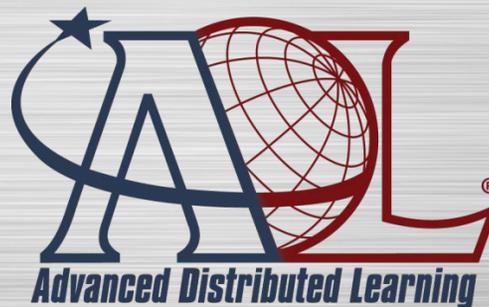# Mobile Learning: Not Just Another Delivery Method

Jason Haag
Tolliver Group, in support of
The ADL Initiative

Peter Berking
Serco, in support of
The ADL Initiative

What We'll Cover

▶ **Mobile Learning: Not Just Another Delivery Method**

- **Background**

- **Mobile Learning Definitions**

- **ISD and ID Models**

- **Research Goals**

- **Literature Review**

- **Learning Theories & Instructional Strategies**

- **Proposed ADL Framework**

- **Lessons Learned & Future Research Work**

Background

- **The Effectiveness of Mobile Course Delivery (Haag, I/ITSEC 2011)**
  - Converted DoD-wide eLearning course to mobile format (Trafficking in Persons)
  - Limited to conversion only (no change to subject matter or instruction)
  - Conducted study of 70+ participants
  - 85% would like to complete mandatory training on mobile devices
  - 70% prefer mobile version to desktop
  - Led to new research questions regarding ISD and mobile learning (e.g. will ADDIE and ID models work? Do we need new ones?)

Mobile Learning Definitions

Not Just Another Delivery Method

Not Just eLearning Courses on Mobile Devices

Do You Define Mobile?

Laptop Computer　　**Jitterbug**　　**Smartphones**　　**Gaming Phones**

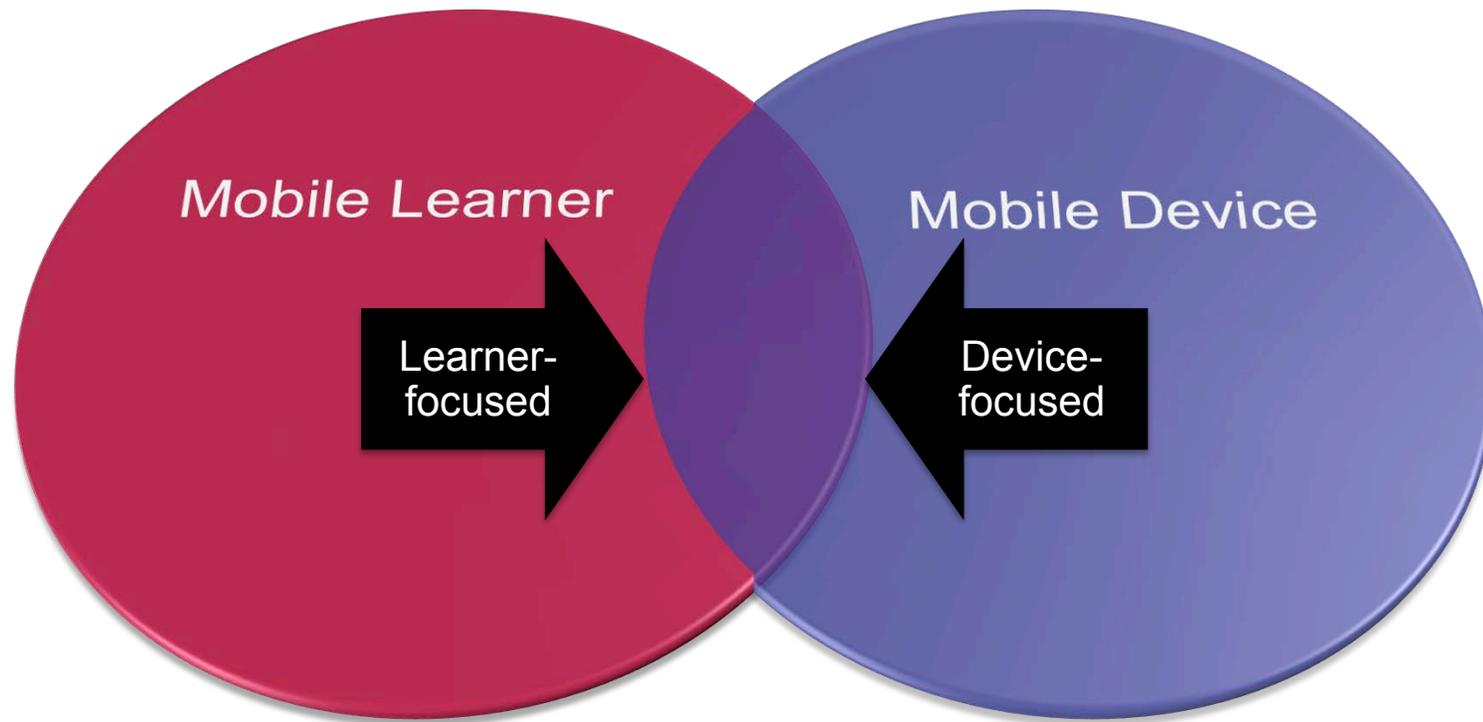**eReaders**　　**Handheld Touch Screen Devices & Tablets**　　**Netbook / Micro Laptop / Macbook Air**

