A forum exploring the common ground between the need for an accurate Public Land Survey System network and the need for a statewide parcel map

Aligning County Surveying & Parcel Mapping in Wisconsin

FINAL REPORT

April 2015

Overview of the Surveying-Parcel Forum

On March 12, 2015, the Wisconsin State Cartographer's Office (SCO) organized and hosted a one-day forum, entitled "Aligning County Surveying and Parcel Mapping Efforts in Wisconsin." The forum was held in the Dreyfus Center at UW-Stevens Point.

The SCO received a $500 Statewide Outreach Incentive Grant from UW-Madison's Office of University Relations to offset the cost of the forum.

The forum was free to all attendees and attracted 117 registrants. Of this number, 105 (90%) attended the event. The breakdown of attendees by sector and affiliation is shown in Table 1.

Leadership from various organizations was present, including current and past Presidents of the Wisconsin Land Information Association, the Wisconsin Society of Land Surveyors, the Wisconsin County Surveyors Association, the Land Information Officers Network, and the Wisconsin Geographic Information Coordination Council.

In terms of statewide distribution, Fig. 1 shows that county/municipal attendees came from a broad range of locales throughout the state.

The forum was advertised on the SCO website (example: http://www.sco.wisc.edu/wisconsin-geospatial-news/forum-on-surveying-a-parcel-mapping-in-wisconsin.html). In addition, various email distribution lists were used to promote the event (Table 2).

Sector	
GIS/Geospatial professional	47
Professional surveyor	43
Real Property Lister	9
Other	6
TOTAL	105

Affiliation	
County	70
Private company	11
Municipality	8
UW	8
Federal, State, Regional	6
Other	2
TOTAL	105

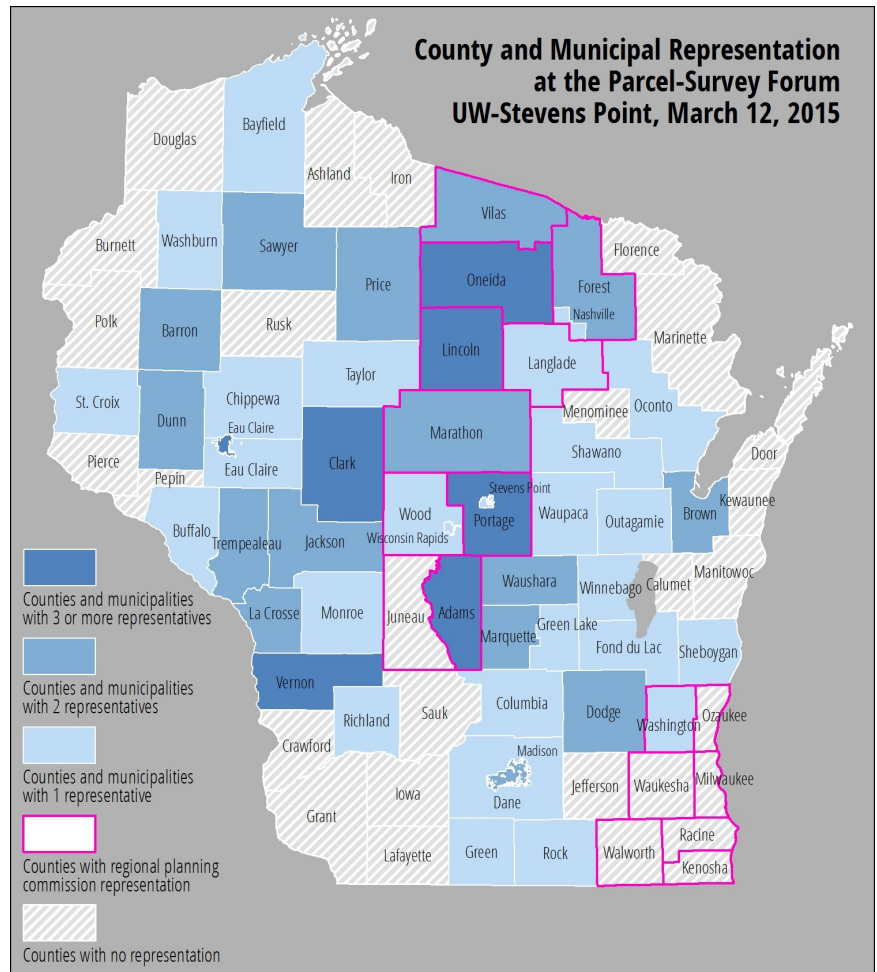Table 1. Forum attendees by sector and affiliation

Fig. 1. County and municipal representation at the Forum

List	Approximate number of members
UW-Madison Geospatial Alliance	300 GIS faculty, staff, and students at UW-Madison and other UW institutions
County Land Information Officers Network (LION)	100, including Land Information Officers in all 72 counties of the state and their designees
Wisconsin County Surveyors Association (WCSA)	85, including all designated County Surveyors in the state
Wisconsin Society of Land Surveyors (WSLS)	1000, including most of the state's professional private-sector surveyors
Wisconsin Land Information Association (WLIA)	1000, including professional GIS/geospatial professionals in government, the private sector, non-profits, education, and elsewhere

Table 2. Email distribution lists for Forum advertising

Purpose of the Forum

The forum was intended to initiate a dialog about county surveying and tax parcel mapping activities in Wisconsin. The forum brought together county surveyors responsible for the PLSS (Public Land Survey System) network, the GIS (Geographic Information System) and Land Information professionals responsible for tax parcel mapping within counties, and members of the broader geospatial community representing a cross-section of users. These individuals discussed ways to improve the alignment and coordination between surveying activities and parcel mapping efforts within and between counties. These efforts are necessary to ensure that parcel maps are accurate, that gaps and overlaps do not occur along county boundaries, and that map users have confidence in their results. Ultimately these efforts will allow for more effective and efficient utilization of parcel maps by the public, researchers, government officials, public policy advocates, non-profits, state agency representatives, and private-sector companies.

