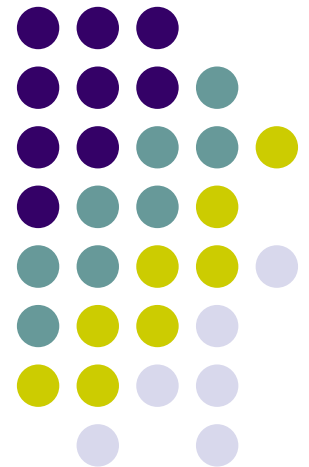
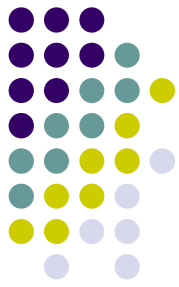


# Innovations in the Evaluation of Innovation

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Brian D. Bontempo, Ph.D.

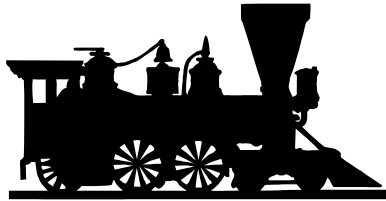
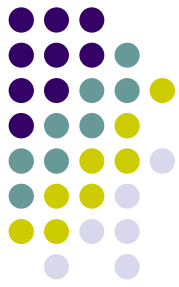




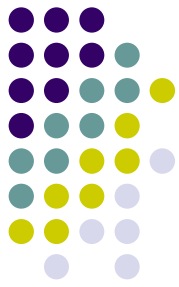
# Topics for Today

- Where were we last year?
- Purpose of Evaluation
- The Evaluation “Thang”
- Success Criteria
- MS Item Type Evaluation Psychometric Results

# Continuum of Innovation



# Bang for the Buck



- Innovation should provide deliverables along the way
- Innovation deliverables should improve the quality and development of later innovations
- Innovations should be implemented in a way that allows the innovation to be evaluated.

# Purpose of the Evaluation



- Knowledge – For Exploring a Technical Innovation
- Judgment (Summative) – For Decision Making on a Technical Innovation
- Improvement (Formative) – For Improving a Technical Innovation
  - Process
  - Technology
- Post Implementation – For Validating a Technical Innovation





# What is Being Evaluated?

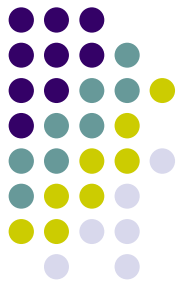
- The Technical Innovation itself
- Quality of the Technical Innovation Products or Providers
- Psychometric Soundness of the Technical Innovation
- Value of the Technical Innovation to Assessment in a Specific Field
- Impact of the Technical Innovation on the Exam Development Process
- Threat of the “Dark Side”

# The Technical Innovation Itself



- “Under the Hood”
  - Reliability
  - Scalability
  - Extensibility
  - Interoperability
  - Industry Standards
- “Features”
  - Functionality
  - Form Factor
  - Bells & Whistles
- “Look and Feel”
  - Style
  - Usability
    - Complexity of User Interface
    - Localizability
    - Readability

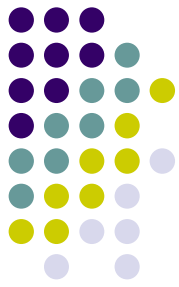
# Quality of the Technical Innovation Providers



- Service
- Cost
- Flexibility (Customization of Product)
- Technical Support
- Training
- Adherence to Industry Standards

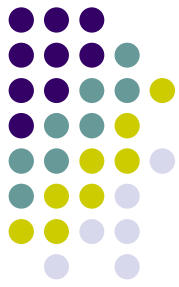


# Psychometric Characteristics of the Technical Innovation



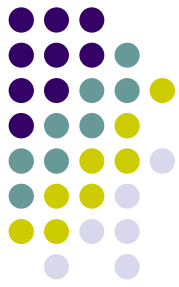
- Reliability
- Difficulty
- Stability
- Item Response Time
- Item Weight
- Scoring Rubric
- Unidimensionality

# Value of the Technical Innovation to Assessment in a Specific Field



- Incorporate new information in credentialing process
- Improve present information in credentialing process
- Conservatism or liberalism with technology

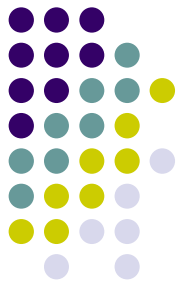
# Impact of the Technical Innovation on the Development Process



- Development Time
- Development Resources
- Development Effort
- Development Costs

# Threat of the Dark Side

- Cheat the Content
- Game the Content
- Compromise the Content



# Success Criteria



- Criterion Referenced – How does the technical innovation measure up to pre-defined criteria
- Norm Referenced – How well does the technical innovation compare to other innovations (or present traditional systems)

# Summary



- **Successes**
  - Use of ROI as a framework for evaluating value
  - Increased emphasis on Usability Study
  - Defining Success Criteria ahead of time
- **Improvements Needed**
  - Evaluating cognitive differences in assessment innovations
  - Evaluating the Dark Side

# MS Psychometric Evaluation



- Survival Rates
- Difficulty
- Consistency  
(Discrimination)
- Item Response Time
- Item Type
- Graphics
- Response Options

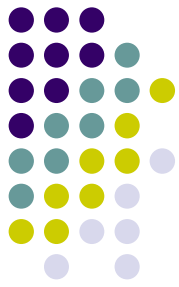
# Item Type Performance



<b>Item Type</b>	<b>Survival Rate</b>	<b>N</b>
MCQ	80.2%	1020
MCQ Choose N	75.5%	196
MCQ Choose All	55.6%	63
MRI	51.7%	89
Drag & Drop	56.4%	39
Hot Area	50.0%	24

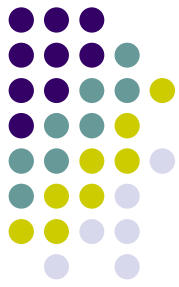


# Response Option Performance



<b>Response Options</b>	<b>Survival Rate</b>	<b>N</b>
4	79.1%	952
5	74.1%	247
6	70.1%	127
7	61.3%	31
8	37.5%	8
9	0.0%	1
12	0.0%	2

# Graphics Performance



<b>Graphics</b>	<b>Survival Rate</b>	<b>N</b>
0	77.1%	1008
1	72.6%	347
2	67.6%	71
3	66.7%	3
4	100.0%	1
5	100.0%	1