



TRENDS AND SOLUTIONS
for Leaders in Credentialing

November 11-14, 2013 Omni Amelia Island Amelia Island, FL



Think *BEFORE* You Jump:

What to Consider When
Developing Performance Items



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Introductions

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Examination Research



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Agenda

1. Pre-development Concepts and Considerations
2. Human Graded Examination Best Practices
3. Use case discussion: Architect Registration Examination (ARE®)
4. Interactive Exercises



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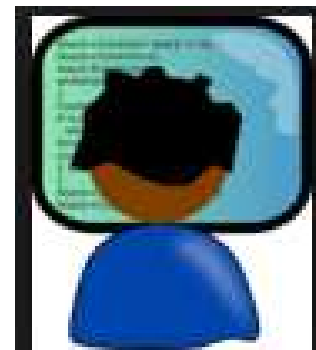
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PERFORMANCE ITEMS

What we mean by *Performance Items*

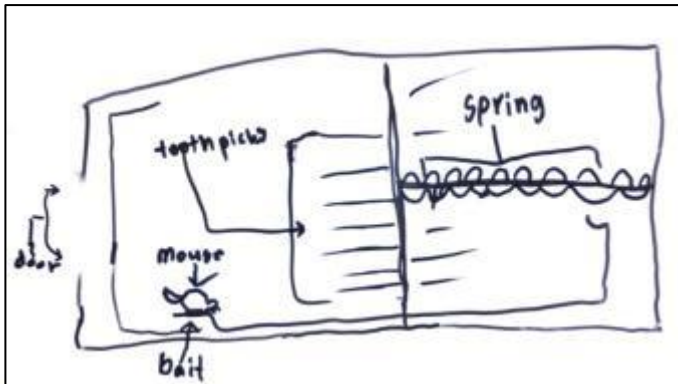
Scoring opportunities that:

- Require psychomotor manipulation/interaction
- Often require the candidate to “construct” a unique response



When To Use Them

- Measurement objectives require highest cognitive levels
and/or
- Only psychomotor interactivity will provide sufficient evidence of qualifications





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Pre-development Considerations

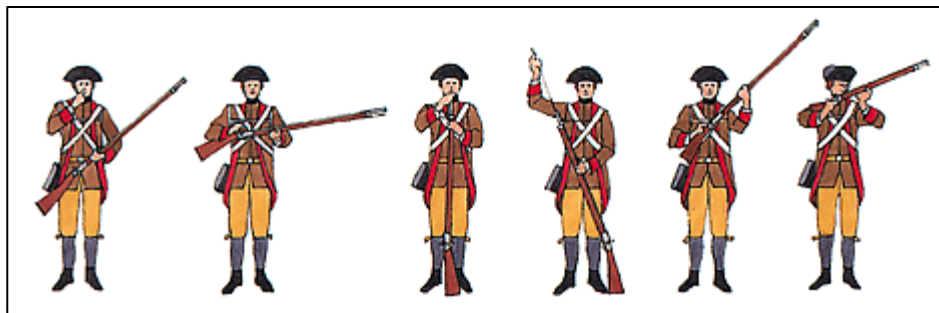
First things, first:

1. What is the purpose of the test?
2. What are your expectations of the minimally qualified candidate?
3. What type of evidence would indicate a candidate is meeting expectations?
4. How can you gather that evidence from a candidate?

Pre-development Considerations

Next:

- What do you want to measure?
 - Process
 - End state
 - Both





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Pre-development Considerations

How will you rate it?

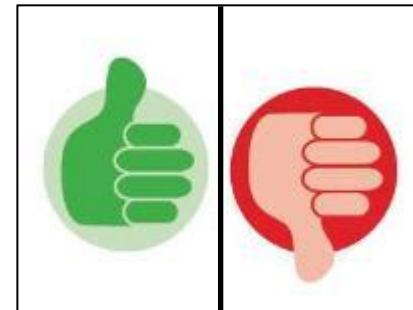
- *Analytic approach*
 - Appropriate when a successful candidate response is predictable
 - Empirically-based
 - More objective for raters
 - Less flexible for raters
 - Appropriate for both computer- or human-scored items
- *Holistic approach*
 - Appropriate when a successful candidate response is not predictable
 - More subjective for raters
 - More flexible for raters
 - Appropriate for human-scored items, only

Pre-development Considerations

How will you score it?

