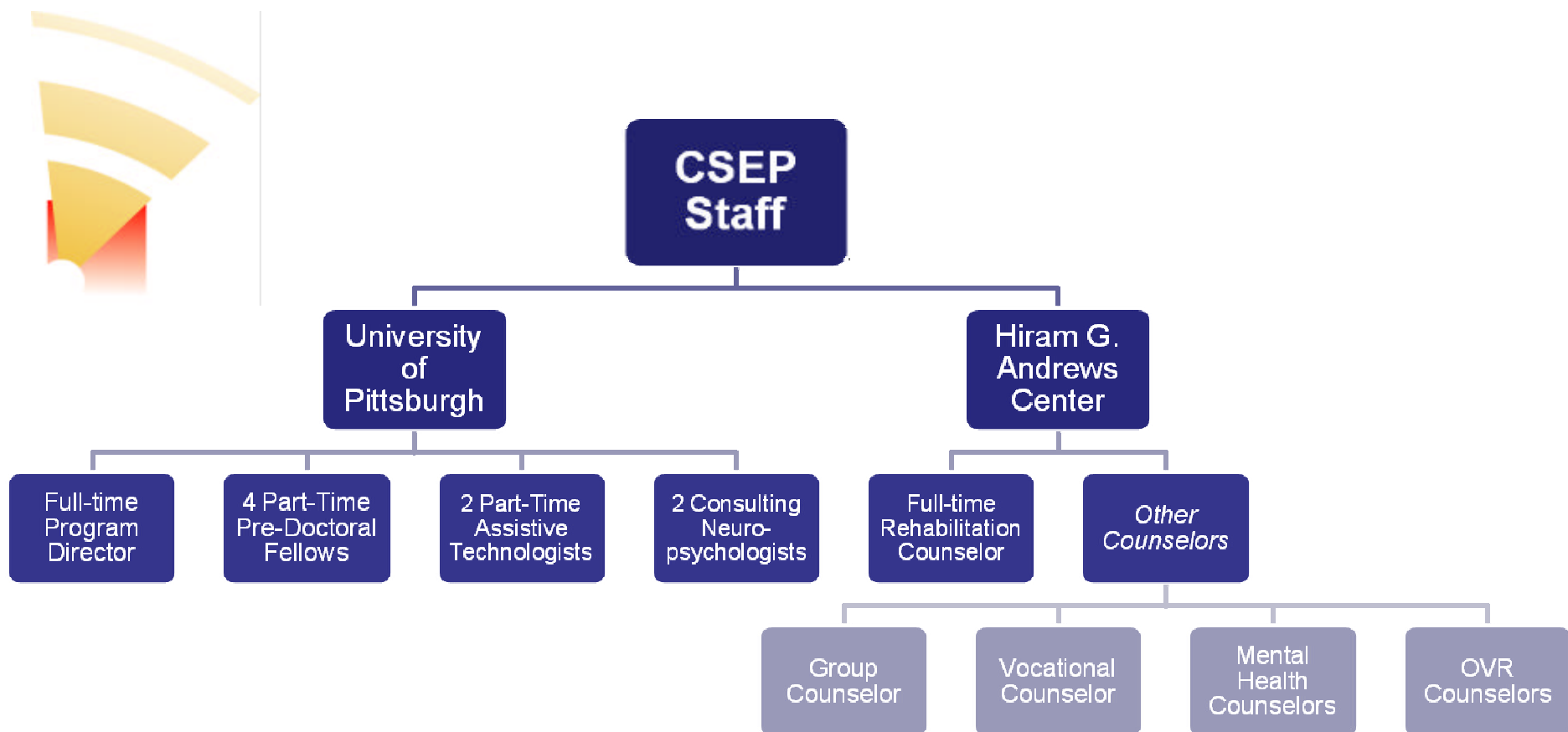
**Jamie Schutte, MS**



# Introduction

- **Telerehabilitation (TR):** The application of telecommunication technology for supporting rehabilitation services
  - Emerging field, rapidly growing
  - Advances of Internet technologies and availability of broadband connections have expanded TR applications that were previously too complicated/expensive to deliver
- Nature of the rehabilitation services determines the necessary telecommunication technology and informatics infrastructures
- The University of Pittsburgh's Department of Rehabilitation Science and Technology (RST) conducts clinical, academic, and research activities in its Johnstown, PA location at Hiram G. Andrews Center (HGAC)





