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Innovations in Peer Review in NCI:

Instantaneous Electronic Scoring of Multicomponent Applications

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Review of Multicomponent Applications

- Goal: Facilitate discussion and scoring of overall application by providing review panel mean scores/ranges for each component
- Large applications: P01, P50, U19, U54
 - Projects, support cores, developmental programs, other components
 - Reviewers discuss and score each component then discuss and score the overall application
 - Review of each application may take 3 hr or more
- Simple, inexpensive system identified in 2006 by two SROs in NCI DEA

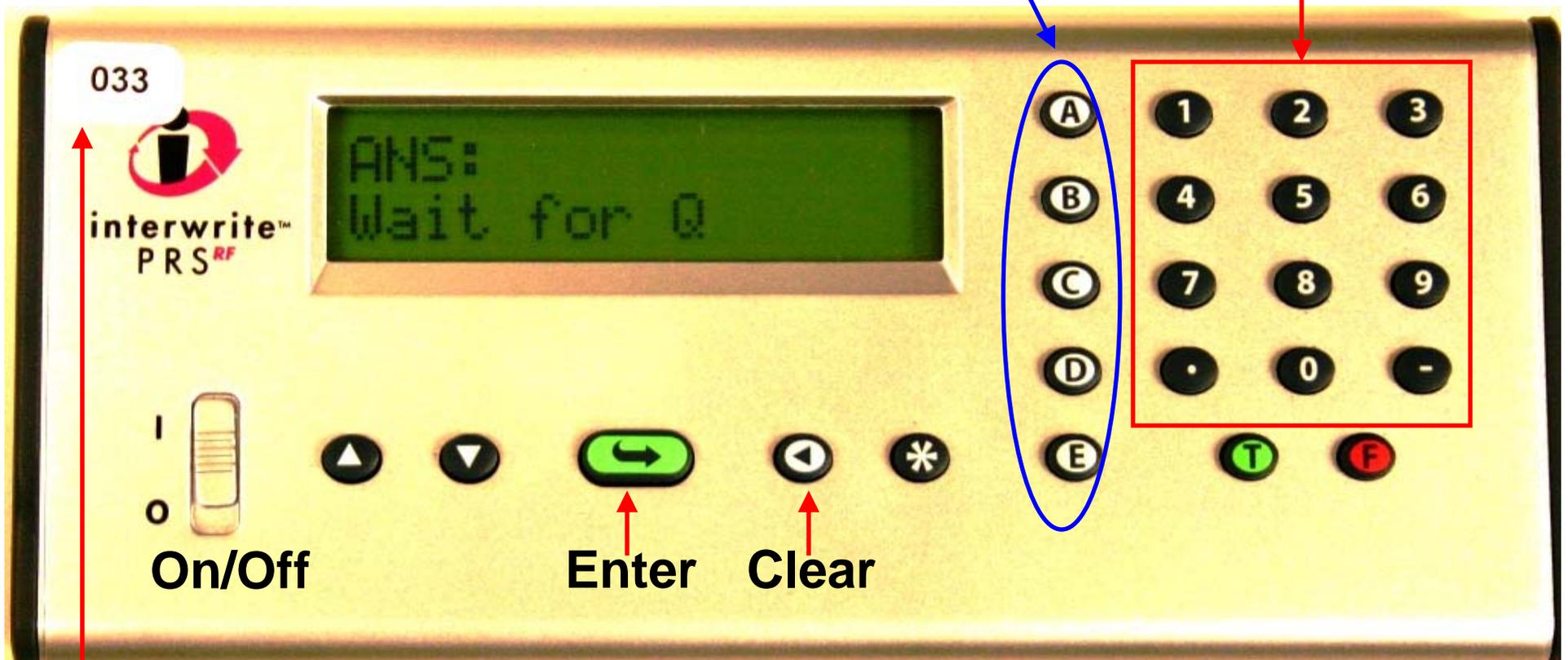
Interwrite PRS System

- Use for test taking in elementary, middle & high schools and colleges
- Wireless radio frequency receiver plugs into USB port in laptop computer
 - Range 150 ft, line of sight not needed
 - Each “class” has a specific frequency channel, so no interference with another meeting “next door”
- Instructor sets up “classes” and “questions”
- Students use a simple hand-held wireless transmitter (“clicker”) to send “answers” – numeric, A - E, true/false
- Each student has a unique transmitter ID number – so answers can be tracked