Recent legislative changes in Wisconsin have set the stage for increased public access to statewide parcel data. Act 20, the state's last biennial budget, instructed the Wisconsin Department of Administration to develop a statewide parcel map online by 2017 by integrating county parcel data (http://www.doa.state.wi.us/Documents/DIR/Land_Information/Parcel_Initiative/Parcel_Initiative_Statutory_Directives-20140318.pdf). Greater public access will result in heightened awareness of errors in parcel maps unless steps are taken to begin to eliminate these errors.

Parcel mapping in Wisconsin is primarily the responsibility of the state's 72 counties, each of which maintains a portion of the state's fabric of over 3.5 million parcels. As shown in a recent study by the State Cartographer's Office and the Department of Administration, the quality and completeness of county parcel datasets is generally very good (http://www.sco.wisc.edu/images/stories/publications/APPMP_Report_Web_September2014.pdf). However, inaccuracies do exist, in part because the state's PLSS network, which theoretically ties together the parcel fabric, has not been fully updated in every county. PLSS updating – known as "remonumentation" – includes re-discovery of PLSS corner monuments and obtaining modern GPS coordinates for these corners. Although remonumentation is a county responsibility, the high cost of the effort means that many counties have not yet completed it.

Different viewpoints exist within the community about how to coordinate surveying and parcel mapping efforts, and what activities should be prioritized. On the one hand, there is a clear business need (and statutory mandate) for a statewide parcel map. On the other hand, any parcel map created without a base of up-to-date PLSS data will ultimately need to be readjusted once the PLSS network is complete.

The Role of UW-Madison

The forum builds on expertise and knowledge at UW-Madison. The State Cartographer's Office (SCO), within the Department of Geography in the College of Letters and Science, is a logical home for the outreach efforts like the surveying-parcel forum. The SCO has a long history of supporting Wisconsin's GIS and surveying communities. The SCO developed and maintains PLSSFinder, an online application that provides a central point of access to PLSS information statewide. The SCO is also familiar with the state's parcel mapping efforts through its work on Wisconsin's statewide Parcel Map Initiative.

Outreach and community engagement are useful tools to help develop the next generation of geospatial policy and practice in Wisconsin. By engaging stakeholders, we can develop a common vision for the state and facilitate the adoption of this vision as a model for the future. In this sense the forum has the potential to provide benefits to every one of Wisconsin's counties, as well as state agencies and users of the final statewide parcel map.

The quality of the parcel map will have direct impacts on benefits to users. The economic benefits of statewide parcel data are potentially quite large. As noted by the National Research Council, "the parcel layer used as a base map is the most information rich database with the broadest utility to local, state and federal agencies." (National Research Council, *National Land Parcel Data: A Vision for the Future*, Washington D.C., National Academies Press, 2007, p. 53).

The forum embodies the Wisconsin Idea by linking UW expertise and resources with issues that impact Wisconsin's citizens in all corners of the state. Improved parcel data is needed as the state moves forward with its efforts to transition to the next generation of online information and services for citizens. Through projects like the forum, UW-Madison can continue to position itself as a leader in the effort to improve the efficiency and effectiveness of these services.

Forum Structure

The agenda for the event is provided in Table 3 (below).

The main focus of the forum was on gathering community input into the statewide parcel mapping effort.

There were two group discussion sessions at each table followed by a report out to the entire audience. Discussion focused on the following questions:

➔ What are our common interests and goals for a statewide parcel map?

➔ Why do we care about accuracy and why is accuracy important for the map?

➔ What are the top challenges we face contributing to a uniform statewide parcel map?

➔ What are the potential solutions to these challenges?

In a final scorecard session, participants were asked to respond to the following question:

➔ What is one concrete step we can take to build a statewide parcel map everyone can use?

Participants' responses were then ranked on a scale of 1-5 by five other participants, resulting in a cumulative score between 5 and 25 for each response.

Time	Activity
9:00-9:15 am	Introduction, goals
9:15-10:15 am	4 @ 15-minute presentations: Tony Jones & Adam Grassl (Vilas Co.); Janet Krucky (Price Co.); Codie See (State Cartographer's Office/UW); Cori Lamont (Wisconsin Realtor's Association)
10:15-10:45 am	Break
10:45-11:30 am	Group work at each table. What are our common interests and goals for a statewide parcel map? Why do we care about accuracy and why is accuracy important for the map?
11:30am-noon	Report out, discussion
Noon-12:45 pm	Lunch
12:45-1:45 pm	4 @ 15-minute presentations: Bryan Meyer (La Crosse Co.); Brenda Hemstead (State Cartographer's Office/UW); Larry Cutforth (WI Dept. of Agriculture, Trade and Consumer Protection); Peter Herreid & Mike Friis (WI Dept. of Administration)
1:45-2:15 pm	Break
2:15-3:00 pm	Group work at each table. What are the top challenges we face contributing to a uniform statewide parcel map? What are the potential solutions to these challenges?
3:00-3:30 pm	Report out, discussion
3:30-3:45 pm	Scorecards handed out to each attendee asking for one answer to: What is one concrete step we can take to build a statewide parcel map everyone can use?
3:45-4:00 pm	Scorecard report out and next steps

Table 3. Forum agenda

Results - Group Sessions - Common Interests and Goals

Table 4 (below) shows the responses from the group sessions focusing on the question, "What are our common interests and goals for a statewide parcel map?"

