Lidar Survey Specifications Summit Meeting Notes V3
January 14 & 15, 2009

Wednesday, January 14, 2009

Opening and Welcome - Jennifer Wozencroft opened the meeting and welcomed participants. She introduced planning team members: Mark Hanson (USGS), Mike Gonsalves (NOAA), and the LEAD Alliance facilitation team Tricia Gibbons and Carol Jeffords. Bill Elenbaas (NAVO) was on assignment and unable to make the meeting. Jennifer reviewed the meeting objectives and emphasized the goal of developing common survey specifications for lidar collection and processing.

Introductions: Participants introduced themselves by stating their names and agencies, followed by one or more of the challenges of the status quo.

Challenges:

- Haven't determined size of object that can be found with bathymetric lidar; no progress made on this despite talking about it.
- LAS compatibility/complications; seabed classification
- How we can merge topo and bathymetric data; how specs are set up
- Properly providing enough metadata so that agencies/users have confidence
- Agency collaboration; strive for interoperable data sets
- Assure integration of topo with topo
- Comment: tremendous opportunity with joint specs; increase our own output. Challenge: stringent specs are difficult for other agencies to accept; tide coordination
- Knowing what others are working on; being able to leverage each others' work
- QAQC reports and their accuracy; know what they're getting
- Support data – could be useful (e.g., aerial photos); information regarding lack of return
- Different definitions/different agencies reflected in QAQC and metadata
- Observation uncertainly from lidar collection and analysis
- Be able to explain issues relating to interoperability
    - Collect once; use many times
    - Describe data
    - Inform users
- Integration of additional sensors is complicated
- What each processor goes through; push for what does work
- Becoming more aware of the standards that exist and what we are required to meet
- Uncertainties about the quality of the data sets
- Merging the data with existing hydrographic data; not receiving information we're used to or expecting
- Determining within our own agencies what the specs are, then extending to others; knowing what others are doing and why
- Data interoperability; WHAT are the problems with interoperability?
- Pushing sensor capability; data structures that allow access to raw data/base data; then fusing and merging the data
- Feedback needed/appreciated re what needs improvement to describe the metadata
- Clear specs on how to prove the capabilities of the system
- Merging lidar data with sonar data
- Interagency collaboration
- Don't have a sense of where everyone is right now – this will help
- Communication

- Draft specs – document – several levels
- % of items – agreement
- CA waiting for us; will help drive others' collection
- FEMA spec was written 5-10 years ago; things have changed and we need a broader look
- Focused on OCM or a broader perspective?
- Eventually provide guidance
- Distinguish between specification and standard; come up with a standard way of describing specifications
- Arrived at accuracy or data collection
- How will we use this document?
    - Use interagency spec document #3 for own data collection
    - Trying to integrate with other folks
    - Standard way of describing
- What are the most common problems with interoperability?
- Don't want to impede technical progress
- What is the lowest requirement for the standard? Is it enough?
- Recognize beyond the Federal Sector. Start here and move to a national perspective.

Introduction of the Specifications Matrix: Jennifer

- The matrix was developed as a tool to focus our efforts for this meeting
- The matrix focuses on specifications for data collection (metadata), positioning, processing and QAQC.
- Key - Black text represent areas of commonality; red text represent areas of differences.

Group Discussion of Metadata Standards:

- Change NOAA's "open for discussion" to "FGDC"
- NAVO currently doesn't output metadata; will comply
- NGA Maritime Domain takes whatever data comes with the data set; preference would be moving toward FGDC
- Q: Will FGDC remain the standard?
- Make sure we identify what is important for interoperability
- Possible recommendation/action item: come up with a lidar standard/template for metadata
- Agreement – use FGDC framework as minimum requirement
- Interagency group to continue to review the template and keep it updated/current (OCM has a metadata working group; could add agencies to it if necessary)
- Q: Will there be dialog between producers and consumers about what is required?
- Suggestion made that our deliberations might lead to establishing an FGDC lidar metadata standard

Agreement: We agree to use the FGDC standard format for metadata.

Agreement: The focus will be on the delivered product and the metadata associated with it.

Action: Develop a metadata template for lidar collection based on FGDC standard format for metadata. Keep the metadata document itself as high-level as possible.

Other Suggested Actions:

Action: Establish an ongoing working group that meets via conference call to keep information current.
Action: Coordinate with other related working groups (e.g., the OCM working group).
Action: Establish a web site to post the metadata template and a sample.

Continued discussion:

- Where to draw the line between metadata and information needed for a project report
  - Better to have all the information in one place (metadata)
  - Provide linkage to source data
- Keep at a project level
- How detailed do we need metadata definition to be?
- At minimum, need to have source data linked to the report so we can follow the lineage
- If talking about binary standards, someone has to write the APR
- Need to include contact information
- Requirements vs. options
- NGA Maritime: as long as it's captured somewhere; accessible to the user
- Accessible if linked to the reference file

Original intent of the metadata was to provide enough information that the user can decide to use the data, point to another source for more information, or not use the data

Sensor Offsets:

- NOAA: Need to be flexible to come up with common standards. Could share with others how they get to that level of accuracy.

Project Tracker: a tool that can be used (a web-based GIS). Used by FEMA.

Datum Collection

- Need enough info in metadata
- Important to agree on the standard we're using for reporting

Work Groups:
The participants self-selected into 4 Work Groups or Task Teams for the A.M. & P.M. work sessions. Each group was to review its section of the matrix to validate the input, build consensus on common specification priorities, find areas of agreement, and note different specification categories that may require different requirements.

