Laying a Foundation: Benchmarking and the NRO Information Assurance Education Program

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Presenters:

Wade R. Sharp, CISSP & Jan W. Whiteley

NRO Security

Security Education Division

Information Assurance Education Program
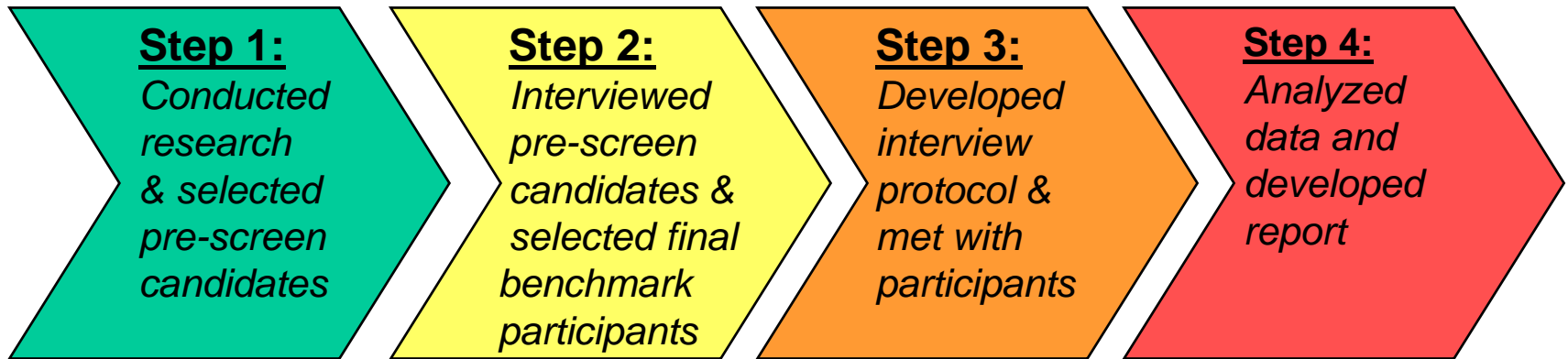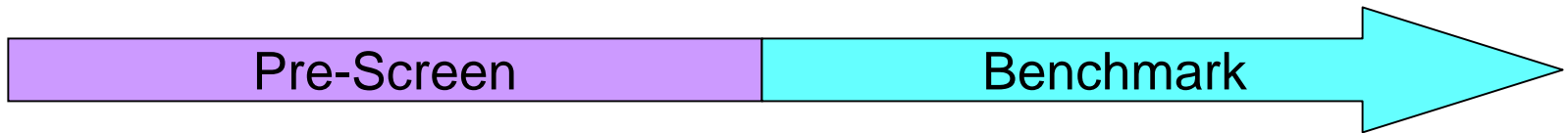
Benchmarking: perception and reality

Common misconceptions

▸ There is a turnkey solution to any problem and a benchmark can reveal it

▸ Lessons learned are easily identified/ captured, and using them will allow someone to sidestep all problems or obstacles

▸ Training resources can be immediately re-used across organizations without tailoring or customization

Our experience

▸ Identifying "Best Practices" from other organizations allows a program to streamline processes, capitalize on innovations of others, and avoid duplication of effort

▸ Lessons learned are not easily gathered, but when provided and properly analyzed can help map out future courses of action and give insight into potential problems

▸ We identified many IA training resources that we hope to re-use after appropriate redevelopment to meet organizational needs

The study was conducted in two distinct phases:

Pre-Screen | Benchmark

Step 1:
Conducted research & selected pre-screen candidates

Step 2:
Interviewed pre-screen candidates & selected final benchmark participants

Step 3:
Developed interview protocol & met with participants

Step 4:
Analyzed data and developed report

- ✓ Identified IA training programs in Civil Government, IC, and Industry
- ✓ Selected twelve organizations for pre-screening
- ✓ Developed protocol for pre-screen interviews

- ✓ Conducted pre-screen interviews
- ✓ Narrowed candidate pool to six organizations based on responses to pre-screen questions

- ✓ Developed working assumptions and hypotheses
- ✓ Designed interview protocol
- ✓ Conducted interviews with agency representatives

- ✓ Analyzed interview data
- ✓ Drafted findings and recommendations
- ✓ Produced benchmark report

Findings and observations from the analysis of benchmark data

▶ **No consensus exists among benchmarked agencies on target audience definition**

➢ Agencies are responding to differing mixes of regulations and guidance documents as criteria for their IA awareness, training, and education programs

➢ A critical success factor in effective IA programs is proactive senior level support that promotes the importance of training and enforces compliance with training requirements

➢ Among benchmarked agencies, only one uses a repeatable and validated process model to conduct training audience analyses

➢ The IA curricula of three agencies in particular possess a breadth, depth, and/or role-based specificity that makes them potential content sources for developing IA training and education programs