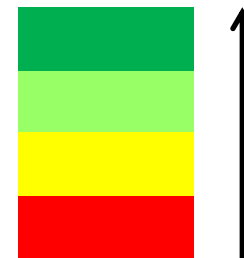
- Dichotomous Scoring

- Yes/no-based
- All-or-none point allocations
- Most appropriate when there is only one anticipated performance level



- Polytomous Scoring

- Degrees of correctness
- Partial credit allocations
- Most appropriate when there are multiple anticipated performance levels



Pre-development Considerations

How will a rater determine when a candidate response meets a given performance level?

- Performance level descriptors
- Exemplars

Performance level	Performance level descriptor	Exemplars
1	Navigates surface streets in a time efficient manner	<ul style="list-style-type: none"> - Times traffic lights - Chooses lightly trafficked routes
0	Navigates surface streets inefficiently	<ul style="list-style-type: none"> - Delayed at multiple traffic lights - Drives into avoidable traffic delays



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Pre-development Considerations

What is provided to the candidate?

- Problem statement:
 - Enough information to determine a successful solution
 - Background information affecting the outcome
 - Necessary documentation
 - Requirements and/or constraints
- Prompt:
 - Clearly and succinctly instructs the candidate what is expected of him/her.
 - Provides enough information to allow the candidate to provide the necessary amount of evidence for success.
 - Should be free of loopholes that allow the candidate to “game” the question.

“You are a used car salesman for EZ Motors, a lightly-patronized business with the inventory shown in the attached document. A customer requests to test drive an SUV. In the area below, draft a sales strategy of less than 500 words that would meet both the customer’s needs as well as EZ Motor sales protocols.”



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Pre-development Considerations

Other considerations:

- Scoring dependencies
- Programming resources (computer scoring)
- Rater methodology, training, and calibration (human scoring)
- Pretesting methodology
- Review and revision
- Delivery capacity/limitations
- Candidate volume



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PRACTICAL APPLICATION:

HUMAN GRADED PERFORMANCE EXAMS



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WHAT AFFECTS THE OUTCOME OF AN EXAM?



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A Partial List

- Examiner bias
- Anonymous grading
- Operational clarity – “What am I supposed to do to?”
- Lack of independent judgments
- When was the last examiner
 - calibration? Did it snow at 4am?
 - When did examiners last eat?
 - Is the environment stressful or calm?
 - Noise in the examination or evaluation area
- Did the examiner correctly capture their grading intentions?



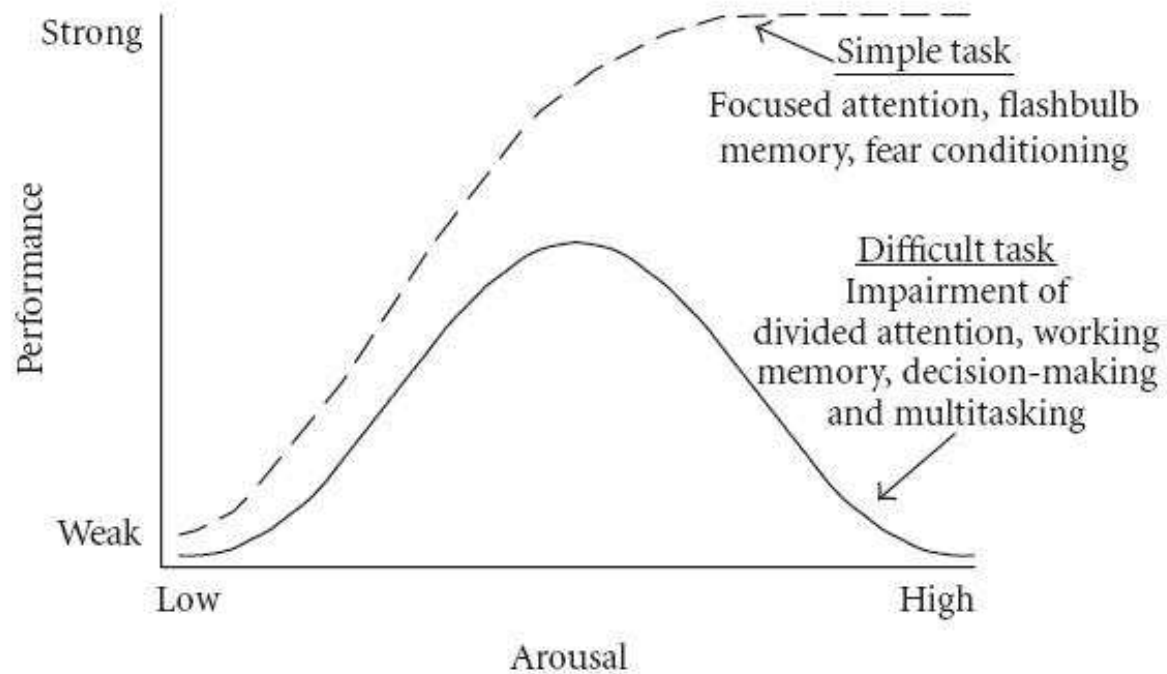
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Environment Matters