Definitions

- **Learner-focused or Device-focused**

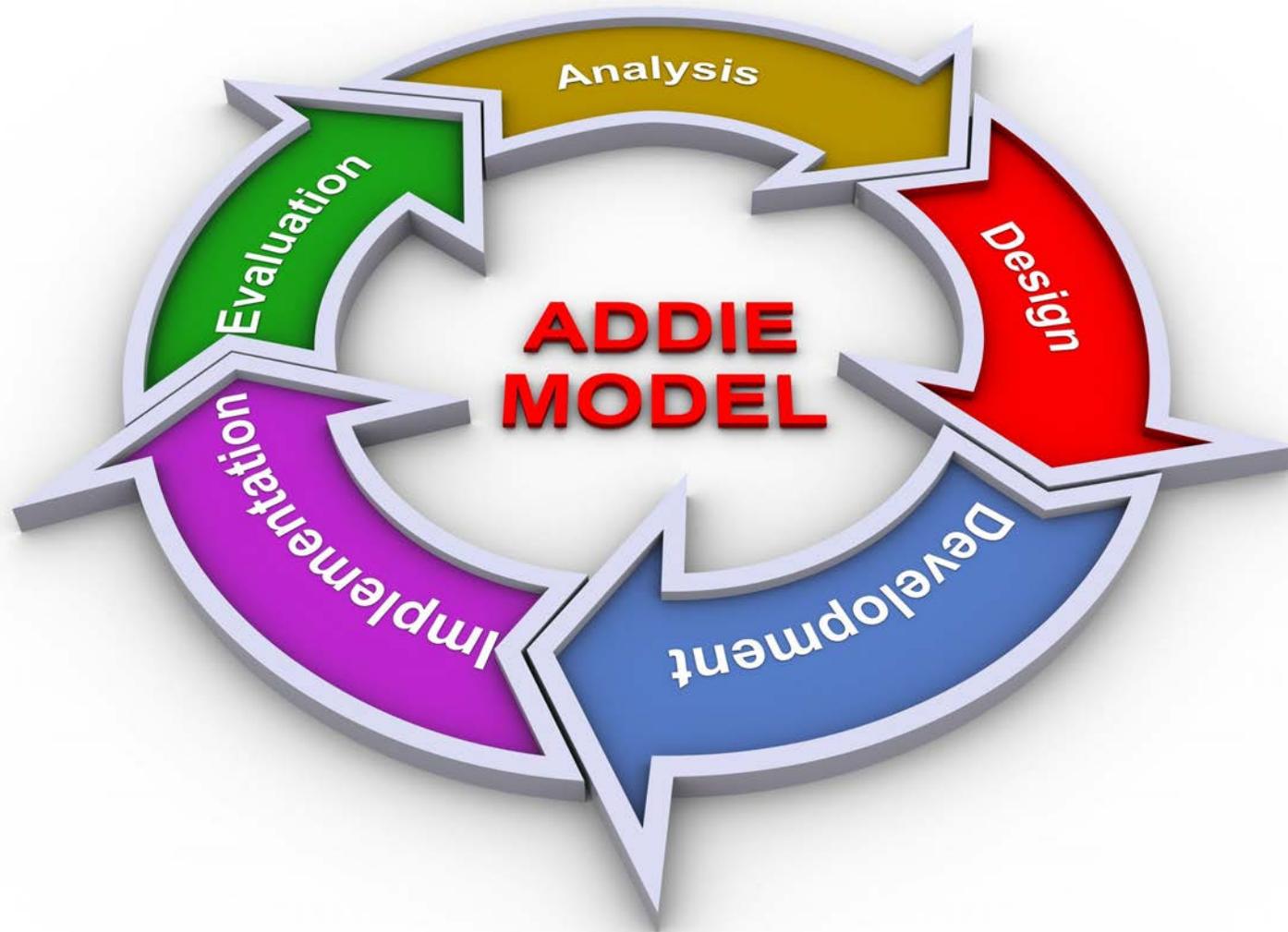# Mobile Learning = Ubiquitous Learning

ADL Conception of Mobile Learning

*"**Leveraging ubiquitous mobile technology for** the adoption or augmentation of knowledge, behaviors, or skills through **education, training, or performance support** while **the mobility of the learner** may be independent of time, location, and space."*

