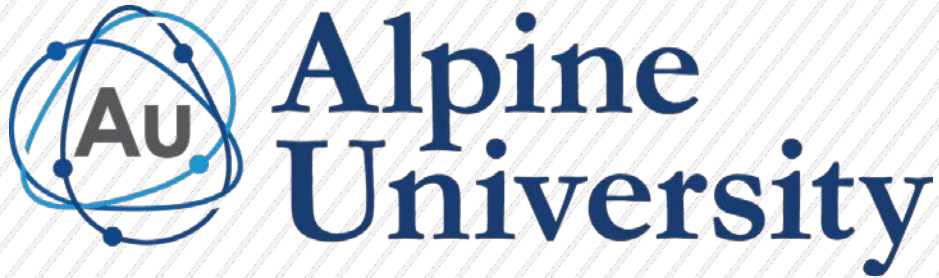# Alpine University

What's in Your Program Toolbox?

Presenters

» Jessi Mielke
  - Certification Program Manager
  - Esri
» Lisa O'Leary, Ph.D.
  - Senior Psychometrician
  - Alpine Testing Solutions
» Susan Cooley
  - Program Manager II
  - Alpine Testing Solutions

Overview

» Present templates for various exam development activities that can help to:

- Efficiently plan for and execute activities

- Automate aspects to support program initiatives and reduce time to market

- Ensure reliability and reproducibility of process

- Improve links between and documentation of program milestones, deliverables, and SME involvement and the intended use of test scores

- Bolster the legal defensibility of your exam program and programmatic decisions

Efficiencies and benefits

Communication Plan → Effective communication strategy

Impact Assessment Template → Inform appropriate exam updates

Item Writing Targets → Dynamically plan for content development

SME Database → Recruit, track, and manage SMEs and their input

Exam Design Methodology → Document exam activities to aid in audits

1. Communication Plan

» Communication Strategy
  - Adopt corporate strategy
  - Add details as necessary

» Determine communication needs
  - Who needs to know what and when
  - Create a survey before project begins to get input
  - Distribute plan for feedback and acceptance

» Update plan as needs change
  - Don't be afraid to make changes

Communication Plan Example

Organized by Activity

Communication Activity	Communication Type	Owner	Recipients	Notes
What is the task?	**Written or Verbal; Formal or Informal**	**Who is responsible?**	**Who is sent the communication?**	**Specific details**
Contractual Agreements	Written; Formal	Vendor Business Development Manager	Client Program Manager, Client Contracts, Vendor Program Manager	Deliver electronically (SOW, MSA, NDA, etc.); Signed digitally
Weekly Meetings	Verbal & Written; Informal	Vendor Program Manager	Client Program Manager, Meeting attendees	Conference call with web sharing; Email notes and updated schedules
Deliverables	Written; Formal	Vendor Program Manager	Client Program Manager	Deliver electronically; Notification of delivery
Deliverable Acceptance	Written; Formal	Client Program Manager	Vendor Program Manager	Notification of deliverable acceptance or rejection.
Invoicing	Written; Formal	Vendor Program Manager	Client Accounts Payable; Client Program Manager; Vendor Program Manager	Deliver electronically; Notification of delivery
Issue Tracking	Verbal & Written; Informal	Vendor Program Manager	Client Program Manager; Anyone else specifically involved	Decisions discussed; Notification on agreement terms and next steps

Communication Plan Example

Organized by Phase

Phase	Frequency	Stakeholder	Title	Method	Owner	Notes
Phase of the Project	How often for touchpoints?	Who is sent the communication?	Stakeholder Title	Delivery Method	Who owns the message	Additional Notes
Initiation	Project Launch	B Smith	Program Manager	Meeting	Sponsor	Handoff to being project planning
Planning	Monthly	A Smith	Sponsor	Email	Program Manager	Monthly Planning Notes
Execute	Monthly	A Smith	Sponsor	Email	Program Manager	Monthly Status Report
Control	Project End	A Smith	Sponsor	Email	Program Manager	Project Acceptance and Closure documents
Close	Weekly	B Smith, C Smith, D Smith	Managers	Verbal and Email	Program Manager	Weekly catch ups and email notes

2. Impact Assessment Matrix

» Factors for an exam update?