Lidar Data Collection and Data Processing (excluding QAQC) – Jeff Lillycrop, leader; Amar, Chris P., Jan, Roger, Bryan, Jason, and Jerry (PM – Roger & Nathaniel swapped places)

Imagery Data Collection and Processing (including QAQC) – Jennifer Wozencroft, leader; Chris M, James F, Mike A, and Bob P.

Positioning – Mark Hansen, leader; Jamie, Eddie, Mike A, Matt, and Brian

QAQC (lidar only) – Mike Gonsalves, leader; Keil, Charlene, Dave, and Nathaniel (PM – Nathaniel and Roger swapped places)

Teams briefly reported back agreements and their work. Work Group leaders agreed to compile the results of their team.

The meeting was adjourned at 4:00 pm. All participants traveled to the Joint Lidar Center at Stennis for demonstrations. Thanks to our hosts. Most members reconvened at the Sycamore House for dinner.

Thursday, January 15, 2009

Discussion: Types of surveys and reorganizing the matrix for different type of surveys

- Based on purpose
- Guidelines
- Based on what we hope to get out of this
- Potential applications these specs might support
- Document – Application
    - Check to see if meeting specs
    - Guidance for data acquisition
- Most Rigorous Rigorous Minimum
  Highest Standard ---→ Lowest Standard
- Minimum = least stringent; maximum = most stringent
- Order A: meets requirements
  Order B: meets "y" requirements
  Order C: meets "z" requirements
- Characteristics – minimum requirements for each type of survey
- We need to get the structure right
- Need a list of the parameters/pertinent information

Brainstorming: What are the types of surveys (by organization):

- Engineering P&S
- Condition Surveys
- Regional Surveys
- Inundation Mapping
- Model Applications (multi-resolution)
- Morphological Features
- Morphological Change
- Visualization
- Shoreline Mapping
    - Approaches
    - Ports and harbors
    - Open coast
- Emergency Response
- IOCM
- Sea-level Rise
- Ecological
- Inundation
- Charting Survey
- Classification

Discussion led to the creation of the Survey Type Lidar Specs (Excel Spreadsheet)
Airborne Coastal Mapping and Charting Specifications

- Discussion centered around making sure the rows or categories are correct
- Domain of use
    - Future planning/budget
    - Resource for surveys
    - Common guidelines

Action: Each agency team will insert specs by survey (target date: 1/30/09; send to Jennifer)
- Minimum acceptable standards
- Planning team will compile once all are received

Action: Jennifer will compile draft and send to the participants

Process decision was made to populate the Survey Type C column (USACE info) as a sample for people to understand what they need to do with the assignment.
Then participants moved on to populating Survey Type B (NOAA info)

Who to lead population effort from each agency?

Type	Description	Responsibility
A	Engineering Condition Surveys	Jeff & Jennifer (USACE)
B	Shoreline Mapping – covered Charting Survey – done * See sample in Survey Type Matrix	Participants Jerry & Chris to verify
C	Inundation Regional Surveys – covered * See sample in Survey Type Matrix	Jennifer, Nathaniel, Mark
C	Morphologic Features Morphologic Change Ecological – covered Classification – covered	Nathaniel & USGS
D	Emergency Response	Chris P & Jerry (NOAA)
C & D	Sea-level Rise/Climate Change	
A – D	Visualization	

Action: Mark, lead work on template, with Jeff, Charlene (Matt added later)

Action: Jason will set up a collaborative site for participants to share information and distribute instructions to participants. http://lidarbb.cr.usgs.gov

Action: Planning team will send message with link to meeting notes and other shared materials (e.g., Executive Summary)

Products agreed upon as a result of this meeting:
- Refine the matrix
- Continuation of this morning's project (survey matrix)
- Metadata template (will be based on FGDC format) – Mark, Jeff, Charlene, Matt (no later than February)

Looking Forward/Next Steps/Communications:
- Extend effort beyond this room (state, academic) at a follow-up workshop
- Participate in regional workshops (Coastal & Marine Agency)
- Engage with Susan Russell Robinson and John Haines of USGS
- Engage/inform FGDC
- Data sharing – when/if it will be available

- Take results of this meeting back to OCM (Ocean and Coastal Mapping) and CMTS (Committee on Marine Transportation Systems)
    - Establish links to the web sites
- OCM Metadata Working Group, OCM Communications Working Group
- Disseminate information within own agencies
- Other agencies we should try to pull in or at least let them know what we did
    - DOE, DOT, FEMA, and other DHS components
- Information will be disseminated to Federal agencies through IOCM and JSOST
    - Jeff may have a contact for DHS
    - Dave may have a FEMA contact

Suggestion: We need to agree on common language, definitions, and measurements.

Action Item: Come up with more of a standard data format – Amar, Jan, Jason

Wrap-up: Meeting Assessment

Pluses/Positives	Delta/Negatives
• Discussions • The initial work done by the planning team – in particular the organizing matrix • Table that was generated by survey types • Action items • Brought the agencies together • Meeting people face-to-face (improves communication) • JALBTCX tour and information exchange • Tour broke things up and provided opportunity to see actual application of the work we're doing • Facilitation to look at the process	• Wish I had been better prepared • Acoustics • FEMA should be involved

Complementary Documents:

Lidar Summit Executive Summary
Lidar Summit Actions and Decisions
Lidar Summit Participant List
Lidar Specifications Matrix
Survey Type Lidar Specifications