The Mobile Paradigm Shift

- **What are the concepts, considerations, decisions, and guidelines specific to mobile learning?**

- **Will traditional Instructional Design (ID) models work for mobile?**

- **Should we prescribe a general "framework" instead and leverage existing models?**

- **Instructional strategies for mobile learning strategies still require a needs analysis**

ISD and ID Models

ADDIE

- ADDIE is not a complex concept
- All of the stages of ADDIE are logical; hard to ignore
- ADDIE is only as good as the creativity, professional skill, and experience of the designers
- Useful for planning; organizations won't tolerate open-ended development
- Flexibility is key!
- New model applied by same team doesn't necessarily equal better results

ID Models

- An ID model is a systematic series of steps that helps the designer to determine learning needs, then conceptualize, choose strategies, and validate instructional approach
- Usually not predicated on particular technology or strategy
- Most steps not described at a very low level of detail (but more detailed than ADDIE)
- Dick and Carey
    - ID models are agnostic of instructional strategies and delivery methods
    - ID models are planning tools for making decisions, taking appropriate actions
- Performance support-optimized models
    - Rossett & Schafer (2009)
    - Gottfredson & Mosher (2011)

Research Goals

- **Determine which ID models and performance support strategies work for mobile learning content development**

- **Measure the satisfaction and effectiveness of the different approaches**

- **Identify the mobile-specific considerations in ISD**

- **Provide guidance and best practices on mobile learning development for the DoD community**
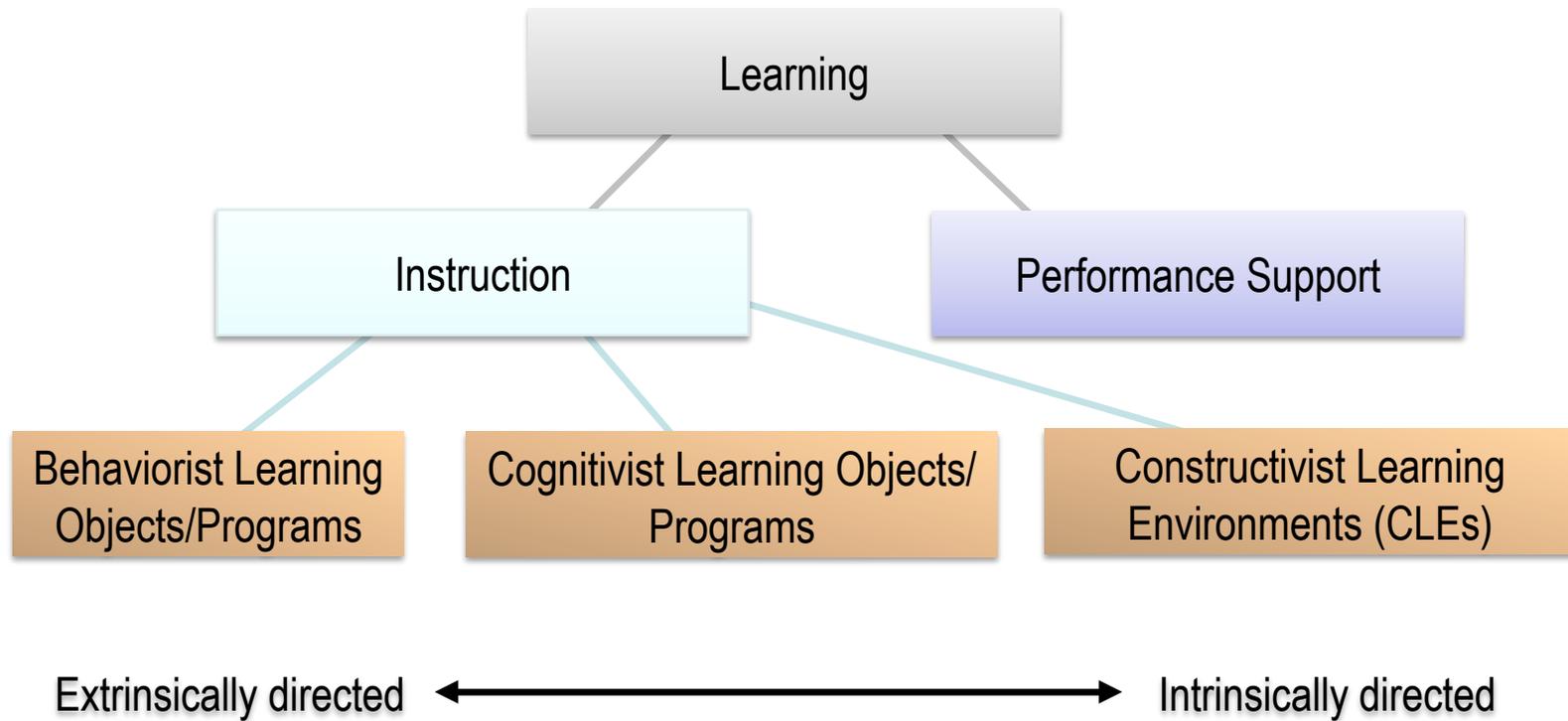
Literature Review

