

**NIST Standards Services
Education Challenge Grants
Workshop for 2012-13 Grant Recipients**

SES/Purdue University

NIST
Gaithersburg, MD
November 8, 2013

The Problem



Graduates are expected to use standards in the workplace, but rarely are they equipped with knowledge of standards and how to practically apply them



Retirement of the baby boomer generation is reducing standards knowledge in the workplace

Project Summary

- SES received NIST funding for 2 projects to develop standards learning materials using multimedia technology with a focus on STEM curriculum
 - New e-learning course
 - Standards case studies
- SES is working in partnership with Bruce Harding (Purdue University) and IP-Shield

E-learning Course Project

Standards Aware™ is a series of 8 online e-learning courses developed as an introduction to the fundamentals of standards and conformity assessment

IP-Shield is an authorized provider of Continuing Education Units (CEUs) by the International Association for Continuing Education and Training (IACET)

1. What Are Standards?
2. Why Are Standards Used?
3. Standards Developing Organizations
4. Standards Development Process
5. Standards and Trade
6. Conformity Assessment
7. Strategic Standardization
8. Finding Standards

Using Standards in the Workplace

- Same format as the existing Standards Aware courses
- Practical examples of standards used in a variety of real world STEM applications
- 6 lessons
- Links to related resource materials on the Internet and other information developed for this course
- Quiz to reinforce learning
- \approx 1 hour long

Using Standards in the Workplace - Course Objectives

Upon successful completion of this course, the student will be able to:

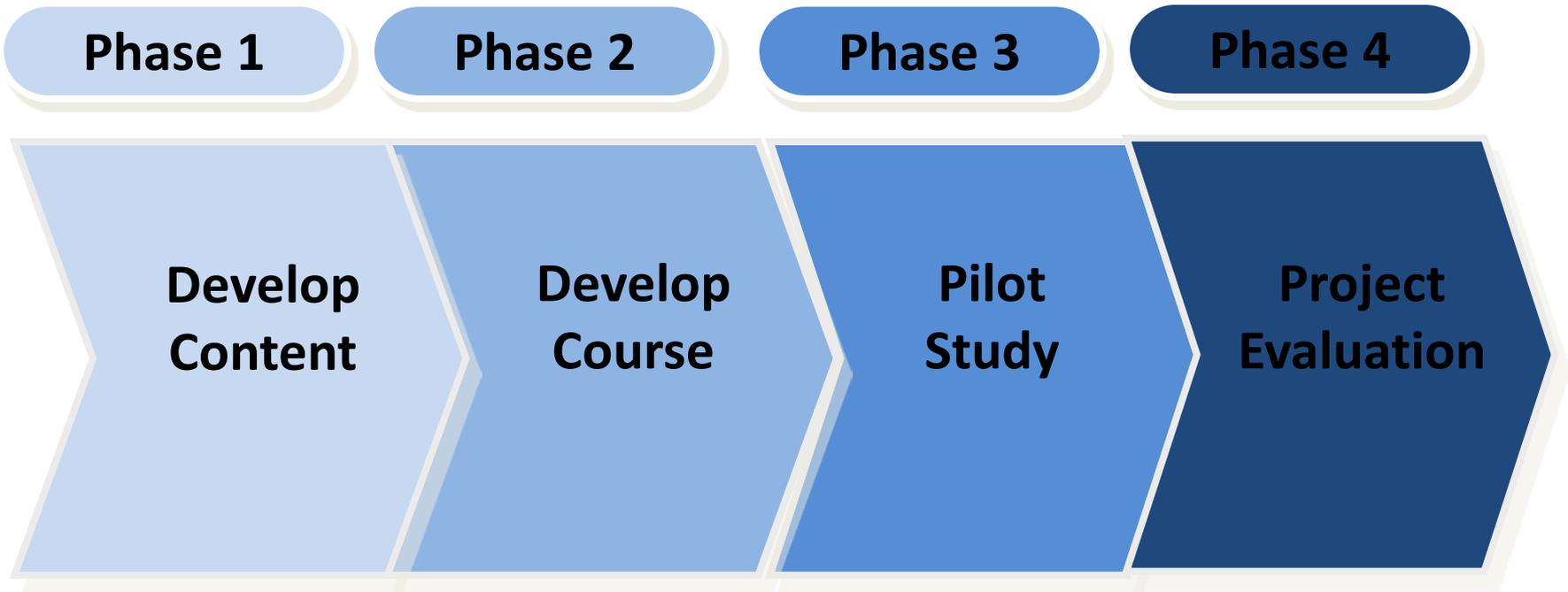
- Describe how standards are used in the various STEM disciplines
- Provide examples of different types of standards
- Identify organizations that develop standards used in the STEM disciplines
- Explain the benefits of standards for STEM disciplines