What are our common interests and goals for a statewide parcel map?
911/RPCs/foresters, etc would need easy to use surrounding data
Accept that this is not perfect
Accept the statewide map is imperfect
Access across county lines (able to get data from other/neighbor counties without multiple sources)
Access: search by name, search by site address
Accessibility (data)
Accuracy - spatially-cadastral, data sets, initial county and state boundaries
Accuracy - what level?
Accuracy (positional accuracy)
Accuracy and public awareness
Accuracy/consistent framework
Accuracy/disclaimer concerns
Accurate as possible
Accurate foundation of PLSS
Accurate PLSS foundation
Achievable - realistic goals
Address the misuse of layers
All mapping based off/from PLSS - "get monument in the ground" w/ survey-grade coordinates
Attribute: last sale date
Authoritative data stewards
Automation (FME: feature manipulation engine; ETL: extract translation and loading)
Common datum for county boundaries
Common web tools among counties
Consistent framework
Consistency/reliability from dept of revenue
Consistent funding for WLIP
Continued WLIP funding
Cooperation between municipalities (for better data)
Coordinating coordinates at county boundaries
Core responsibilities of state and county
Counties with parcels along the fringe - all parcels can cross county boundaries
County boundaries (including parcels along county)
County boundary evidence…
County to county working relationships
Currency and timely updates
Currency/attention to update cycles/frequencies
Data development
Data scales & dissemination/retention
Determine difference in section corner discrepancy
Do not create redundancy

Ease of data submission
Ease of data submission (good $ for counties to fix border data errors to improve statewide product)
Educate the community on the purposes of a layer such as this (disclaimers and big letters - "DO NOT READ"!)
Education (land info council government officials)
Enforcing county compliance
Errors happen - aligned county boundaries, reconciling (addressing/minimizing errors)
Feedback mechanism/routing questions/corners
Full remonumentation
<u>Funding</u> (needs to be for land records modernization)
Funding for repeatability
Funding source (process to get funding) - update/revisited/define
Funding to replicate
Funding?
Future solutions for boundary overlap/gaps monumentation along county lines
Guidelines for conflict resolution
Guidelines for standards (best practices)
Have the statewide layer direct the user to the appropriate data steward
Include info what/how any particular parcel map is based on! (plss system)
Keep AUTHORITY within local jurisdiction; most current data stays with creators
Legislative mandated publications (data accuracy minimums, data format types)
Links to individual county sites to provide more current and accurate information
Links: statewide map to statewide DoR datasets (i.e. e-return assessment, work roll, tax roll) - utilize existing statewide tax and assessor datasets
Maintaining PLSS monuments
Making sure WLIP funds used for land records mapping
Map that is revisable/improvable to major redos
Meet needs of all users
Meet needs of community
Meet the needs of the community
Mobile access
Nomenclature/verbiage common between counties
One data request/yr from state, private/public for free
One source for state agencies to get data
One stop shop (no/fewer interruptions)
Our goal is to know what the state's goal is: one viewer for all of the state? What about DNR WebView then this parcel viewer and counties?
Positional & attribute accuracy
Positional accuracy of corners
Public access
Public access to FSA and other programs will use this data for a plethora of programs determining funding
Public access to parcels
Public/private info
QQ
Quality/accuracy/completeness
Quality: data access, currency, completeness
Reduce data requests to county
Reduction of data requests on local level

Searchability
Single access distribution
Specificity of statewide parcel map goal (survey-grade vs. GIS; complete statewide coverage notation of differences in accuracy)
Standardized attributes
Standardizing coordinate values, data sets, attributes, schema
Standards (coordinate system; definition of "survey-grade"); federally-informed if appropriate
Start with PLSS
Streamlined schema for data
To keep the funds to be used for what they were meant for
Understanding what a parcel map
Uniformity for updates
Update - frequency and ease
Update frequency
Updated as often as possible
Updated frequently
Visibility - to create support for WLIP public relations
Visibility/PR/viz of needs for state
Visual status - identifying needs, not a shaming tool
Well-timed data requests (tax roll Dec/Jan work roll - but county variations)
What does a complete parcel map? (a:1 ratio between parcels and tax roll) - quality data
What is the product going to be?
What level of accuracy are we targeting?
WHO is the state building this statewide parcel layer? Who is your intended audience?
Will geometries ever be perfect? CSM require a statement of error
WLIP funding for parcel admin

Table 4. Responses from the group sessions focusing on the question, "What are our common interests and goals for a statewide parcel map?" Sorted alphabetically.

Figure 2 shows the number of times particular ideas/themes were mentioned in the responses in Table 4.* As such, this figure identifies the common interests and goals for a statewide parcel map as viewed by the participants at the forum.

Participants thought that the following themes were of particular importance (mentioned more than 5 times):

➔ The parcel map must be built on an accurate PLSS foundation.

➔ The statewide parcel map needs to be accurate.

➔ Keeping the parcel map up-to-date is critical.

➔ Data access and search functions need to be provided for users.

➔ User needs for the online map need to be understood.

➔ Funding is a requirement.

➔ Data standards are needed.

➔ Cooperation and coordination are required among all particpants.

➔ A single access point would reduce redundant requests for county data.

➔ Awareness and education is important to achieve buy-in from decision-makers.

➔ The state should make it easy for counties to submit data.

The following themes were mentioned less frequently (5 times or less):

➔ Counties should continue to be recognized as the authoritative data stewards.

➔ Disclaimers should be included on the map.

➔ The statewide map should not be replicate a service already provided by the counties.