- **Most literature addresses rationales for mobile interface design, practical considerations, appropriate types of learning activities, and design best practices**

- **Few attempts to identify how learning theories drive decision to use mobile learning and a particular mobile instructional strategy**

  - Uden (2007) ID model based on Activity Theory

  - Cooper (2011) focused on learning style, instructional, and information processing preferences

  - Park (2001) presented categorization scheme based on Transactional Distance Theory

- **None address what steps to follow in designing mobile learning**

Learning Theories and Instructional Strategies

- Learning theories are invoked (explicitly or implicitly) in the ID process when the learning strategies need to be determined

- Macro-strategies describe overarching elements:
  - Motivation and engagement
  - Information presentation
  - Practice and feedback
  - Assessment

- Micro-strategies describe 'what the learner does when'

- Learning theories rely on epistemology and cognitive science

- Learning theories fall into 3 camps:
  - Behaviorist
  - Cognitivist
  - Constructivist

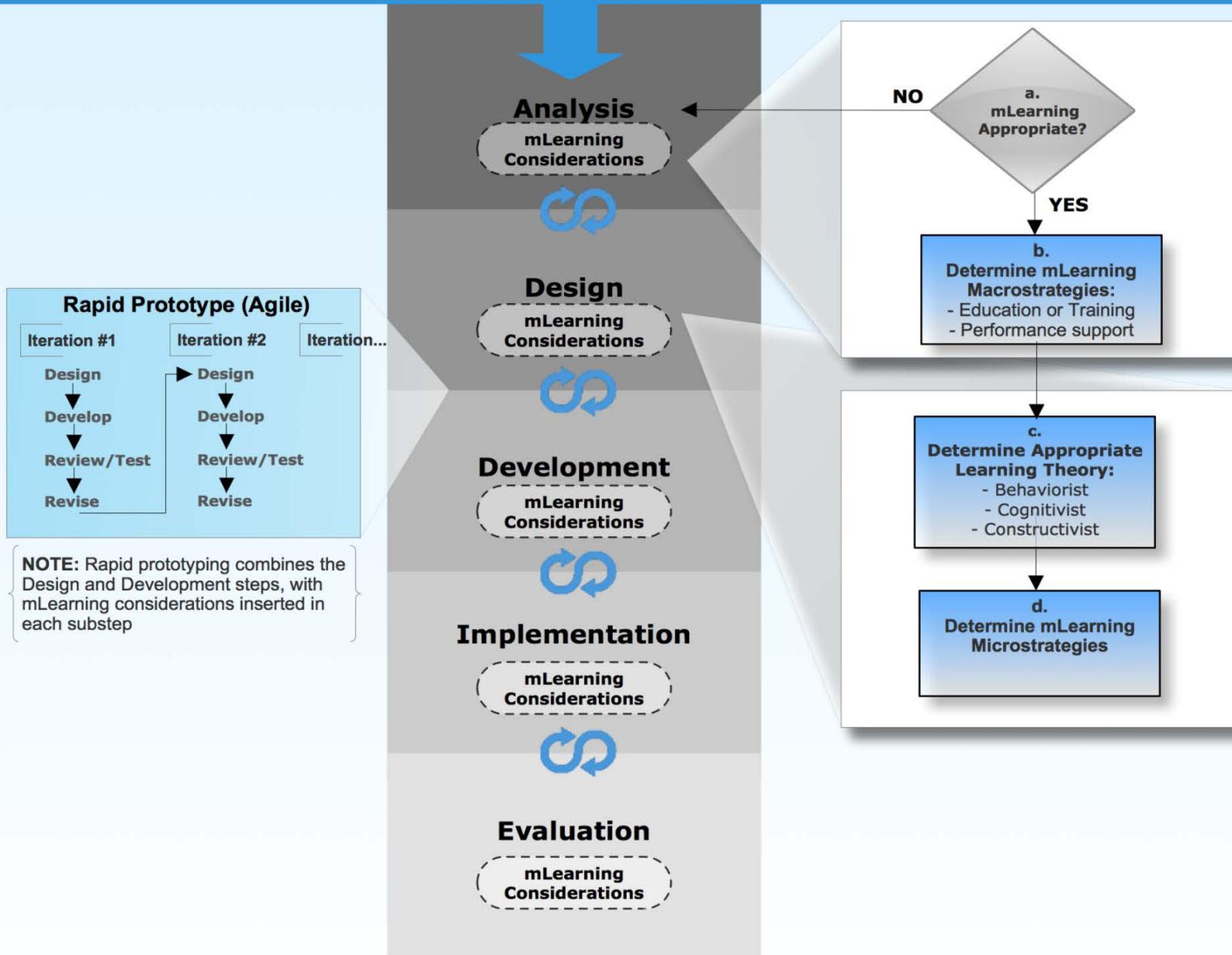- Important distinction between instruction vs performance support (though can be blended)