- Content/Technology changes
- Overexposure
- Publish date

» Leverage existing TDD/Blueprint

- Assess at the objective level
- Perform item level analysis

» Awareness building for onboarding SMEs

- Familiarity with exam content, terminology

Impact Assessment Matrix

	A	B	C	D	E	F
1	SME #1:	<<Insert Name Here>>				
2	SME #2:	<<Insert Name Here>>				
3		**Exam Name**	**SME #1 Impact**	**SME #2 Impact**	**Blueprint Reccomendations**	**Additional Comments**
4	**Section 1**	**Section 1 NAME**				
5	1.1	Objective 1.1	0	0	No changes to the blueprint/items needed	
6	1.2	Objective 1.2	3	1	Redefine this topic	
7	1.3	Objective 1.3	0	0		
8	1.4	Objective 1.4	2	2		
9	**Section 2**	**Section 2 NAME**				
10	2.1	Objective 2.1	2	2		Objective is important, but item content may be significantly impacted.
11	2.2	Objective 2.2	0	0		
12	2.3	Objective 2.3	0	1		
13	2.4	Objective 2.4	1	0		
14	**Section 3**	**Section 3 NAME**				
15	3.1	Objective 3.1	4	5	This objective should be deleted	This section overall does not align with the direction of the software
16	3.2	Objective 3.2	4	4		
17	3.3	Objective 3.3	5	5	Based on new functionality, objective may no longer align with candidate qualifications	
18	3.4	Objective 3.4	3	4		
19		**Overall Exam Comments**				
20	SME #1	Major changes overall. We may need to add a new section for recently released content				
21	SME #2	<<Please write any comments or concerns on the				

3. Item Writing Targets

» Use blueprint specifications to set appropriate targets for item writing based on existing item pool

» Targets can be dynamically adjusted based on item bank considerations

- Number of forms, items/points per form, target overlap, target overwrite

» Use in pre-workshop planning as well as in real-time during item development

Item Writing Targets

Creation Date: 22-Jan-16
Number of Forms: 4 forms
Items per Form: 100 items
Form Overlap: 10%
Bank Overwrite: 20%
Target Item Pool: 441 items

		Exam Blueprint		Item Development Targets	
		Weight	Items/Form	Bank Target	Rounded Target
Section 1	**Section 1 NAME**	**22.00%**	**22**	**96.8**	**97**
1.01	Objective 1.01...	6.00%	6	26.4	26
1.02	Objective 1.02...	5.00%	5	22.0	22
1.03	Objective 1.03...	6.20%	6	27.3	27
1.04	Objective 1.04...	4.80%	5	21.1	21
Section 2	**Section 2 NAME**	**21.90%**	**22**	**96.4**	**96**
2.01	Objective 2.01...	6.00%	6	26.4	26
2.02	Objective 2.02...	4.50%	5	19.8	20
2.03	Objective 2.03...	5.00%	5	22.0	22
2.04	Objective 2.04...	6.40%	6	28.2	28
Section 3	**Section 3 NAME**	**31.60%**	**32**	**139.0**	**139.0**
3.01	Objective 3.01...	6.60%	7	29.0	29
3.02	Objective 3.02...	5.30%	5	23.3	23
3.03	Objective 3.03...	5.80%	6	25.5	26
3.04	Objective 3.04...	7.40%	7	32.6	33
3.05	Objective 3.05...	6.50%	7	28.6	29
Section 4	**Section 4 NAME**	**24.50%**	**25**	**107.8**	**108**
4.01	Objective 4.01...	7.00%	7	30.8	31
4.02	Objective 4.02...	6.50%	7	28.6	29
4.03	Objective 4.03...	5.40%	5	23.8	24
4.04	Objective 4.04...	5.60%	6	24.6	25
		100.00%	100	440	441

Item Writing Targets

Item Writing Target Template

Creation Date:	22-Jan-16	
Number of Forms:	4	forms
Items per Form:	125	items
Form Overlap:	30%	
Bank Overwrite:	30%	
Target Item Pool:	502	items

		Exam Blueprint		Item Development Targets	
		Weight	**Items/Form**	**Bank Target**	**Rounded Target**
Section 1	**Section 1 NAME**	**22.00%**	**28**	**110.0**	**110**
1.01	Objective 1.01…	6.00%	8	30.0	30
1.02	Objective 1.02…	5.00%	6	25.0	25
1.03	Objective 1.03…	6.20%	8	31.0	31
1.04	Objective 1.04…	4.80%	6	24.0	24
Section 2	**Section 2 NAME**	**21.90%**	**27**	**109.5**	**110**
2.01	Objective 2.01…	6.00%	8	30.0	30
2.02	Objective 2.02…	4.50%	6	22.5	23
2.03	Objective 2.03…	5.00%	6	25.0	25
2.04	Objective 2.04…	6.40%	8	32.0	32

4. SME Database

» How do you track Subject Matter Experts (SMEs)?