Goals of E-Learning Course Project

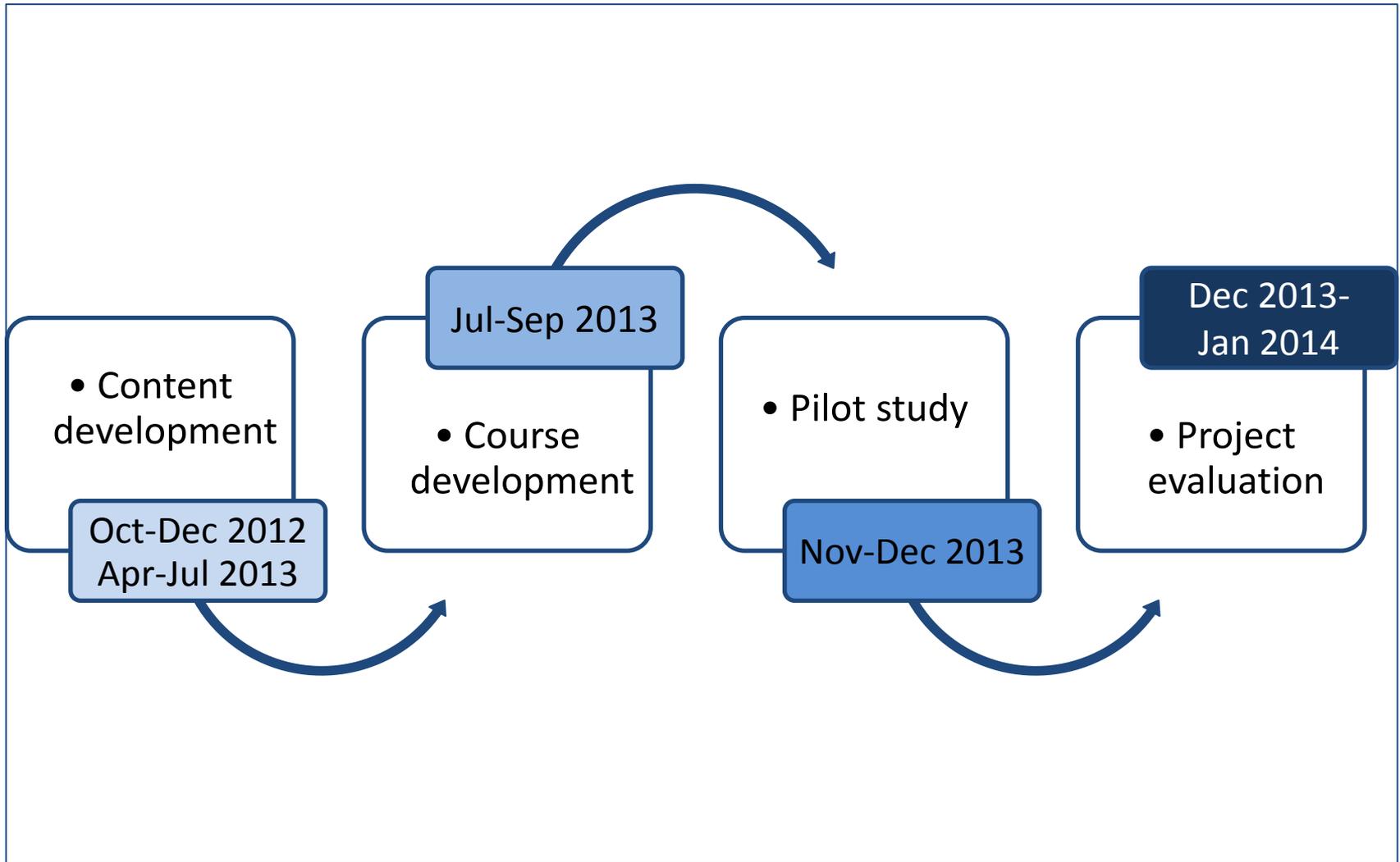
Develop a new e-learning course that engages students while conveying essential information to facilitate growth in standards knowledge