A = Superior / Highly Integrated
B = Satisfactory / Integrated
C = Minimally Satisfactory / Not Integrated
D = NRFC

Adjectival
Rating

Numerical
score 1.0-5.0



Specific clicker assigned to each reviewer

Adapting the Interwrite PRS System for Use in Peer Review Meetings

- Each review meeting becomes a “class” and each application component to be scored becomes a “question” in the PRS system
- NCI DEA Contractors developed interface programming to
 - Download meeting information, application components, and roster from IMPAC II to automatically build “class” and “questions”
 - Set type of answer for each application component - (numeric 1.0 – 5.0) or letter (A – E)
 - Display data appropriately for multicomponent application review
 - Download data to Excel files for each application

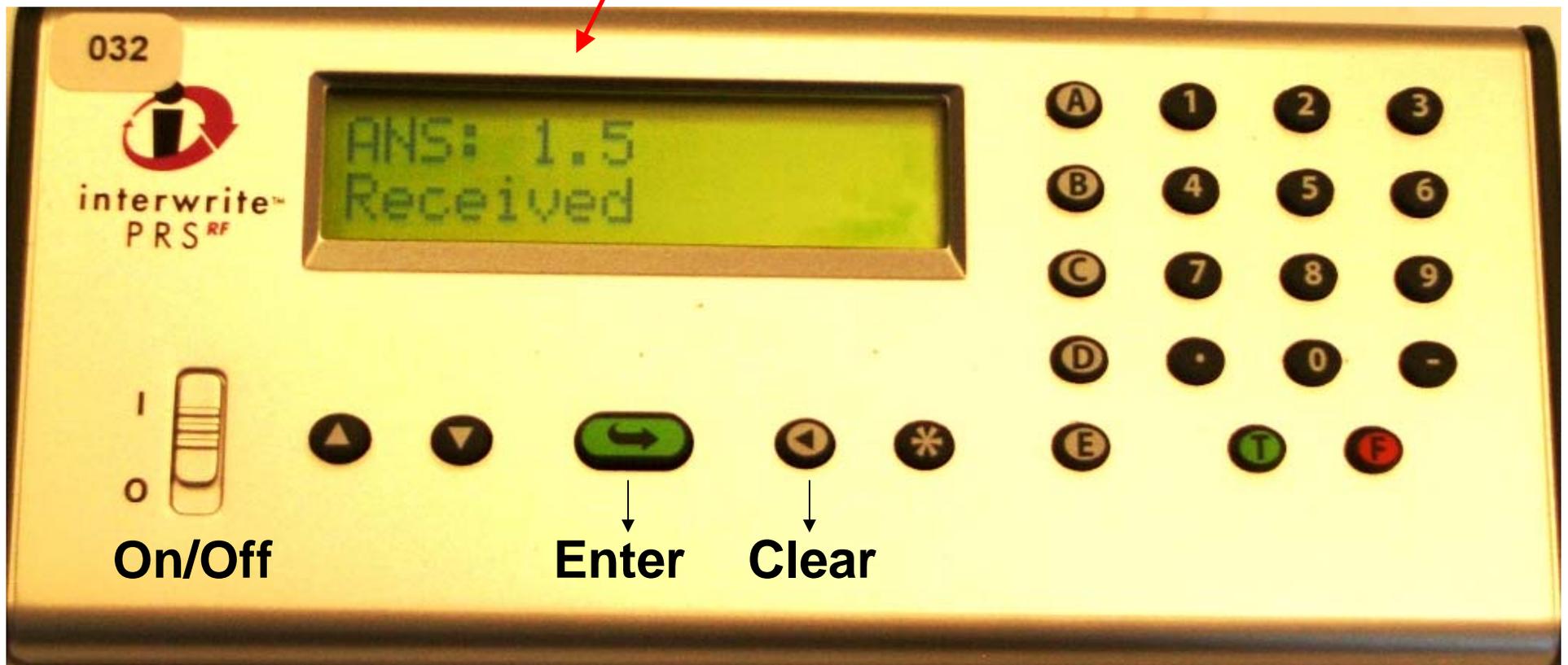
Set Up Required Prior to Peer Review Meetings

- NCI DEA IT staff load PRS software and interface program onto NCI laptops
- SROs and DEAS staff trained in assembling the system and operating it during review meetings
- One-page instructions developed for reviewers
- Prior to each review meeting, Program Specialist
 - Downloads IMPAC II information
 - Sets up meetings and subprojects for each application
 - Assigns “clickers” to meetings and reviewers
 - Prepares USB flash drive with all info for meeting

Use of the Interwrite PRS System During the Review Meeting

- Two “sample questions” used to train reviewers at beginning of review meeting
- DEAS staff member operates system during the meeting
 - Changes “questions”, sets timer for each question, posts means and ranges, changes to next application
- Panel members transmit numeric or letter score after discussion of each component
 - Subsequent transmissions over-write previous if reviewer changes score
 - Correct out of range (ie 15 vs 1.5) or incorrect format (numeric vs letter)

Reviewer can see score entered, correct it before sending if needed, and can see it was received.