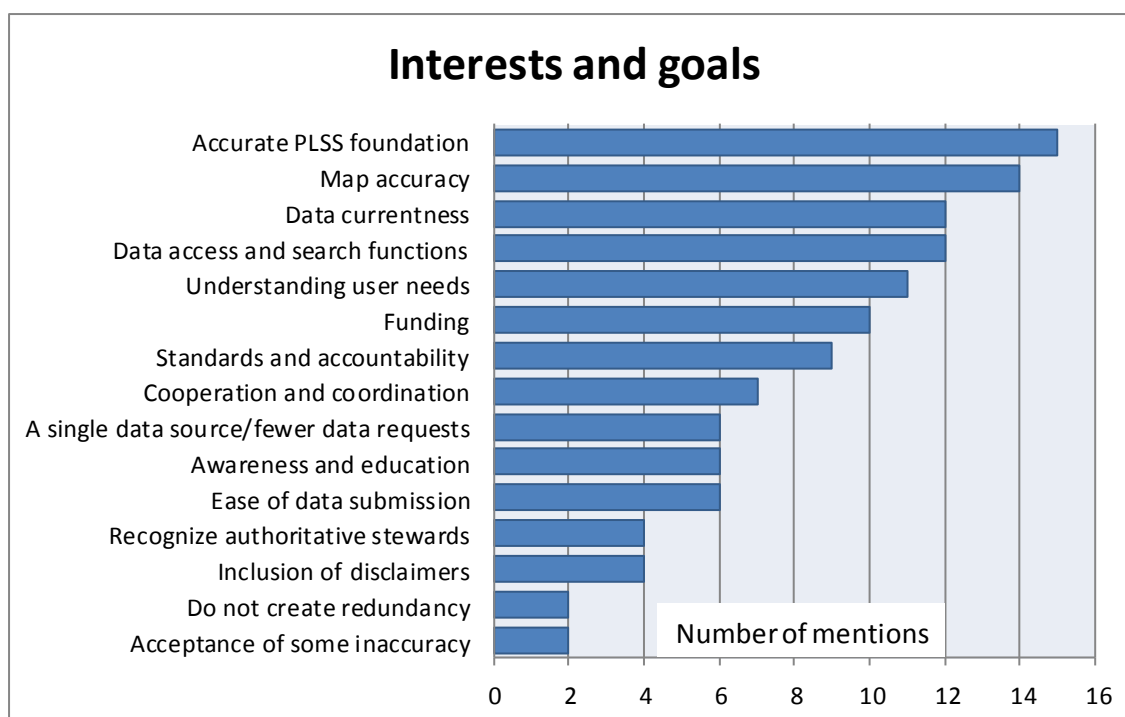➔ We need to accept some level of error as unavoidable.

Fig. 2. Common interests and goals for a statewide parcel map. (Number of times each idea/theme was mentioned in response to the question, "What are our common interests and goals for a statewide parcel map?")

*Note. To keep graphs from getting too large, and to keep the focus on the "common ground," only responses with at least 2 mentions are included in the graphs in this report. Since these statistics were collected in groups (one per table at the Forum), one "mention" means one group (out of a total of about twenty groups).

Results - Group Sessions - Accuracy

Table 5 (below) shows the responses from the group sessions focusing on the question, "Why do we care about accuracy and why is accuracy important for the map?"

Why do we care about accuracy and why is accuracy important for the map?
Ability to trust data - (user) stakeholder confidence in data.
Accuracy - public knowledge
Accuracy depends on what the USER wants/needs - how it will be used.
Accuracy is important because data will be misrepresented - which leads to assumptions from USERS.
Accuracy of original subdivision/csm's surveys/record
Accuracy with precision
Accurate assessment
Accurate assessment and taxation - state has a responsibility to its citizens to accurately assess/tax.
Accurate attributes
Address gaps and overlaps
Affects revenue
As industries are getting more accurate products (i.e. airphotos) the products and tools the parcel map will be used for should also be compatible.
Attribute accuracy - what time frame? 3 months? (minimum 95% confidence in accuracy? As an attribute in the dataset?)
Attributes
Because important decisions are being made on the data.
Because it will be misused.
Because people will presume it is accurate.
Bordering "county" coordination
Common starting point
Complete data (attribute) - zoning, floodplain, voting, utilities, addresses
Credible product
Damage assessment
Definition of a parcel (ownership vs. tax)
Determine appropriate use with metadata (i.e. datum issues source).
Don't want to be liable for misuse of parcel maps.
Economic development
eE911 support - funding
Emergency notification - multiple counties
Fiscally responsible
For enforcement purposes (permitting, DNR, zoning, etc)
Funding to help qualified people do the mapping and collecting data on the PLSS.
Geometric accuracy - multiple parcels (stacked parcels) and joining data (do we place the handling of this on the local level?), e.g., Madison has hundreds of years of historic parcel discriptions… errors are not debated.
How will county edges match up? (identify gaps/overlaps)
How will entities such as FEMA accurately overlay floodplain data on "inaccurate" parcels?
If base data is not accurate all subsequent data is compromised
Image - professional
It is expected.
Lake dist. Owner notification.
Parcel map - informed, starting point