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Demonstrations of senior-level involvement in IA training

▸ Division Directors and other Senior leaders underscore the importance of training by serving as faculty for IA courses

▸ Senior managers advocate for mission-critical personnel who wish to attend training despite their demanding workloads and resistance from immediate supervisors

▸ The Director and other senior leaders release strategically timed e-mails to the entire workforce to promote specific IA training initiatives (e.g., annual security awareness training)

▸ Senior managers foster compliance with training requirements by enforcing mechanisms such as:
  – Suspending account privileges to ensure that personnel complete mandatory training
  – Restricting or denying open internet access to personnel at a site until local ISSOs have completed all training requirements
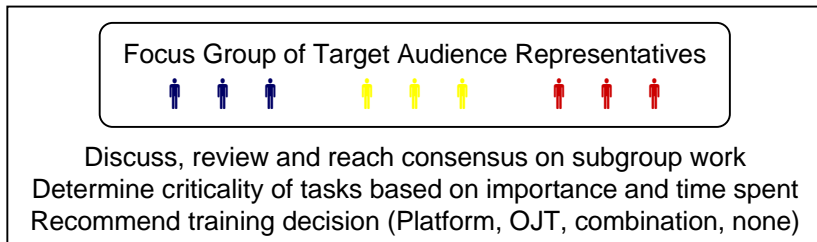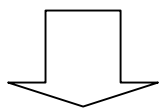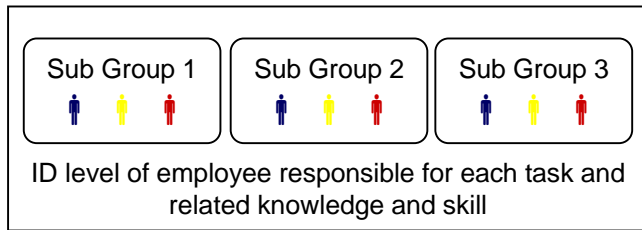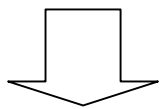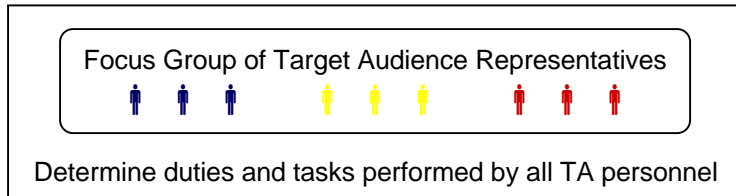
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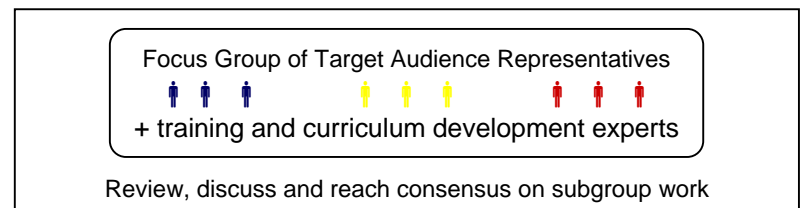- ▶ No consensus exists among benchmarked agencies on target audience definition

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Phase I: Task Analysis

Focus Group of Target Audience Representatives

Determine duties and tasks performed by all TA personnel

Sub Group 1 | Sub Group 2 | Sub Group 3

ID level of employee responsible for each task and related knowledge and skill

Focus Group of Target Audience Representatives

Discuss, review and reach consensus on subgroup work
Determine criticality of tasks based on importance and time spent
Recommend training decision (Platform, OJT, combination, none)

Phase II: Curriculum Development

Focus Group of Target Audience Representatives
+ training and curriculum development experts

ID preliminary training categories
Assign tasks, knowledge and skills to a category
Add new categories, as needed, by consensus
Review available training resources to determine if anything meets needs

Sub Group 1
+ trainers

Sub Group 2
+ trainers

Examine categories where no training currently exists
ID learning outcomes for courses and structured OJT
based on tasks, knowledge and skills

Focus Group of Target Audience Representatives
+ training and curriculum development experts