Excessive stress impedes cognitive function





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Overhead Reduction: A 2011 Case Study

- 15% more time for candidates (as a result of process overhead reduction)
- Increase in pass rate
- Increase in examiner decision consistency



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Environmental Structures

- Clinical setting (realistic)
- Dedicated testing center (variable minimizing)
- Off-site evaluation of work
- Are third party individuals involved (patients / actors)
- How many candidates are examiners grading at the same time?



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Examiner Calibration





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Calibration Keys

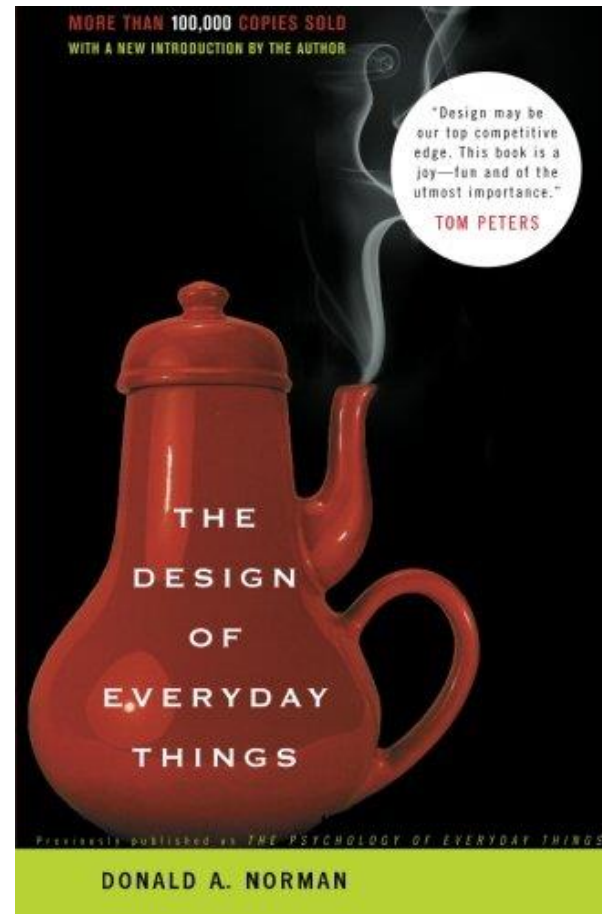
- Active examiner participation
- Pretest: cover all content
- Test event: focus on the “edges”
- Create variability



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Usable Technology





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Support Systems

- The primary concerns of support systems *should* be to:
 - Reduce examiner cognitive overhead
 - Reduce examiner bias
 - Increase validity & reliability
 - Enhance the examination operation experience



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NOT! To be cool...