People don't always read/use disclaimers properly.
Plants/CSMS - public has to pay to get use… this can be inhibited (but this is good revenue stream for ROD).
Positional, geometric, attributes, logical consistency, completeness, currentness of accuracy
Program business goals (attribute accuracy)
Protect people from themselves
Public safety/emergency MGMT
Purpose of the data
Quality
Real property listing needs to match the map.
Reduces public concern.
Reliability
Seamless integration
State plat review
Statutory requirements
Subd regulations circa 1956
Temporal aspect of accuracy (when are we basing accuracy off of?)
The parcel map can be very accurate but also needs to be updated as well. "The 40 lines may be great, but if a split is done, the accuracy is still diminished."
Third party geospatial discrepancies (Google, etc.)
Time (snapshot in time) component accuracy? When/how often data refreshed/updated?
Time: qualified
Timestamp attribute for geometry updates?
To avoid unnecessary expenses by citizens for inaccuracies (court, improvements).
To combat problems from "apparent" encroachment due to bad data.
To maintain credibility.
Uniform metadata
Variables (subd plot, csm, plot of survey, deed)
Variations over time; especially due to technology evolution.
Visual comparison - orthos & other layers
Want to avoid: lawsuits, loss of realtor sales because of poor data, misinterpreted flood risk.
Weekend "surveys" of property lines using published parcel data
Who defines "accuracy," who will QA/QC the accuracy, how will the accuracy level be decided?
Will state layer (display) use GIS acres or assessed acreage? Or even show acreage?
Without one standard of "accuracy" assumptions will be made that every piece of data is created equally.

Table 5. Responses from the group sessions focusing on the question, "Why do we care about accuracy and why is accuracy important for the map?" Sorted alphabetically.

Figure 3 shows the number of times each idea/theme was mentioned in the responses in Table 5. This figure identifies important issues related to the accuracy of the statewide parcel map.

Participants thought that the following themes were of particular importance (mentioned more than 5 times):

➜ There are many business needs that require accurate data (examples provided).

➜ Accuracy is needed to ensure that decisions that are made from the data are not erroneous.

➜ Keeping the parcel map up-to-date is a key concern.

➜ Accuracy is required to ensure that parcels align properly with other datasets.

The following themes were mentioned less frequently (5 times or fewer):

➜ Accuracy definitions depend on how people are going to use the map.

➜ Accuracy is a professional responsibility, and a standard that the state needs to uphold as part of its responsibility to taxpayers.

➜ Accuracy is needed to ensure that GIS and government professionals maintain credibility.

➜ Users expect data to be accurate and will use the data accordingly.

➜ Accuracy is needed if all stakeholders are going to have confidence in the final map.
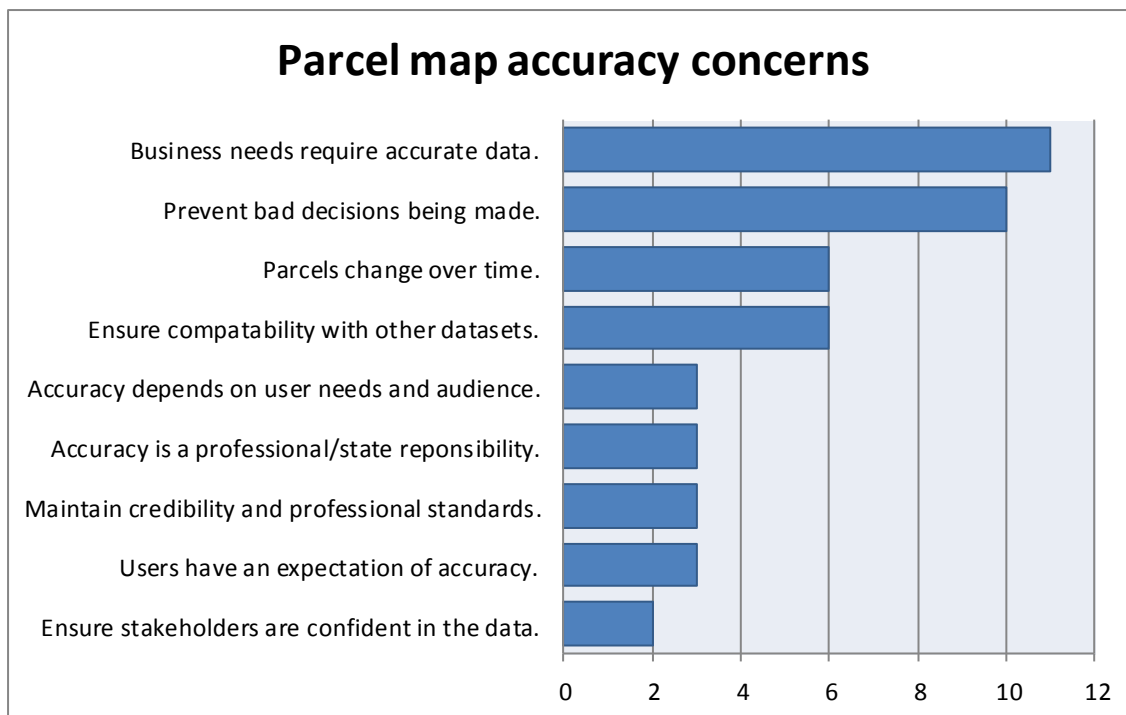

Fig. 3. Important accuracy issues for the statewide parcel map. (Number of times each idea/theme was mentioned in response to the question, "Why do we care about accuracy and why is accuracy important for the map?")

Results - Group Sessions - Challenges

Table 6 (below) shows the responses from the group sessions focusing on the question, "What are the top challenges we face contributing to a uniform statewide parcel map?"