Use of the Interwrite PRS System During the Review Meeting

- Mean scores and ranges or adjectival ratings for each project/core are recorded on large laminated posters
- Chair/SRO refer review panel members to poster prior to discussion of overall application
- Reviewers have their own vote sheets as well as the “group think”

Principal Investigator _____ Application # _____

PROJECT #	MEAN	RANGE		
1	1.4	1.4 – 1.9		
2	1.9	1.4 – 1.9		
3	1.6	1.5 – 1.7		
4	2.3	1.8 – 2.5		
5				
6				
CORE	Superior (Clicker = A)	Satisfactory (Clicker = B)	Min. Satisfactory (Clicker = C)	NRFC (Clicker = D)
A	1	29	1	
B	29	2	0	
C	0	3	28	
D				
	HIGHLY INTEGRATED (Clicker = A)	INTEGRATED (Clicker = B)	NOT INTEGRATED (Clicker = C)	
PROGRAM INTEGRATION	9	21	1	

After the Peer Review Meeting

- Reviewer's paper vote sheets are “gold standard” for scores
 - Telephone reviewers don't have clickers
 - A reviewer may miss the time “window” for transmitting a score
 - Reviewer may “recalibrate” and change score later
- Program Specialist downloads Excel files from flash drive
 - DEAS staff correct spreadsheet to reflect vote sheets
- Comparison showed that mean numeric scores from PRS system are within 0.1 of final mean from vote sheets

Conclusions

- Feedback from reviewers
 - PRS system easy to learn and use
 - Group means and ranges very useful in discussing and scoring the overall application
 - Promotes scoring consistency
- Applicable to various review settings
 - NCI has used the PRS system for all P01 and P50 SPORE review meetings since October 2006
 - Could be used for final scoring to facilitate “ranking” if that is implemented based on Enhancing Peer Review recommendations
- Saves DEAS staff time and effort in calculating individual project scores after the review meeting
 - Excel file could be formatted to upload to IMPAC II
- System is very affordable: ~\$3000 for PRS software, transmitter and set of 32 clickers

**A look at the PRS system
user screens and
a hands-on demonstration.....**

Molecular Oncology

Roster

Smith, John-1P01CA1234
McCartney, Paul-2P01CA
Legend, John-1P01CA567
Charles, Ray-2P01CA987
Foxx, Jamie-3P01CA1234

List of all applications for this review meeting

Reviewers attending in person assigned clicker numbers

Print Roster

#	Role	Reviewer	Clicker
1	Chairperson	Stein, Gary S.	58 - FEFABB
2	SEP	Abounader, Roger	59 - FEFBB9
3	SEP	Ali-Osman, Francis C.	
4	SEP	Aster, Jon C.	60 - FEFA7B
5	SEP	Bar-Sagi, Dafna	61 - FEADB4
6	SEP	Bardeesy, Nabeel	
7	SEP	Bogler, Oliver	
8	SEP	Brat, Daniel J.	62 - FEBD93
9	SEP	Burgess, Shawn M.	63 - FEDA99
10	SEP	Cheng, Jin Q.	64 - FED990
11	SEP	Davissou, Vincent J.	
12	SEP	Dlugosz, Andrzej A.	
13	SEP	Eckhart, Walter M.	65 - 1CB8E5
14	SEP	Freeman, James W.	66 - 1D0D54
15	SEP	Giaccia, Amato J.	67 - D3793A
16	SEP	Gudkov, Andrei V.	68 - 1CE819
17	SEP	Hann, Stephen R.	69 - F1B7DC
18	SEP	Hansen, Marc F.	70 - 1D1896
19	SEP	Heerema, Nyla A.	71 - F1AD2B
20	SEP	Hingorani, Sunil R.	72 - FE9BA8
21	SEP	Hoffman, Barbara	73 - FF0C77
22	SEP	Hollingsworth, Michael A.	74 - D37E14
23	SEP	Howe, Philip H.	75 - D3575C
24	SEP	Lam, Wan L.	76 - D37A38
25	SEP	Lewis, Brian C.	77 - 1CB665
26	SEP	Mohammad, Ramzi M.	78 - D35F6A
27	SEP	Nelkin, Barry D.	79 - D377F8
28	SEP	Newcomb, Elizabeth W.	
29	SEP	Normolle, Daniel P.	80 - 1C7B6D
30	SEP	Ohh, Michael	
31	SEP	Olson, James M.	81 - F1BA1D
32	SEP	Recht, Lawrence D.	
33	SEP	Roberts, Charles T.	82 - 1CE7ED
34	SEP	Rodeck, Ulrich	83 - 369B12
35	SEP	Rosmarin, Alan G.	84 - 1C6DB1
36	SEP	Sheng, Shijie	85 - 1C6A71
37	SEP	Tsaprailis, George	86 - D32DEC
38	SEP	Tsichlis, Philin N.	87 - F1AB6C