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Software

- Exam Experience should drive everything:
 - Data entry of evaluation information
 - Decision support for outcomes
 - Examination Control (candidates, patients, examiners)



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Ubiquitous Technology

- Exam Experience should drive everything:
 - Examiner control structures require information displays
 - Audio controls for candidate movement
 - Unattended sensors (proximity, etc.)



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Cost Reducing Techniques

- Automation of manual processes through technology
- Implementation of remote evaluation
- If examiners are required on site, select based on examiner travel costs in conjunction with policy concerns



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USE CASE DISCUSSION:

ARCHITECT REGISTRATION EXAMINATION



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The ARE®





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The ARE®

Asked ourselves these same questions:

1. What is the purpose of the test?
2. What are your expectations of the minimally qualified candidate?
3. What type of evidence would indicate a candidate is meeting expectations?
4. How can you gather that evidence from a candidate?

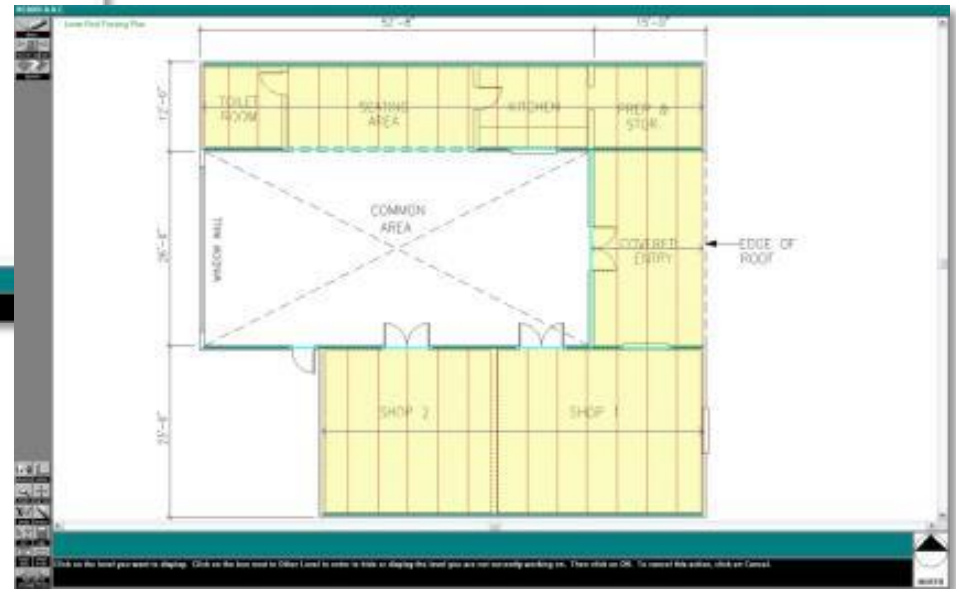
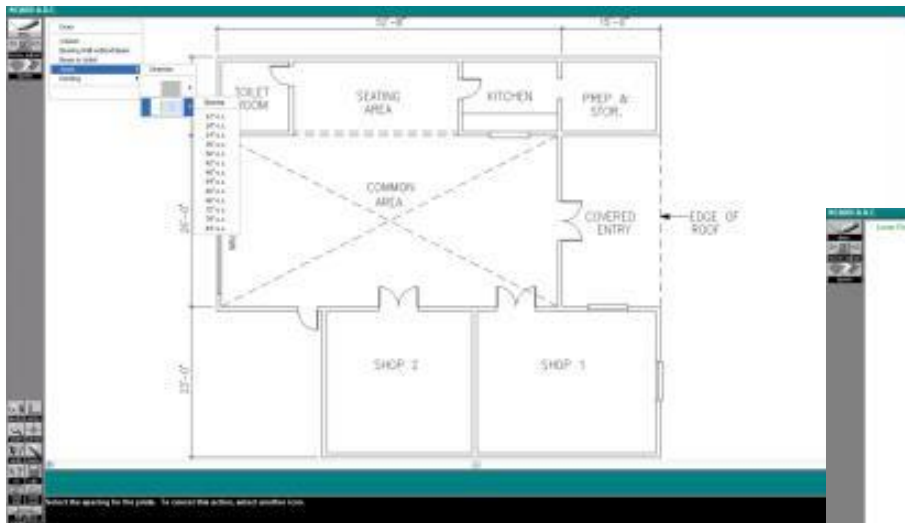


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HOW?