- Coordinating and organizing across employers and geographical locations makes communication a daunting task



# Clinical Objective

- To develop a web-based Portal that would support a variety of clinical activities in order to increase efficiency and improve clinical practices
  - Method of gathering and updating participants' information and progress
  - Planning and updating the group schedule
  - Organizing Learning Technologies Program (LTP)
  - Documenting intake/referral screening information
  - Storing program evaluation/research data
  - Improving methods of staff communication
- Ideally, Portal could be modified to fit the needs of other community-based rehabilitation programs





# Methods

- PITT model of Information Management Infrastructure was developed at the University of Pittsburgh's Rehabilitation Engineering and Research Center on Telerehabilitation (RERC-TR)
- Infrastructure was developed through a design process that focused on accessibility, openness, extensibility, cost-effectiveness, and security





## Results - Security

- Encompassing all aspects of the PITT model is the security of the infrastructure
- Portal has been built to comply with common security policies
  - Encryption of data
  - Requiring access information
  - Limiting access to rightful persons





# Results - Portal

- Homepage
- Calendar
- Tasks
- Sessions and Activities
- Learning Technologies Program (LTP)
- Participant Information
- Team Discussion
- Referral Screening/Intake Interview
- Program Evaluation/Research Data
- Resources





Home - CSEP Portal - Windows Internet Explorer

http://www.csep.pitt.edu/default.aspx

File Edit View Favorites Tools Help

Home - CSEP Portal

CSEP Portal

Welcome Schutte, Jamie L | My Site | My Links

This Site: CSEP Portal

 **CSEP Portal**

Home Site Actions

View All Site Content

**Tools**


- CSEP (Tier I) Calendar
- LTP Calendar
- Tier II and Tier III Calendar
- Tasks

**Documents**

- Sessions and Activities
- Learning Technologies Program (LTP)
- Tier I - Summer 2009
- Tier II
- Tier III
- Referral Screening/Intake Interview
- Resources
- Program Evaluation/Research Data
- In-Service Training

**Discussions**

- CSEP-Summer 2009
- LTP Notes

 **CSEP** A Collaborative Project by the University of Pittsburgh & HGAC  

**Announcements**

**Take Pictures for Banquet** 5/1/2009 8:30 AM  
by Gales, Sara Kathleen  
Please take pictures of sessions, as appropriate, so that we get a good variety of pictures for the banquet slide show.

**SIMS** 2/7/2009 2:19 PM  
by Schutte, Jamie L  
Primary clinicians: remember to discuss SIMS progress with participants

☐ Add new announcement

**Shared Documents**

Type	Name	Modified By
------	------	-------------

**Links**

URL

- Hiram G. Andrews Center homepage
- University of Pittsburgh homepage
- CSEP Gmail

☐ Add new link

**RSS Viewer**

**Rehabilitation Counseling Bulletin current issue**

Predicting Employment Outcomes of Consumers of State-Operated Comprehensive Rehabilitation Centers

Done

start Home - CSEP Portal - ...