What are the top challenges we face contributing to a uniform statewide parcel map?
Accessibility
Aligning parcels with PLSS
At state level: a need for quality technical assistance working w/ counties (staff, coordinators, regionally?); direction from state - neighbors (counties) not talking to one another
Attribute data
Attribute standardization
Attribution is not uniform
Bureaucracy
Changing existing systems (numbering, etc.)
Changing revenue standards
Complete PLSS network
Completion of local maps
Confidence in process
Coordinaton (inter/intra)
Cost/license agreement requirements (use limitation)
County boundary - all of them
County board leadership - education
County boundaries
County boundary lines (need county agreement)
Currency of data
Custodianship issues
Data consistency/uniformity
Datums - conversion software not including NAD83(91)
Define (what attributes; what schema; accuracy; survey grade v. parcel mapping coordinates) - accountability for meeting and not meeting timelines
Deliver data in a way that state (DOA/SCO) can use
Delivering quality data
Don't know what future uses the parcel map will have
Ensuring all players (counties) get necessary funding - some counties have more/less resources so some may need more assistance
Funding
Funding
Funding
Getting buy-in from local boards, higher-ups, politicians
Having an efficient process - simple
History of state failure
How will we determine an available shelf life of the data!?
Incomplete tax roll (timing between geometries & attributes)
Inconsistent staffing (staff priority, educating govt officials) - uniform/standardization/defined
Independent attitudes & ways of doing things. Solution - funding
IT issues
Lack of consensus

Lack of political support for county surveyors & county programs
Lack of standards from county to county (municipality to county/within the county)
Layer completeness
License agreements (state won't sign indemnification clause)
Means/mechanisms to submit data (how do we get it to them and how often?)
Monumenting & locating PLSS
Multizoned parcels
Need for security (county protections)
Net zero effect
Open records
Parcel construction methods vary from county to county
Participation (all players: muni, county, state)
PIN
Priority of county (board/supporters) - do the people making decisions believe in this project?
Privacy issues
Purpose/end use for "parcel map" is unclear so accuracy/timeliness/needs are unclear
Rapidly changing data
Revenue-tax data distribution/use
R-O-W mapping is not uniform
Schema or fields
Sharing data
Spatially taking 72 pieces of a puzzle and trying to fit them without manipulating or "fitting" data
Split parcels have incomplete assessment records/not in the tax roll
Standardization - names and fields
State inter-agency communication (not sharing data with agencies)
State standardized changes. Solution - funding
State-owned land boundaries
Time/money/resources
Timelines/temporal accuracy (date)
Uniformed attribute data set (standardized PIN)
Uniformity (we need to know what they want)
What is the workflow for contributors - how do we contribute; users - how are stakeholders to use?
What's good enough?
Who are the primary stakeholders (contributors/users)
Who or how will access to data be governed?

Table 6. Responses from the group sessions focusing on the question, "What are the top challenges we face contributing to a uniform statewide parcel map?" Sorted alphabetically.

Figure 4 shows the number of times each idea/theme was mentioned in the responses in Table 6. This figure identifies the main challenges faced contributing to a statewide parcel map.

Participants thought that the following challenges were of particular importance (mentioned more than 5 times):

➜ Lack of standards for parcel data.

➜ Data issues specific to parcels (e.g., incomplete tax roll data).

➜ Resources to do the job (especially time and money).

➜ Privacy concerns and data licensing restrictions.

➜ The need for cooperation and coordination among the actors involved.

The following challenges were mentioned less frequently (5 times or fewer):

➜ Need for accurate PLSS data.

➜ Making it easy for counties to contribute data.

➜ Temporal accuracy — the need to keep the parcel map up-to-date.

➜ Understanding stakeholder needs and how the map will be used.

➜ Providing user access to the data.

➜ Accuracy concerns, including completeness.

Fig. 4. Main challenges faced contributing to a statewide parcel map. (Number of times each idea/theme was mentioned in response to the question, "Why do we care about accuracy and why is accuracy important for the map?")

Results - Group Sessions - Solutions

Table 7 (below) shows the responses from the group sessions focusing on the question, "What are the potential solutions to these challenges?"

What are the potential solutions to these challenges?
Secure grants (securing money will attract and KEEP <u>quality</u> employees for a specified amount of time) $ = staff + project funding
Develop minimum standards for data submitted to project
County board/committees/supporters who make decisions need to be bribed/educated by the state… Improve state-to-county relationship
State pay all expenses PLSS & parcels w/o WLIP funds
Extract, translate load
a. subsidize local surveyors to require GPS coord on surveys b. review process for CSM & filed surveys
Enforce parcel ID number (32 characters co) municipality/str/qq/lot/block etc.
$ for staffing/re-monumentation etc.
Educate at county level (public & govt) - importance of surveyor & what they do. County surveyor for every county .(realistic?)
Get network (monumentation) established and maintain it!
Procedure: training & education with state standard
Funding!!!
$
Develop standard data sharing policy for statewide parcel data
Priority list for funding (DoT)
State level dog and pony show for county higher-ups
Meeting the needs of everyone using the data
Agreement between stakeholders (admin code, statutes), uniformity standard
Create best practice
Start at the base
Deliverables
Funding & educating
Accept parcels for what they are
Determine the priority of geodetic control then adjust parcels as the control allows
Need definitions/direction in mandates
Staff available from state to coordinate information coming from counties (to help bridge the gap between county and state)
Money - to fund staff at county level
Counties need to understand and accept that states will need to mandate and counties will need to conform to those mandates
Providing a "cause and effect" for meeting or not meeting deadlines; penalties and incentives
Money/grants for county boundary PLSS information prior to/or priority number #1 for fitting the 72 pieces of the puzzle
Counties interacting with each other - "regionally"?
"Tech teams"
Offering of a potential/preferred standard (uniform metadata)… not mandated!
More time and more money
Make it easy to send/upload the data
Have common names and fields (attach it to funding)
Have a format (state mandated?)

Continued leadership at the state level
Continued funding
Start somewhere and refine over time
Adequate staff
Land records
Uniform state standards
State - clear directions/goals/plans
Staff continuity
End product - publicly available
State inter-agency communication
Specify projects - parcels only?
Fix county boundaries

Table 7. Responses from the group sessions focusing on the question, "What are the potential solutions to these challenges?" Sorted alphabetically.