Evaluate feedback from faculty and student users on the course, and revise if necessary

Methodology - E-Learning Course Project



Timeline - E-Learning Course Project



Standards Case Studies Project

- 4 case studies
- ≈ 3 minute videos
- Uses fictional scenarios
- Students must answer questions based on specific standards
 - access provided
- Cooperation from
 - ASME, ASTM, IPC, and UL
 - IHS



Forklift Questions



Tailhook Questions



Nail Gun Questions



Cruise Ship Questions

Goals - Standards Case Studies Project



Connect concepts to real world scenarios with engaging and informative case studies

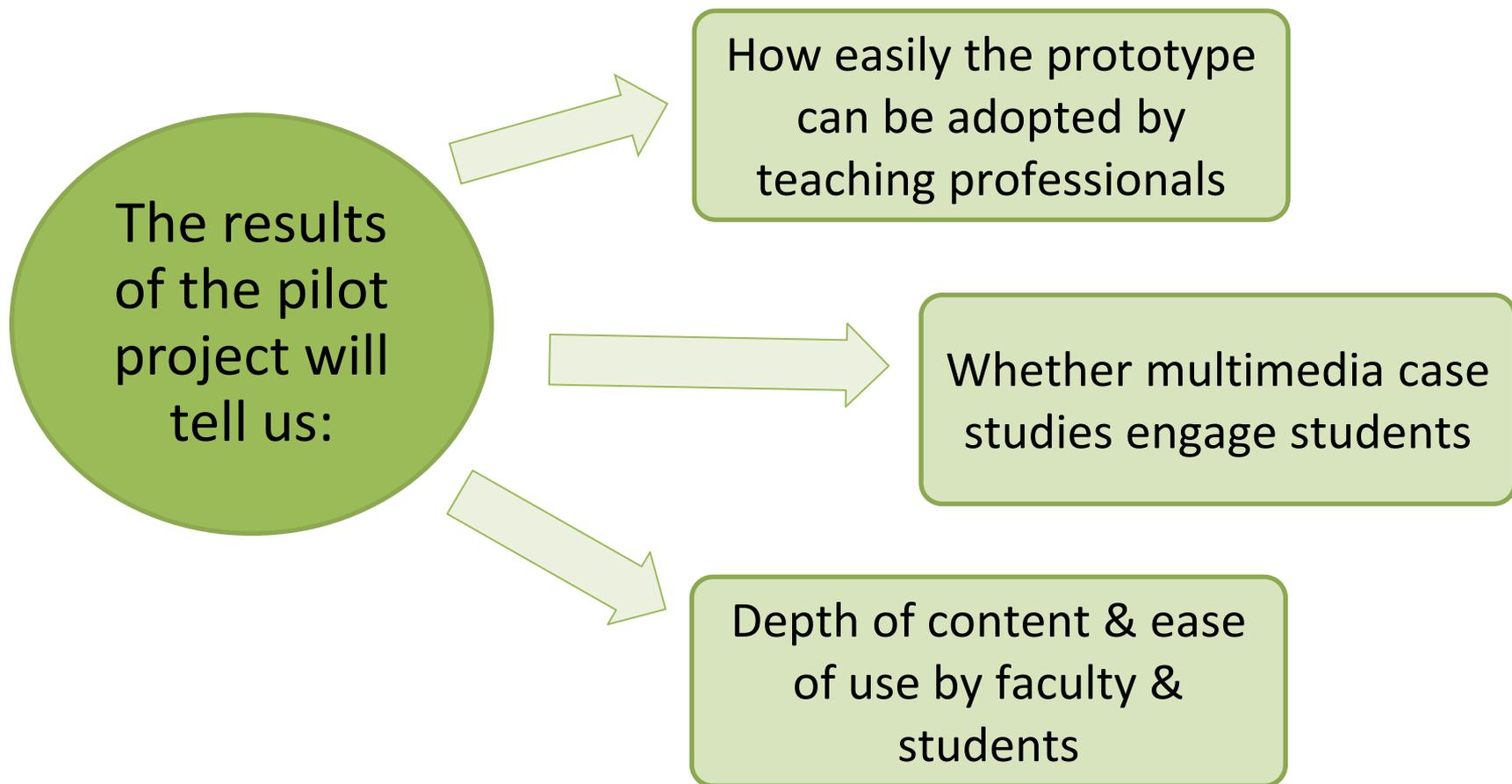


Evaluate feedback from faculty and students

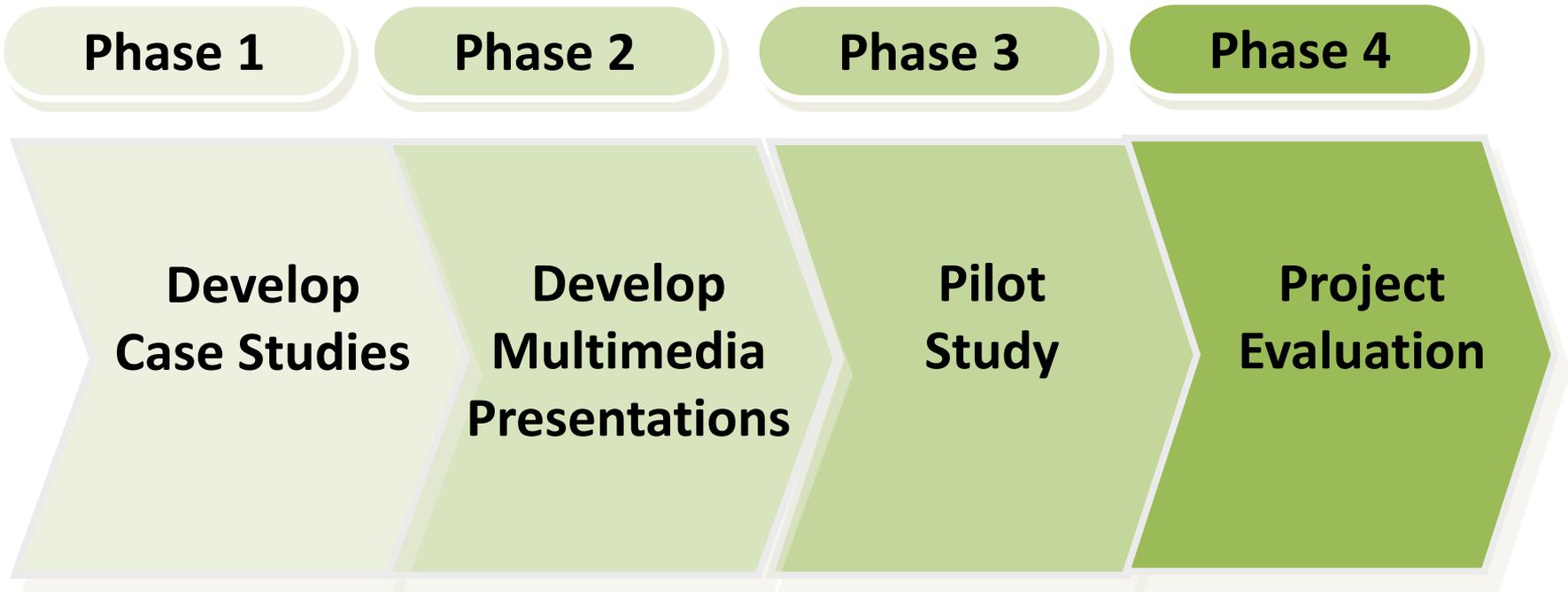


Provide faculty with a Standards Education Toolkit of instructional materials, lecture notes, and case studies

