

## NSDI-related Training Materials Development

### Recommendations and Resources for Stakeholder Subject Matter Experts

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#### **Purpose**

This document is provided for individuals developing NSDI-related training materials. The recommendations and resources were compiled with the understanding that while the training materials developed for these projects must first address project-specific objectives and deliverables there is an opportunity to coordinate content development so that it may also support NSDI Stakeholder training. Project/program managers are encouraged to review the recommendations and resources below and implement those that best support both their own project and that of the broader NSDI Stakeholder Community.

#### **Background**

The objective is to provide NSDI Stakeholders coordinated, expandable training materials that address the full range of NSDI implementation and initiatives. NSDI materials are intended to support both workshop instruction (PPTs) and self-paced online instruction. The goal is to empower the Stakeholder community to take a more active role in NSDI training. More information about NSDI Training is available at: <http://www.fgdc.gov/training/>.

#### **NSDI Training Curriculum**

The NSDI Training Curriculum is organized into three learning tracks.

<i>The National Spatial Data Infrastructure (NSDI)</i>		
<b>Geospatial Data Discovery and Access</b>	<b>Geospatial Data Integration</b>	<b>Geospatial Partnerships, Policy and Planning</b>
<i>Data Portals and Distribution</i>	<i>NSDI Standards</i>	<i>NSDI Policies and Practices</i>
<i>Geospatial Metadata</i>	<i>NSDI Data Themes</i>	<i>NSDI Partnership Opportunities</i>
<i>Geospatial Web Services</i>	<i>The National Map</i>	<i>Geospatial Business Planning</i>

NSDI Training Program Curriculum

## Scoping Content

When determining the scope of content needed to address the training project objectives, determine if there are existing training materials that you can either incorporate or build upon. **Efforts to build upon existing NSDI Training materials and to coordinate with other related training material development projects are especially encouraged so that funds are used to extend, rather than duplicate, content**

### Recommendations

- Identify the NSDI Curriculum Track and Module to which your lessons will apply and cite the Track/Module in progress reports
- Review existing relevant training materials developed by other Stakeholders and the FGDC to use as resources. Materials can be viewed at:  
<http://www.fgdc.gov/training/training-materials#fgdctraining>
- Review existing NSDI Training Program Online Materials to determine if you can utilize the existing materials and develop your content to **expand upon the existing content**. Materials can be viewed at:  
<http://www.fgdc.gov/training/nsdi-training-program/online-lessons>
- Consult with your CAP Category Lead or other sponsor to explore options to coordinate with related projects. Options may include, but are not limited to:
  - shared review of project status reports and deliverables
  - regular telecons to discuss progress and issues
  - coordinate and align project deliverables

## Learning Objectives

Quality content development is dependent on the development of a strong set of learning objectives. Learning objectives specify the *actions* that a student should be able to perform after completing the lesson. When crafted with careful consideration, a strong set of learning objectives serves as a:

- general outline for content development
- foundation for student testing
- valuable means of measuring lesson success.

The key to the development of effective learning objectives is the use of performance-oriented ‘action’ verbs that can be tested and measured and the avoidance of ambiguous verbs that suggest a general purpose and are not easily assessed. For example:

*After the lesson the student can:*

Action:  
*explain*  
*compare*  
*list*  
*identify*  
*create*

Ambiguous:  
*understand*  
*know*  
*believe*  
*appreciate*  
*discover*

To test the effectiveness of a learning objective, ask ‘what outcome can the student produce that I could easily assess or measure?’. In other words, if a student is expected to be able to ‘outline’ a process, one can easily envision the student producing a list of steps. However, if a student is expected to ‘value’ a concept, it is difficult to imagine a product that would convey ‘valuation’. If, in this case, you can identify a product, such as a list of benefits, then the objective can be more clearly stated as the student can ‘list the benefits’.

Several online resources are available to aid in the development of effective learning objectives:

- Penn State E-learning Initiative, 'Action Verbs for Learning Objectives'  
<http://agsci.psu.edu/elearning/pdf/objective-verbs.pdf>
- Park University Faculty Resources: 'Writing Quality Learning Objectives'  
<http://www.park.edu/cetl/quicktips/writinglearningobj.html>
- FGDC Subject Matter Expert (SME) Learning Objectives and Activities Handouts:  
<http://www.fgdc.gov/training/nsdi-training-program/workspace/SME/SMEWorkshopWorkbookDocs/LearningObjectives/>
- NSDI Stakeholder learning objectives identified as part of the *NSDI Training Program Requirements Analysis* available at:  
[http://www.fgdc.gov/training/nsdi-training-program/workspace/RAdocs/NSDITraining\\_RequirementsAnalysisReport\\_20060701.pdf](http://www.fgdc.gov/training/nsdi-training-program/workspace/RAdocs/NSDITraining_RequirementsAnalysisReport_20060701.pdf)

## Slide Format

Microsoft PowerPoint™, PPT, is a common format for training materials. PPT 'slide decks' are easily transferred and customized. However, many new options for training content format are available and most new formats better support online training. If feasible, it is highly recommended that core content be developed as PPT then formatted using newer or proprietary formats.

## Lesson Planning

Lesson plans can be used to effectively develop content, record speaker notes, and incorporate media, handouts and activities.

### Recommendations

- Review the example lesson plan provided at:  
<http://www.fgdc.gov/training/nsdi-training-program/workspace/SME/SMEWorkshopWorkbookDocs/NSDITrainLessonPlanExample/>
- Review the blank lesson planning document lesson plan provided at:  
<http://www.fgdc.gov/training/nsdi-training-program/workspace/SME/SMEWorkshopWorkbookDocs/NSDITrainLessonPlanForm/>

## Exercises and Activities

Exercises and activities are key to effective learning as they require students to absorb process, store and apply newly gained knowledge. When exercises and activities are developed to support lecture/presentation materials, knowledge retention is increase significantly.

### Recommendations

- Use activities and exercises to support content absorption:
  - worksheets
  - games: adaptations of *Jeopardy*, *Deal or No Deal*, *Trivial Pursuit*
  - discussion questions and mock debates
- Review the FGDC SME Learning Objectives and Activities Handout  
<http://www.fgdc.gov/training/nsdi-training-program/workspace/SME/SMEWorkshopWorkbookDocs/LearningObjectives/view>

## Assistance

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Lynda Wayne ([Lynda@GeoMaxim.com](mailto:Lynda@GeoMaxim.com)) provides FGDC training and metadata support and is available to:

- discuss the recommendations and resources presented above
- review CAP-related draft training materials
- assist in efforts to coordinate NSDI-related content development