Learning Theories

Proposed ADL Framework

- Allows for a instruction, performance support, or both
- For instruction, puts learning theory in the driver's seat
- Allows existing ID models to determine approach
- Also supports the need to support a mobile solution without revisiting due diligence (e.g. converting eLearning content)
- Supports rapid-prototyping and agile methodology
- Flexible approach to plug in mobile learning-centric principles and considerations
- Uses ADDIE as a reference point (only because it is most universal model)
- Learning macro-strategies and micro-strategies

ADL ISD Framework for Mobile Learning

Analysis
- mLearning Considerations

Design
- mLearning Considerations

Development
- mLearning Considerations

Implementation
- mLearning Considerations

Evaluation
- mLearning Considerations

Rapid Prototype (Agile)

Iteration #1	Iteration #2	Iteration...
Design	Design	
Develop	Develop	
Review/Test	Review/Test	
Revise	Revise	

NOTE: Rapid prototyping combines the Design and Development steps, with mLearning considerations inserted in each substep

NO ← **a. mLearning Appropriate?**

YES

b. Determine mLearning Macrostrategies:
- Education or Training
- Performance support

c. Determine Appropriate Learning Theory:
- Behaviorist
- Cognitivist
- Constructivist

d. Determine mLearning Microstrategies

Future Research Work

Mobile Training Implementation Framework (MoTIF)

- Refinement of the decision nodes within each of the ADDIE phases
- Mobile-specific considerations and questions to ask
- Document best practices on working with both existing and new content for mobile deployment
  - Army Fire Center of Excellence (FCoE)
  - JKO Joint Operational Access Concept (JOAC)
  - Stand-alone mobile component for ADL research project (Imaginarium)
  - Process that integrates appropriate ID models and approaches
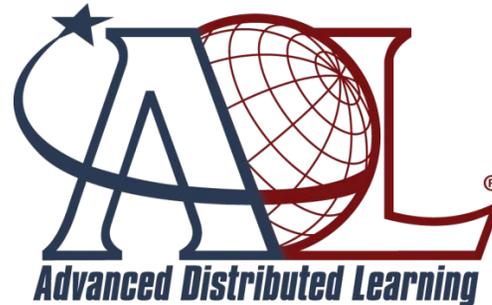
Credits and References

- **Graphics:**
  - http://www.defenseimagery.mil
  - http://www.schrockguide.net/bloomin-apps.html
  - http://k12onlineschools.org/production/Content/DesAndAssessPD/DesAndAssessPD.html

- **Books**
  - Dick, W., Carey, L., & Carey, J.O. (2009). *The Systematic Design of Instruction (7th Edition).* Pearson Education Publishers, Upper Saddle River, NJ.
  - Gottfredson, C., & Mosher, B. (2011). *Innovative Performance Support.* McGraw Hill Books, New York, NY
  - Rossett, A., & Schafer, L. (2007). *Job Aids & Performance Support.* Pfeiffer Publishing, San Francisco, CA.

Questions & Thank You!

Jason Haag
Mobile Learning Team
SETA Support Contractor
The Tolliver Group, Inc.
jason.haag.ctr@adlnet.gov

Peter Berking
ISD Team
SETA Support Contractor
Serco, Inc.
peter.berking.ctr@adlnet.gov