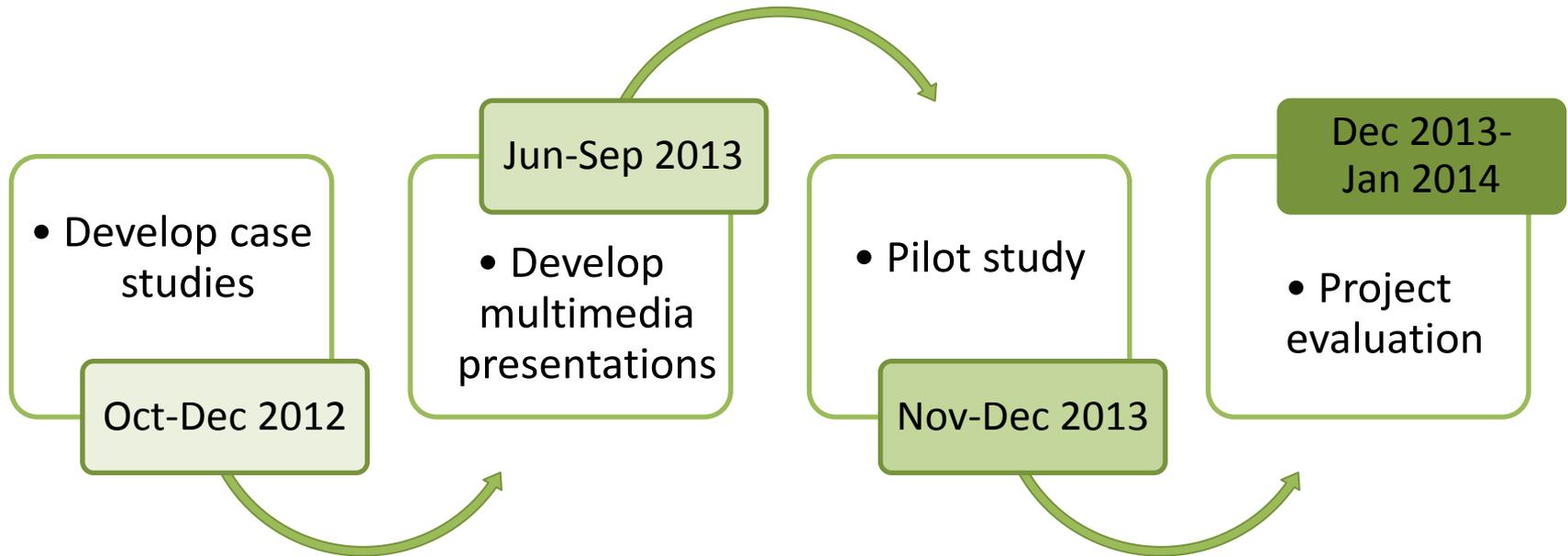
Standards Case Studies Project



Methodology - Case Studies Project



Timeline - Case Studies Project



Institutional Background

- Purdue University
 - College of Technology
 - Department of Mechanical Engineering Technology
- Teaching undergraduate and graduate classes
- Motivation: Promote standards education among STEM educators so they in turn incorporate standards education into their classroom instruction