Molecular Oncology

Roster

Smith, John
McCartney, Paul
Legend, John
Charles, Ray
Foxx, Jamie

List of all applications for this review meeting

Application Summary

#	Subproject ID	Subproject PI	Scoring Method
1	Proj 1	Starr, Ringo	Numeric Score 1.0 - 5.0
2	Proj 2	Lennon, John	Numeric Score 1.0 - 5.0
3	Proj 3	Harrison, George	Numeric Score 1.0 - 5.0
4	Proj 4	McCartney, Paul	Numeric Score 1.0 - 5.0
5	Core A	Sutcliffe, Stuart	Multiple Choice A-D Superior ...
6	Core B	Beatles	Multiple Choice A-D Superior ...
7	Prog	Beatles	- Not Scored -
8	PL	Beatles	- Not Scored -
9	PIE	Beatles	Multiple Choice A-C Highly Integrated ...
10	HS	Beatles	- Not Scored -
11	OV	Beatles	- Not Scored -

Set up of a typical P01 application

RF Connection View Help

Classes Lessons Sessions Gradebooks

New Lesson Edit Lesson Copy Lesson Delete Lesson Import Lesson Export Lesson Create Report New Session

Lessons

00 - Sample Questions, -

01 Smith, John

02 McCartney, Paul

03 Legend, John

04 Charles, Ray

05 Foxx, Jamie

New Question Edit Question Delete Question Copy Question

Move Down Move Up Select All Unselect All

Selected	Number	Name	Time	Type
<input checked="" type="checkbox"/>	1	Rate your flight - Numeric	05:00	Numeric
<input checked="" type="checkbox"/>	2	How was your service at dinner	05:00	Multiple Choice

Sample questions for training reviewers at beginning of review meeting

Class: Not Started

0

Q: Application: Rate your flight - Numeric

“Class” = Review meeting
PRS “channel” for this session is “A”

System shows how
many clickers (ie, reviewers)
have logged in

RF Class: SMALLHYATT <A>

Joined: 2

Q: Application: Rate your flight - Numeric

System shows how many responses have been received

Attendee List - IDs remaining have not responded

Abounader R	Aster J	Bar-Sagi D	Brat D	Burgess S
Cheng J	Eckhart W	Freeman J	Giaccia A	Gudkov A
Hann S	Hansen M	Heerema N	Hingorani S	Hoffman B
Hollingsworth M	Howe P	Lam W	Lewis B	Mohammad R
Nelkin B	Normolle D	Olson J	Roberts C	Rodeck U
Rosmarin A	Sheng S	Stein G	Tsaprailis G	Tsichlis P
Yung W				

2P01CA04 [REDACTED] Numeric Question Summary

Question	Average	Range
01 Proj 1	1.8	1.6 - 2.1
02 Proj 2	1.5	1.4 - 1.7
03 Proj 3	1.8	1.6 - 2.0
04 Proj 4	1.5	1.5 - 1.6

2P01CA [REDACTED] Multiple Choice Question Summary

Question	Highly Integrated	Integrated	Not Integrated	Invalid
09 PIE	24	1	0	0

2P01CA [REDACTED] Multiple Choice Question Summary

Question	Superior	Satisfactory	Minimally Sa...	NRFC	Invalid
05 Core A	0	24	0	0	0
06 Core B	0	22	0	0	0

DEA contractor-built interface program tallies results for each application