Figure 5 shows the number of times each idea/theme was mentioned in the responses in Table 7. This figure shows the main solutions identified to build the statewide parcel map.

Participants thought that the following solutions were of particular importance (mentioned more than 5 times):

➔ Funding, especially for staffing dedicated to parcel mapping and updates.

➔ Standards, best practices, and mandates.

➔ Education, relationships, and coordination across government entities and users.

➔ An accurate, complete PLSS network including county boundaries.

The following solutions were mentioned less frequently (5 times or fewer):

➔ Clear direction, goals, and leadership from the state.

➔ Acceptance that errors are inevitable.

➔ Making it easy for counties to contribute data.

Solutions

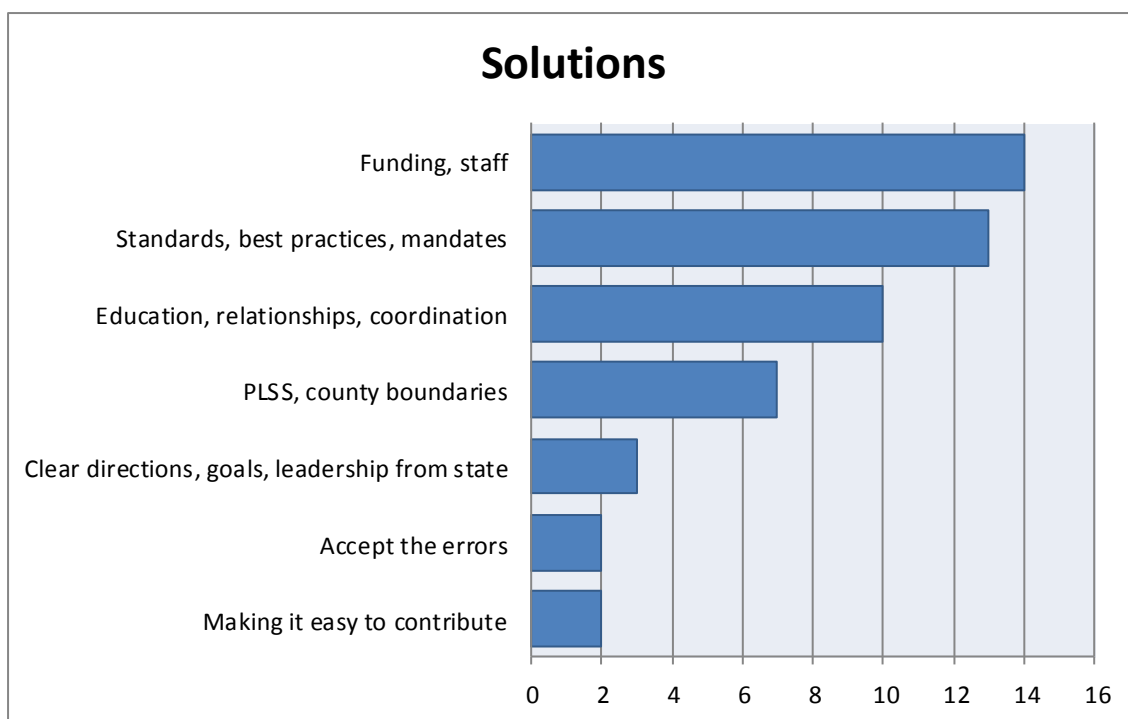| Solution	Count
Funding, staff	14
Standards, best practices, mandates	13
Education, relationships, coordination	10
PLSS, county boundaries	7
Clear directions, goals, leadership from state	3
Accept the errors	2
Making it easy to contribute	2

Fig. 5. Main solutions identified for the statewide parcel map. (Number of times each idea/theme was mentioned in response to the question, "What are the potential solutions to these challenges?")

Results - Scorecards

Table 6 shows the results of the scorecard session, where participants were asked to write down "one concrete step we can take to build a statewide parcel map everyone can use." These responses were then assigned a value of 1-5 by five other participants.

Scorecard Response	Score (max. 25)
Complete parcels utilizing the coordinate positions of monumented PLSS corners.	25
Create a map where all county boundaries are consistent (matched).	25
Educate the public and local government on the importance of the corners of the public lands survey system and the county surveyor. Establish a county surveyor in the 10 remaining counties without one.	25
Accurate PLSS network.	24
Better data exchanging with state agencies. Maintain funding through WLIP Grant Program.	24
Complete county boundaries with survey grade coords on the PLSS. Standardize attributes within parcel data.	24
Complete PLSS network.	24
Complete remonumentation.	24
Ensure funding that will continue to the end of the project.	24
Funding for all counties to complete parcels and their PLSS boundary.	24
Get county and state boundaries identified and monumented.	24
Get quality coordinates on the PLSS corners by funding county. Standardize attributes.	24
Good, reliable base mapping.	24
Having an accurate location of the county boundaries and then map the parcels from that. There should be no disagreement on that location.	24
It must start with county boundaries/PLSS monuments.	24
Section corner monuments, starting with county boundaries.	24
Start with the PLSS, put a deadline on counties to have their boundaries monumented and survey coordinate values.	24
County boundary defined with "survey grade" accuracy.	23
Create an accurate county boundary layer based on the parcel land survey system.	23
Disperse the highest percentage of WLIP funds possible to counties through strategic initiative grants.	23
Publish state guidelines/recommendations for parcel mapping procedures (from PLSS control to attributes).	23
Resolve boundary discrepancies between adjacent counties.	23
Accurate county boundaries with monumented PLSS corners.	22
Define standard, easy to fill out, metadata template to accompany all data submissions including most relevant info (i.e. coord system of attribute data dictionary, etc.)	22
Ensure PLSS monuments exist along every county boundary and a coordinate be provided for each.	22
Establish a set of standards that ensure a good base for the project.	22
Get each county to communicate with surrounding counties on the status of their boundary monumentation so we can have definite, defined boundaries.	22
Match county boundaries to prepare first iteration of a quality foundation. Funding for at least part-time county surveyor position.	22
Survey quality PLSS.	22
Uniform standards from the state.	22