Significant Accomplishments

Accomplishments of the project to date

- New e-learning course
- 4 case studies in video format

Additional Goals

- Short term (12-24 months)
 - Complete pilot studies at Purdue
 - Conduct surveys of participants
 - Project evaluations
 - Develop strategy for wide dissemination of case studies
 - Develop strategy for distribution of e-learning course
- Long term (2-5 years)
 - To be determined

Communication Plans

- *How was the information shared within and outside of your organization?*
 - Press release about SES receiving NIST grants
 - SES website
 - Information published in *Standards Engineering*
 - E-newsletter
 - Social media
 - Presentation at the 2013 SES annual conference

Communication Plans

- *How did you disseminate the information?* TBD
- *Was your communication plan effective?* TBD
- *Can the materials be replicated or built on? How? By whom?*
 - Yes, SES or IP-Shield could develop additional courses or case study videos

Communication Plans – Summary Paper

- *Have you written a summary paper?*
 - No, it is scheduled for completion in January 2014
- *What are the findings (if not described elsewhere)?* TBD
- *Was writing the paper a worthwhile exercise?* TBD
- *Are there any plans for presenting the paper at any conferences, workshops or other forums?*
 - Yes, an article detailing the SES NIST grant projects is scheduled to be published in the March/April 2014 issue of *Standards Engineering*
 - Presentation to be made about the projects at the next SES annual conference (August 2014)

Evaluation

- *Was the project evaluated?*
 - Project evaluation will be done after the projects are complete in January 2014
- *What tools were used?* TBD
- *By whom?* SES Project Teams
- *What are the results?* TBD

Outcomes

- *Did you meet your stated goals and objectives?* TBD
- *Qualitative and Quantitative Outcomes*
 - *seminars, learning resources and/or courses offered*
 - 1 e-Learning course (approx. 1 hour long)
 - 4 case study videos (approx. 3 minutes each)
 - *number of students affected* TBD
 - *teaching materials created and maintained*
 - Course script, glossary, links, related materials, test questions and answers
 - Case study scenarios, 4 standards, questions and answers
 - *other organizations impacted* None
 - *change/increase in priorities with regards to standards and standardization education* None

Lessons Learned

- *Roadblocks, Challenges, Surprises, Successes*
 - Administrative issues were a big hurdle to overcome
- *How can your accomplishments be used and/or improved upon in the future?*
 - Additional multimedia case studies could be created for other disciplines/applications using the format developed in this project
- *Is there anything you would do differently?*
 - Gain a better understanding of the administrative requirements earlier on in the process

From Proposal to Project: Project Management Challenges

- *Did your original objectives change, and if so, how and why?* No, although the budgets were extended into the next FY
- *How did the change(s) alter the outcome(s)? What was the overall impact?* N/A
- *Did the project timeline change dramatically?*
 - Yes, the original schedule was revised multiple times
 - For the final schedule, the projects are ending 4 months later than originally planned

From Proposal to Project: Project Management Challenges

- *Did you evaluate use of funds and cost effectiveness? Was your budget realistic? Were the proposed staffing needs realistic?*
 - We will do this at the end of the project
 - Our experience to date indicates the work and time put toward these projects have exceeded the funds allocated
 - Additional volunteer time and effort

Additional Information/Future Plans

- *Has there been any interest from other academic departments within your institution?* TBD
- *What are your plans from here forward?*
 - Once the results of the pilot studies are analyzed, we will determine if any changes to the course and case studies are required

Thank You

Bruce A. Harding
Professor and Coordinator
Office of Professional Practice (Co-Op)
Purdue University
harding@purdue.edu

Diane C. Thompson
SES NIST Grants Project Director
dthompson@standards-consulting.com

SES
admin@ses-standards.org