Vignettes



- Site Zoning
- Site Design
- Site Grading
- Interior Layout
- Building Layout
- Building Section
- Accessibility/Ramp
- Stair Design
- Structural Layout
- Roof Plan
- Mechanical & Electrical Plan



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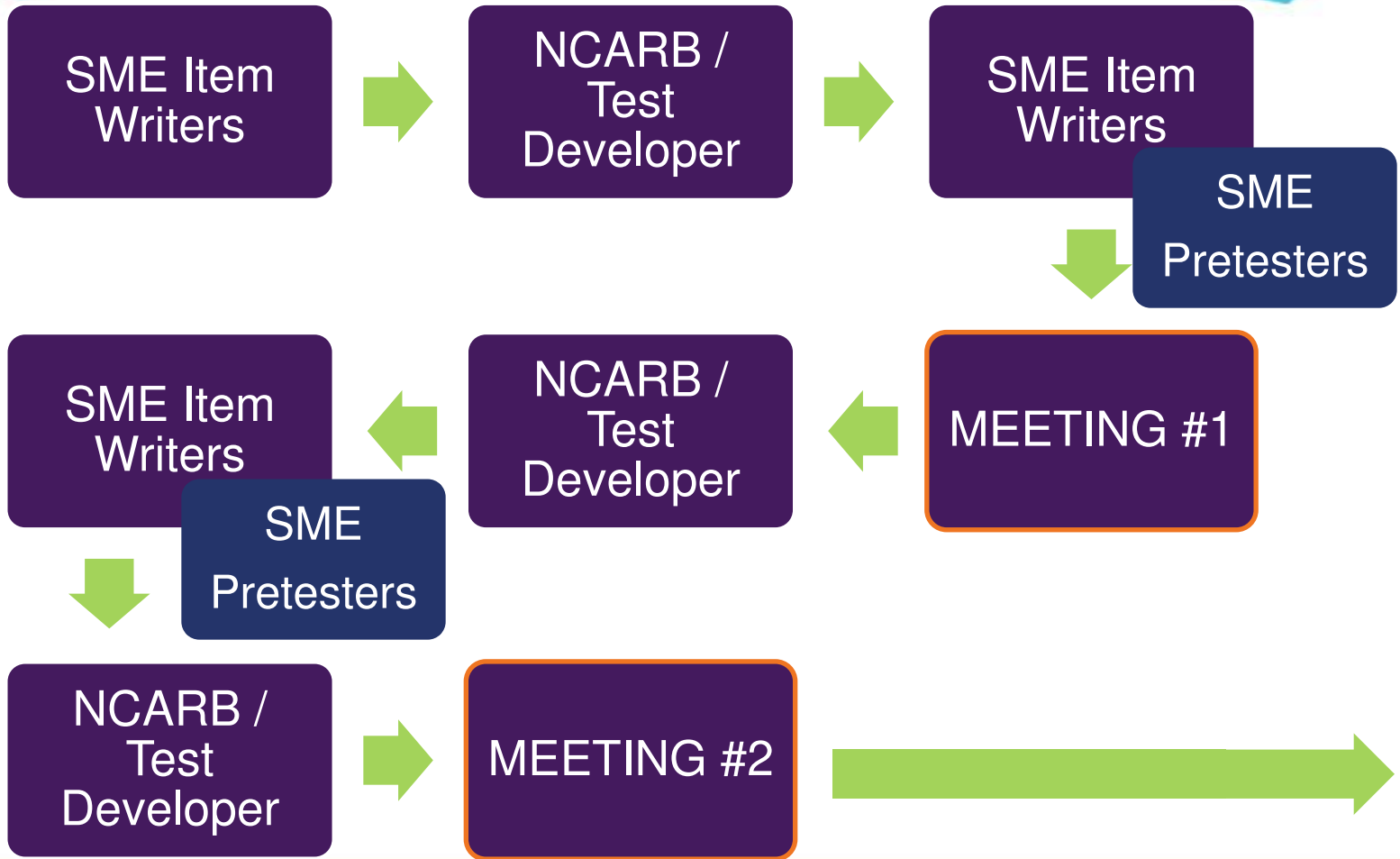
Considerations: Item Development Process