- Dashboard, SharePoint, Excel, etc.

» What information should you track?

- Participation history
- Domains of expertise

» How can this benefit your program?

- Recruit based on experience
- Scheduling assistance
- Track quality outputs

SME Database

```
                              ┌─── Bio

                              ├─── Involvement

                              ├─── Exam Support
           SME Name ──────────┤
                              ├─── Certifications

                              ├─── Availability

                              └─── Item Status
```
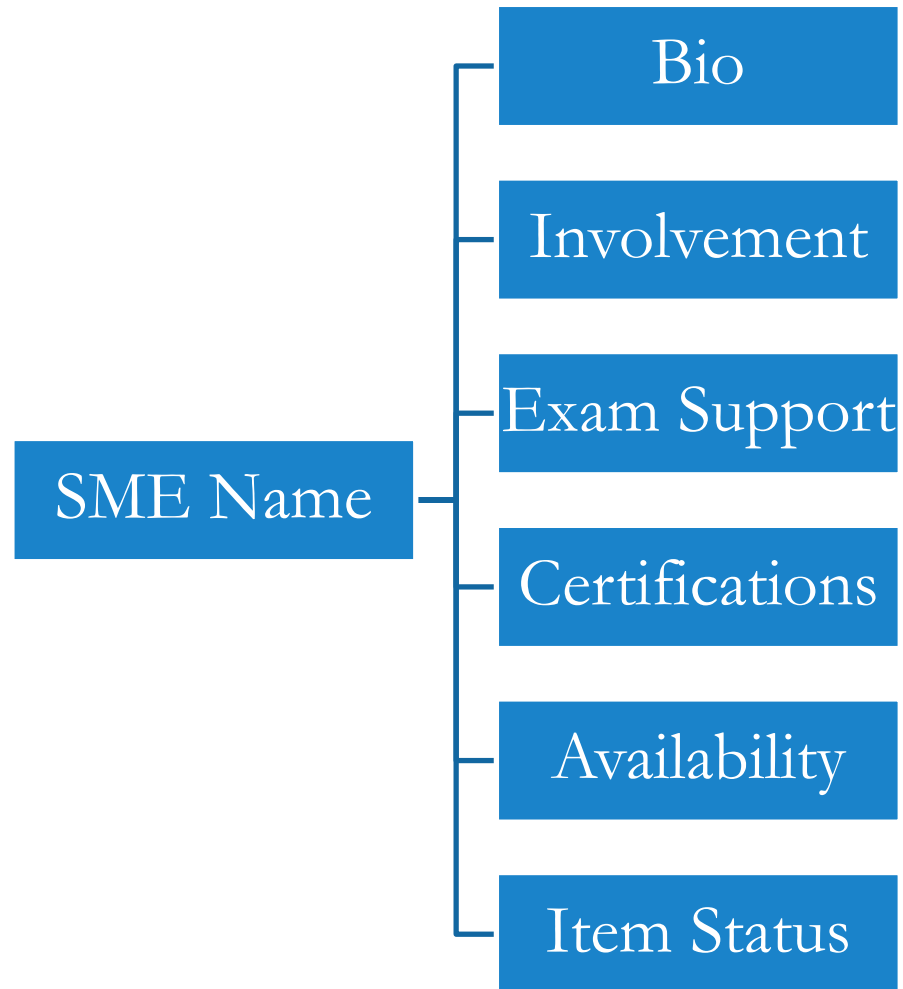
5. Exam Design Methodology

» High-level snapshot of exam development process for internal transitions and external audits

» Tracks exam development progress, including timing of various steps and SME involvement