Review, discuss and reach consensus on subgroup work

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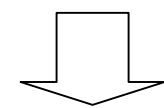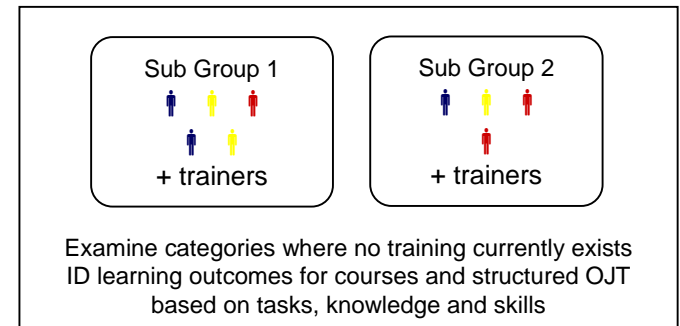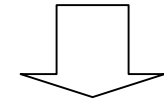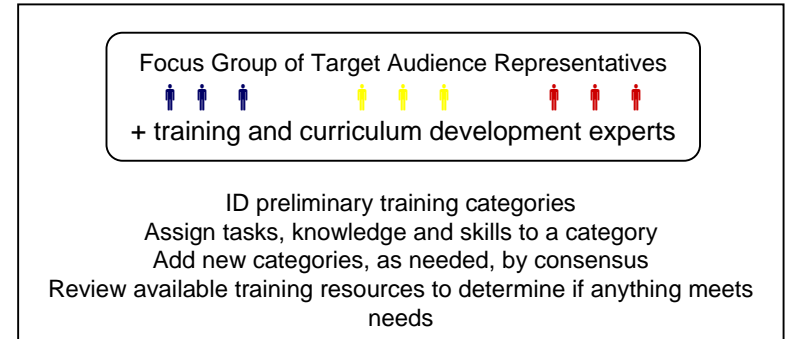
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The IA curricula of three benchmarked agencies possess a breadth, depth, and/or role-based specificity that makes them potential content sources for the NRO IA curriculum

- ▶ One offers an IA Education and Training curriculum that consists of approximately 50 courses in 5 knowledge domains for 8 major IA populations

- ▶ A second has, as the core of its IA curriculum, a vendor software course library, which offers approximately 90 courses in 4 knowledge domains that address 14 IA-related job categories

- ▶ The third offers eight courses tailored to the needs of its 6 major IA training populations, and augments this base curriculum by sending designated individuals to other organizations for specialized IA training

Findings and observations from the analysis of benchmark data (cont.)

▶ **Because most benchmarked agencies employ multiple strategies to deliver training to every local and remote population, they have achieved very high training completion rates for FISMA**

➢ With one exception, all benchmarked agencies use centralized databases to ensure accurate, standardized collection and maintenance of training information about their workforce

➢ Although all benchmarked agencies profess the need for a framework for a performance measurement program, no agency used performance management to systematically evaluate training effectiveness throughout the IA training program life cycle

➢ To complement required training offerings, several agencies have taken innovative steps to recruit, retain, and professionalize a highly-skilled IA workforce

Because most benchmarked agencies employ multiple strategies to deliver training to every local and remote population, they have achieved very high training completion rates

- ▶ Five of six benchmarked agencies reported training 90% or more of their general user populations

- ▶ All benchmarked agencies reported training more than 70% of their specialized users

- ▶ Factors that make this possible include the:
  - – Ability to deliver CBT to most of an agency's population via a common network
  - – Use of a variety of facilitator-centric strategies to reach remote users

Findings and observations from the analysis of benchmark data (cont.)

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Database strategies for the centralized collection and maintenance of training information

▶ Two agencies capture training information in PeopleSoft, their Human Resources personnel data management application

▶ Two other agency-wide systems allow queries of employee records to view training requirements, related schedules, and training completion data

▶ A fifth agency has customized its comprehensive FISMA data collection software tool to also house its employees' training completion data

▶ One agency used its comprehensive training information in conjunction with other innovative strategies to enhance FISMA reporting processes

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Most benchmarked agencies use anecdotal evidence and training compliance records in an attempt to gauge programmatic impact

- ▸ Some of the factors considered in these measurement efforts include:
    - – Correct preparation of C&A documents
    - – Reviews of audit and incident reporting logs
    - – Number of help desk phone calls received
    - – Training completion statistics required for the agency's FISMA report
    - – Course attendance, completion rates, and employees' progression between skill levels

- ▸ One agency has taken strides towards performance measurement, but they have not yet established a formal, ongoing, program

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- ▶ Facilitate study groups and hosting examination sessions for professional IA certifications

- ▶ Pay for Government personnel to obtain professional IA certifications

- ▶ Provide, through vendor libraries, opportunity for personnel who are otherwise eligible to obtain CNSS System Administrator certification

- ▶ Offer 5% to 15% salary bonuses to individuals who obtain professional certifications

- ▶ Plan implementation of an internal Continuing Professional Education (CPE) program for its IA workforce

- ▶ Permit some contractors to charge time to their contracts for external training mandated by the agency

Summary/Conclusion

▸ Benchmarks are not a panacea, but can yield valuable data for IA training programs at any stage of development

▸ Carefully collected and analyzed benchmark data can validate current actions, confirm courses of action, and inspire new projects and approaches to IA training

Points of Contact

Marlin "Mickey" Anderson
Chief, Security Education Division

NRO Security

703-808-3750

Kay Robertson
Deputy Chief, Security Education Division

NRO Security

703-808-3617

Presenters:

Wade R. Sharp, CISSP & Jan W. Whiteley

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