Internet 100% 4:16 PM



CSEP (Tier I) Calendar - Windows Internet Explorer

<http://www.csep.pitt.edu/Lists/Calendar/calendar.aspx>
Live Search

File Edit View Favorites Tools Help

CSEP (Tier I) Calendar

Home
Site Actions

CSEP Portal > CSEP (Tier I) Calendar  

# CSEP (Tier I) Calendar

New Actions Settings View: **Calendar**

June, 2009
Expand All Collapse All | 1 Day 7 Week 31 Month

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31	<b>Tryout: Natasha (Med. Office)</b> Sara/Jamie <b>CSEP PAYCHECKS</b> 9 more items	<b>Tryout: Natasha (Med. Office)</b> Sara/Maren 7 more items	<b>Voc Project 1 DUE</b> Maren/Jeanine 7 more items	<b>Jamie/Jeanine</b> 7 more items	<b>CSEP Employee of Week</b> 6 more items	
7	Sara/Jamie <b>CSEP PAYCHECKS</b> 8:00 AM <b>Atty Gen (See Description)</b> 5 more items	Sara/Maren 8:00 AM <b>Daily Planning Meeting</b> 6 more items	Maren/Jeanine 8:00 AM <b>Daily Planning Meeting</b> 6 more items	<b>Jamie/Jeanine</b> 8:00 AM <b>Daily Planning Meeting</b> 6 more items	<b>CSEP Employee of Week</b> 8:00 AM <b>Daily Planning Meeting</b> 2 more items	
14	Sara/Jamie <b>CSEP PAYCHECKS</b> 8:00 AM <b>Daily Planning Meeting</b> 7 more items	Sara/Maren 8:00 AM <b>Daily Planning Meeting</b> 6 more items	Maren/Jeanine 8:00 AM <b>Daily Planning Meeting</b> 6 more items	<b>Jamie/Jeanine</b> 8:00 AM <b>Daily Planning Meeting</b> 6 more items	<b>CSEP Employee of Week</b> 8:00 AM <b>Daily Planning Meeting</b> 2 more items	

2009  
Jan Feb Mar  
Apr May **Jun**  
Jul Aug Sep  
Oct Nov Dec  
Today is Wednesday, June 03, 2009  
View All Site Content  
**Tools**  
CSEP (Tier I) Calendar  
LTP Calendar  
Tier II and Tier III Calendar  
Tasks  
**Documents**  
Sessions and Activities  
Learning Technologies Program (LTP)  
Tier I - Summer 2009  
Tier II  
Tier III  
Referral Screening/Intake Interview  
Resources  
Program Evaluation/Research Data

Done
Internet
100%
4:17 PM

View All Site Content	7 AM							
<b>Tools</b>	8	8:00 AM <b>Daily Planning Meeting</b>	8:00 AM <b>Daily Planning Meeting</b>	8:00 AM <b>Daily Planning Meeting</b>	8:00 AM <b>Daily Planning Meeting</b>	8:00 AM <b>Daily Planning Meeting</b>	8:30 AM <b>Weekly Review</b>	
<ul style="list-style-type: none"><li>CSEP (Tier I) Calendar</li><li>LTP Calendar</li><li>Tier II and Tier III Calendar</li><li>Tasks</li></ul>	9	8:30 AM <b>Test - Brain/PAC</b>	8:30 AM <b>Intro to Memory</b>	8:30 AM <b>Anchoring</b>	8:30 AM <b>Memory and Study Skills</b>			
<b>Documents</b>		9:30 AM <b>Review Test</b>	9:30 AM <b>Concentration</b>	9:30 AM <b>Social Memory: Names and Faces</b>	9:30 AM <b>Split Groups-Group 1: Discovery Wheel. Group 2: What is</b>		9:00 AM <b>PAC Activity - Led by Melissa</b>	
<ul style="list-style-type: none"><li>Sessions and Activities</li><li>Learning Technologies Program (LTP)</li><li>Tier I - Summer 2009</li><li>Tier II</li><li>Tier III</li><li>Referral Screening/Intake Interview</li><li>Resources</li><li>Program Evaluation/Research Data</li><li>In-Service Training</li></ul>	10	10:00 AM <b>Internet Safety</b>	10:30 AM <b>AT Group</b>	10:30 AM <b>Introduction Activity</b>	10:30 AM <b>I'm Going to a Picnic Activity</b>		10:00 AM <b>Feedback Circle</b>	
<b>Discussions</b>	11	11:00 AM <b>Staff meeting NTSS Lab</b>					11:00 AM <b>Double-Jenna</b>	
<ul style="list-style-type: none"><li>CSEP-Summer 2009</li><li>LTP Notes</li><li>Portal Questions</li></ul>	12 PM							
<b>Pictures</b>	1	1:00 PM <b>Review Videotaped Sessions</b>	1:00 PM <b>Mike's Group</b>	1:00 PM <b>Visualization</b>	1:00 PM <b>Mike's Group</b>			
<a href="#">Recycle Bin</a>	2	2:00 PM <b>Independent Time</b>	2:00 PM <b>Independent Time</b>	2:00 PM <b>Independent Time</b>	2:00 PM <b>Independent Time/ Sims with Ed (See description)</b>			
	3	3:00 PM <b>Wrap-Up</b>	3:00 PM <b>Wrap-Up</b>	3:00 PM <b>Wrap-Up</b>	3:00 PM <b>Wrap-Up</b>			
	4							
	5							
	6							