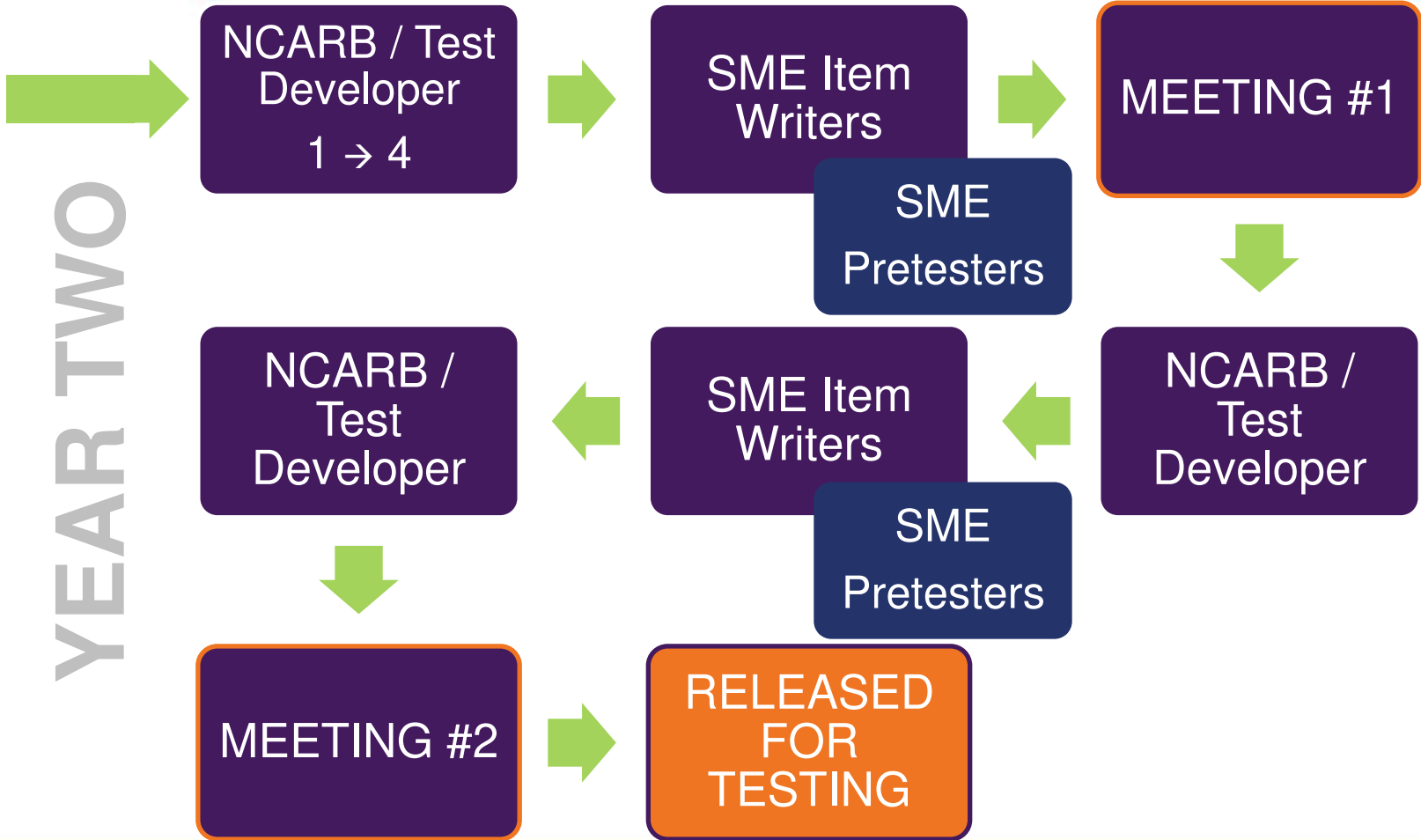
- Committee(s) for Authoring
- Committee(s) for Pretesting
- Committee(s) for Scoring Rubrics
- Specs, Templates, Graphic Standards, Authoring Standards, etc.