» Documents pertinent deliverables and decisions in one location for an exam

Exam Design Methodology

Activity	Explanation
Target candidate definition	Engage content area experts to determine the candidate population, target audience, and definition of the Mininimally Qualified Candidate (MQC, the candidate who will just pass the exam and earn the certification)
Test specifications	Engage program stakeholders to determine exam specifications, including item types, delivery options, and exam length
Domain definition	Engage content area experts to finalize the MQC description, outline job tasks associated with the content domain and job role, and use the job tasks to draft measureable test objectives with cognitive complexity levels
Blueprint specifications	Engage content area experts to rate the relative importance of each test objective through the frequency its performed on the job and criticality associated with the task, analyze the ratings to determine recommended number of items per objective and section, and discuss to finalize the blueprint distribution
Content development	Engage content areas experts to develop the designated exam types to meet item writing targets derived from blueprint specifications, at the correct level of cognitive complexity, using best practices in item writing
Content review & editing	Engage a test development professional to review items for alignment with blueprint, cognitive complexity level, and best practices in item writing, an editor to review items for grammar, branding, and alignment with psychometric best practices according to th eitem writing guide, and content area experts for technical accuracy
Item mapping to blueprint	Engage content area experts for congruence with exam objectives and assignment to appropriate blueprint domain

Exam Design Methodology

Activity	Explanation
Pre-testing	Assemble beta form(s) and administer to a sample of candidates representative of the intended candidate population to identify any content concerns or statistical anomalies with item performance
Form and Item-level analysis	Analyze each beta form and item to Identify problematic items (content and/or statistical performance) prior to use in operational scoring decisions, use results in operational form assembly so that multiple forms are balanced based on content and statistical characteristics
Standard setting	Engage content area experts to determine the recommended cut/passing score for the exam based on proven and defensible methodologies, using beta item analysis impact data and results to inform final cut score decision
Form(s) assembly	Assemble one or multiple operational forms based on beta item performance information and blueprint specifications, statistically balance multiple forms on content coverage, difficulty, reliability, standard deviation, and time to ensure fairness issues are not introduced by which form a candidate is administered
Equating	Link the current cut score to proposed forms or future versions of the exam through either a pre-equating or post-equating process to maintain the meaning of the credential over time and ensure fairness for all candidates regardless of exam form or version administered
Scaled scores	Translate the raw scores into a score scale that can be translated across exam versions, allows for accurate comparison of scores across exam versions without having to publish raw cut score information and flexibility in exam mainatenance options
Score reports	Design score reports with a level of detail and visual displays aligned with the purpose of the exam and intended use of and interpretations of test scores
Security	Establish policies and a comprehensive plan to prevent, detect, and enforce against misusues of exam forms and content

Exam Design Methodology

Exam Development Activity Log

Activity	Included?	Start Date	End Date	Source?	Method	Number of SMEs	Deliverables	Key Decisions
Target candidate definition	Yes	1/12/2016	1/14/2016	External	TDD Call	4	Exam 1 TDD.docx	KSAs of MQC
Test specifications	No							
Domain definition	Yes	1/28/2016	1/31/2016	External	In-person JTA	7	Exam 1 JTA Report.docx	Domains, Tasks
Blueprint specifications	Yes	2/8/2016	2/8/2016	Internal	BP by Cmte	5	Exam 1 BP.xlsx	Section Percents
Content development	Yes	2/12/2016	2/26/2016	Internal	Distributed	8	"Exam 1 Item Pool"	186 new items
Content review & editing								
Item mapping to blueprint								
Pre-testing								
Form and Item-level analysis								
Standard setting								
Form(s) assembly								
Equating								
Scaled scores								
Score reports								
Security								

Benefits

- Clear communication strategy
- Increased productivity

Communication Plan

- Informed exam update decisions
- Create consistency over multiple exam versions

Impact Assessment

- Allows for directed item writing that can dynamically adjust based on exam specifications

Item Writing Targets

- Recruit based on experience
- Scheduling assistance
- Track quality outputs

SME Database

- Documents all exam development activities to track progress and demonstrate validity of process in one template

Exam Design Methodology

Wrap-Up and Q&A

» Any questions?

» Find the documents on our website
  • http://www.alpinerealworld.com/

» Thank You!

AlpineTesting.com
au@alpinetesting.com • (844) 625-7463