CSEP (Tier I) Calendar - Windows Internet Explorer

http://www.csep.pitt.edu/Lists/Calendar/calendar.aspx?CalendarPeriod=day&CalendarDate=6%2F9%2F2009

File Edit View Favorites Tools Help

CSEP (Tier I) Calendar

CSEP Portal

Home Site Actions

CSEP Portal > CSEP (Tier I) Calendar

## CSEP (Tier I) Calendar

New Actions Settings View: **Calendar**

← → Tuesday, June 09, 2009 Day Week Month

7 AM

8 8:00 AM **Daily Planning Meeting**

8:30 AM **Working and Procedural Memory**

9 9:30 AM **Intro to Hamburger Turning**

10 10:30 AM **AT Group**

11

12 PM

1 1:00 PM **Mike's Group**

June, 2009

S	M	T	W	T	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4

Today is Wednesday, June 03, 2009

View All Site Content

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- Tier II

Done

start CSEP (Tier I) Calenda... calendar2.JPG - Paint


Internet 100% 4:21 PM

CSEP (Tier I) Calendar - Cognitive Abilities & Social Interactions... - Windows Internet Explorer

<http://www.csep.pitt.edu/Lists/Calendar/EditForm.aspx?ID=266%2E1%2E181&Source=http%3A%2F%2Fwww%2Ecsep%2Eedu%2FLists/Calendar/EditForm.aspx>
Live Search

File Edit View Favorites Tools Help

CSEP (Tier I) Calendar - Cognitive Abilities & Social Int...


**CSEP Portal**

Home

Site Actions

CSEP Portal > CSEP (Tier I) Calendar > Cognitive Abilities & Social Interactions > Edit Item

## CSEP (Tier I) Calendar: Cognitive Abilities & Social Interactions

OK Cancel

Attach File | Edit Series | Delete Item | Spelling... \* indicates a required field

<b>Title *</b>	Cognitive Abilities & Social Interactions
<b>Location</b>	
<b>Start Time *</b>	5/28/2009 8 AM 30
<b>End Time *</b>	5/28/2009 9 AM 30
<b>Description</b>	<div> A A   B I U                     </div> <p>Participants will be provided with a chart, which identifies nine associated areas of cognitive skills, including memory, attention, organization, problem-solving, self-awareness, impulsivity, initiation, self-monitoring, and flexible thinking. These areas will be briefly described. Participants will then be asked to write ways in which strenghts and weaknesses in</p>
<b>All Day Event</b>	<input type="checkbox"/> Make this an all-day activity that doesn't start or end at a specific hour.
<b>Recurrence</b>	Every 1 week(s) on: Monday, Tuesday, Wednesday, Thursday
<b>Workspace</b>	
<b>Attachments</b>	Cognitive Abilities Affecting Social Interaction - DISCUSSION.doc <input type="checkbox"/> Delete Cognitive Abilities Affecting Social Interaction - WORKSHEET.doc <input type="checkbox"/> Delete

Created at 5/22/2009 9:22 AM by Gales, Sara Kathleen  
Last modified at 5/22/2009 10:50 AM by Schutte, Jamie L

OK Cancel

Done

Internet 100%

start

CSEP (Tier I) Calenda...

calendar3.JPG - Paint

Program Manual (origi...