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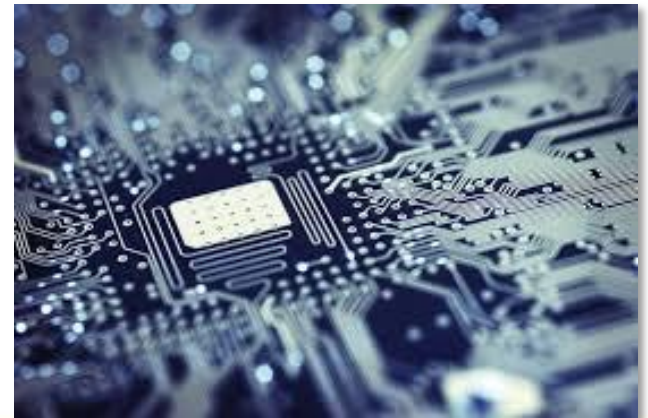
YEAR ONE





Considerations: Technology

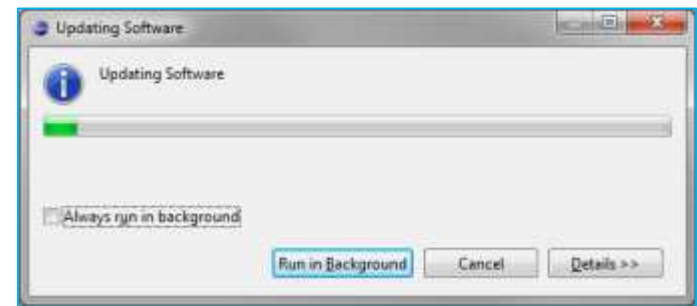
- Software
 - Custom or off-the-shelf
 - Integration into test center or online driver
 - Results returned
 - Custom scoring software and rubrics
 - Item Bank storage



Considerations: More Technology

- Updating
 - Base software application
 - Scoring rubrics or features

- Candidate Interaction
 - Practice Programs
 - Accommodations



Additional Considerations

- Cost of items
 - Monetary Costs
 - Assessment Benefits Costs
- Security
- Life of item and statistical item drift





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Next for the ARE

- Still want to achieve same original objectives as when we moved to Vignettes in 1997
- Moving to new, “more standard” Performance Item Types:
 - Drag and Place
 - Hot Spots
 - Begin using Case Studies





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INTERACTIVE EXERCISES

Interactive Exercise 1

Organization:

- International Secret Agent Association (ISAA)

Test:

- Certified Deep Cover Operative (CDCO)

Purpose:

- To determine if a candidate meets the minimal requirements to be certified as an expert in deep cover infiltration operations

TOP
SECRET



TOP
SECRET

TOP
SECRET



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CDCO measurement objectives:

- Create an appropriate cover story for a given deep cover scenario
- Select an appropriate disguise for a given environment
- Develop an appropriate escape strategy given operational constraints
- Design a target-specific explosive configuration that meets ISAA guidelines

TOP
SECRET

Discussion questions:

1. *Which measurement objectives might be most appropriately measured with performance items?*
2. *Would these objectives be best measured using an analytic or holistic scoring approach?*
3. *What types of computer or human measurement strategies might you suggest for these objectives?*

Interactive Exercise 2

Organization:

- National Caddie Partnership Organization

Test:

- Certified Greens Reader (CGR)

Purpose:

- To determine if a candidate meets the minimal requirements to be certified as a professional putting green reader





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CGR measurement objectives:

- Select the correct club for use inside 50 yards given a specific course
- Identify the type of grasses used on the putting green
- Identify any outside factors that may affect the path of travel for a golf ball
- Create a target path for the ball travel



Discussion questions:

1. *Which measurement objectives might be most appropriately measured with performance items?*
2. *Would these objectives be best measured using an analytic or holistic scoring approach?*
3. *What type of computer or human measurements strategies might you suggest for these objectives?*



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QUESTIONS?