4:25 PM



Sessions and Activities - Windows Internet Explorer

http://www.csep.pitt.edu/CSEP%20SESSIONSACTIVITIES/Forms/AllItems.aspx

File Edit View Favorites Tools Help

Sessions and Activities

CSEP Portal

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This List: Sessions and Activities

Home Site Actions

CSEP Portal > Sessions and Activities

## Sessions and Activities

Descriptions, outlines, and handouts for group sessions and activities

New Upload Actions Settings View: All Documents

Type	Name	Modified	Modified By
Folder	1st Week - Introduction	4/24/2009 12:46 PM	Schutte, Jamie L
Folder	Attention	2/4/2009 11:35 AM	Schutte, Jamie L
Folder	Awareness	2/4/2009 11:36 AM	Schutte, Jamie L
Folder	Brain and Cognition	3/9/2009 8:34 AM	Schutte, Jamie L
Folder	Communication	2/4/2009 11:40 AM	Schutte, Jamie L
Folder	End of Term - Wrap-up	4/24/2009 12:47 PM	Schutte, Jamie L
Folder	Flexible Thinking	2/4/2009 11:37 AM	Schutte, Jamie L
Folder	Guest Speakers	2/4/2009 11:40 AM	Schutte, Jamie L
Folder	Initiation	2/4/2009 11:37 AM	Schutte, Jamie L
Folder	Memory	2/3/2009 1:46 PM	Schutte, Jamie L
Folder	Miscellaneous	2/4/2009 11:40 AM	Schutte, Jamie L
Folder	Organization	2/4/2009 11:37 AM	Schutte, Jamie L
Folder	Planning	2/4/2009 11:37 AM	Schutte, Jamie L
Folder	Problem Solving	2/4/2009 11:37 AM	Schutte, Jamie L
Folder	Salary Plan	2/10/2009 8:12 AM	Vigilante, Maren A
Folder	Self-Advocacy	2/4/2009 11:39 AM	Schutte, Jamie L

View All Site Content

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**Discussions**

Done

Internet 100%

start Sessions and Activitie... calendar4.JPG - Paint 4:26 PM

In-Service Training - Windows Internet Explorer

http://www.csep.pitt.edu/InService%20Training/Forms/AllItems.aspx

File Edit View Favorites Tools Help

In-Service Training

CSEP Portal

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This List: In-Service Training

Home







Site Actions

CSEP Portal > In-Service Training

## In-Service Training

Collection of presentations for in-service trainings

New Upload Actions Settings Copy Slide to Presentation View: All Slides

Thumbnail	Name	Presentation	Description	Modified By	Modified	Checked Out To
	ASD Information			Schutte, Jamie L	5/4/2009 9:34 AM	
	Communication and Our Changing Population			Gales, Sara Kathleen	5/2/2009 3:36 PM	
	CSEP Information			Schutte, Jamie L	4/24/2009 12:14 PM	
	MH Information			Schutte, Jamie L	4/24/2009 12:17 PM	
	Spina Bifida Information			Schutte, Jamie L	4/24/2009 12:23 PM	
	TBI Information			Schutte, Jamie L	4/24/2009 12:25 PM	

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**Discussions**

start In-Service Training - ... sessions and activitie...

Internet 100% 4:28 PM



# Discussion

- Application
  - Introduced February 2009
  - Implemented summer term (May) 2009
- Given experiences and feedback thus far, the authors anticipate it will provide functional benefits, including improved communication and increased efficiency, compared to the old system of paper records and a written curriculum
- Creation of a customized, user-friendly Portal has the potential to improve standard operating procedures in a variety of different community-based clinical settings







# Acknowledgements

- University of Pittsburgh
  - Department of Rehabilitation Science and Technology
    - Michael Mccue, PhD
    - Michael Pramuka, PhD
  - Department of Health Information Management
    - Bambang Parmanto, PhD
    - Andi Saptono, MS
- Development of this system was funded by the **National Institute on Disability and Rehabilitation Research (NIDRR)** grant #H133E040012; an outcome of **Rehabilitation Engineering Research Center (RERC) on Telerehabilitation**
- This system was created in collaboration with **Hiram G. Andrews Center**, state-operated vocational rehabilitation facility, located in Johnstown, PA





## Selected References

- Parmanto, B., Saptano, A., Sugiantara, W., Brienza, D., & Nnaji, B. (2006, June). *Information Technology Infrastructure for Supporting Telerehabilitation*. Poster session presented at the RESNA Conference, Atlanta, GA.
- Russell, T. G. (2007). Physical rehabilitation using telemedicine. *Journal of Telemedicine and Telecare*, 13 (5), 217-220.