100% participation from parcel map stakeholders.	21
Have an outline of how the data is to be submitted to the state so that they don't have to manipulate the data to work in the state's data system.	21
Have standardized, accurate attribute data.	21
Investing in the county boundaries spatially (PLSS).	21
No statewide parcel map.	21
Provide funding to counties along with a standard to be adhered to.	21
Quality control on the base control & parcel data. Standards in data exchange and data collected (attributes).	21
Remonument and acquire accurate coordinates on all county PLSS corners. If everyone is going to use it, it has to be accurate enough for all users.	21
Section corner coordinates. Standardized attributes.	21
Uniform construction and content standards	21
Use program dollars to fund one full time surveyor/parcel mapper in each county.	21
County boundaries.	20
Define the goals, objectives and requirements for a statewide parcel map.	20
Get a strong PLSS network and a dedicated technician to deal with the information	20
Grant funding to create survey grade PLSS corners.	20
Have a uniform set of attributes for each county.	20
If counties do not match, have counties look at difference and document why the corners don't match.	20
Increase funding.	20
Minimum standards for "parcel" map.	20
Standardized data (?)	20
Survey all county boundaries. Establish a process for improving parcels and acceptance as is -- PLSS accurate.	20
Create an efficient implementable standard for parcel attributes that is funded (initially covers costs) and tied to receiving funds.	19
Data standards for parcel attributes.	19
Data submission --> public access.	19
Develop and maintain sound metadata and data dictionaries.	19
Ensure county boundaries and monumented and have "survey grade" coordinates translatable among different coordinate systems.	19
Fund parcel mapping at the county.	19
Get state outside boundaries.	19
Offer clear standards that local - level contributors can use as a directive to submitting data. Not man-dates though.	19
Provide counties with uniform standards.	19
Build trust with/amongst stakeholders in the process and the final product.	18
Communicate (county to county, state agency to county, state agency to state agency).	18
Determine a standard set of attributes for statewide parcel layer.	18
Determine who "everyone" is. Establishing stakeholders and priorities.	18
Develop a legislative defined mission statement (statute/admin code, etc.) that contains minimum standards for parcel mapping and defined stakeholders and responsibilities. Throw liability aside with statewide indemnification.	18

Have a county surveyor in every county to finish county boundary survey.	18
Have the information be as accessible as possible.	18
Mandatory participation among counties/municipalities and long-term funding for maintenance.	18
Secured funding and update process to ensure longevity of the program.	18
Standardize attributes.	18
State standards to the counties for what they are looking for/need as far as uniform metadata. A guideline.	18
Develop a workflow/step by step plan on how the data flow process will occur.	17
Educate and get all parties involved in setting standards and responsibilities.	17
Identify who will be the primary stakeholders in order to coordinate how the parcel map is compiled in a standardized manner.	17
Might not need to be structured - could be a webpage of links to each county.	17
Put everyone and everything on the same playing field.	17
Accept parcels the way they are as a statewide data set that we can build upon.	16
Be active in the land records community through the WLIA, WCSA, LION or whatever organization you wish. The only way this works is through a discussion and involvement like today for an example.	16
Define the data that state needs. Define the data format. Define standards for everything.	16
Standardization - comes from top down.	16
Update frequently. State data will make map less used, less accurate and represent a bad use of resources.	16
Work together, move on from past experiences.	16
An agreed list of "minimum" standards for the creation of parcels that all counties "must" follow.	15
Cooperation by all involved parties to determine county boundaries.	15
Get the parties contributing data to agree on expected accuracy.	15
Participate with a positive attitude in the planning process.	15
Agree that spatial accuracy is a priority.	14
Agree to represent that statewide data to be representative to the best of our ability as of this day each year. Pick a day. That's the disclaimer for statewide, if anyone wants better or more current - call the creator of that data.	14
Recognize that we need to start with the foundation of the base map before we can get away from the "cartoon parcel map".	14
Look out for the good of the whole state, not just my county.	13
See attribute standards.	13
State agencies defining a target data schema. They would like custodians to strive to comply with.	11
The state should be the keeper of the PLSS for all to use, not to repeat what's already done.	9
Get the land information business out of 72 county kindgoms and allow the Wisconsin Cadastral Commission to take over those responsibilities going forward.	7

Table 6. Responses from the scorecard session, where participants were asked to write down "one concrete step we can take to build a statewide parcel map everyone can use." Responses were assigned a value of 1-5 by five other participants. Results are sorted by the cumulative score.

Figure 6 shows the main ideas mentioned in scorecard responses. The figure shows the main steps that the community can take to produce a statewide parcel map everyone can use.

The following are the highest-ranked ideas from the responses (score > 100):

➔ Data standards need to be designed and implemented to ensure that the statewide map is completed and kept current in an efficient manner.

➔ Discrepancies between county boundaries need to be resolved to improve the quality of the statewide map.

➔ PLSS remonumentation needs to be completed to ensure that parcel data are positionally accurate.

➔ Additional funding is needed to ensure that parcel and PLSS data are completed, maintained, and properly integrated into the parcel fabric.

➔ Communication, cooperation, and participation is needed across all levels of government.

The following ideas were also mentioned (score < 100):

➔ County Surveyors should be funded in all counties.

➔ Data access and sharing arrangements between units of government need to be facilitated.

➔ Education, especially about the importance of the PLSS network, is important.

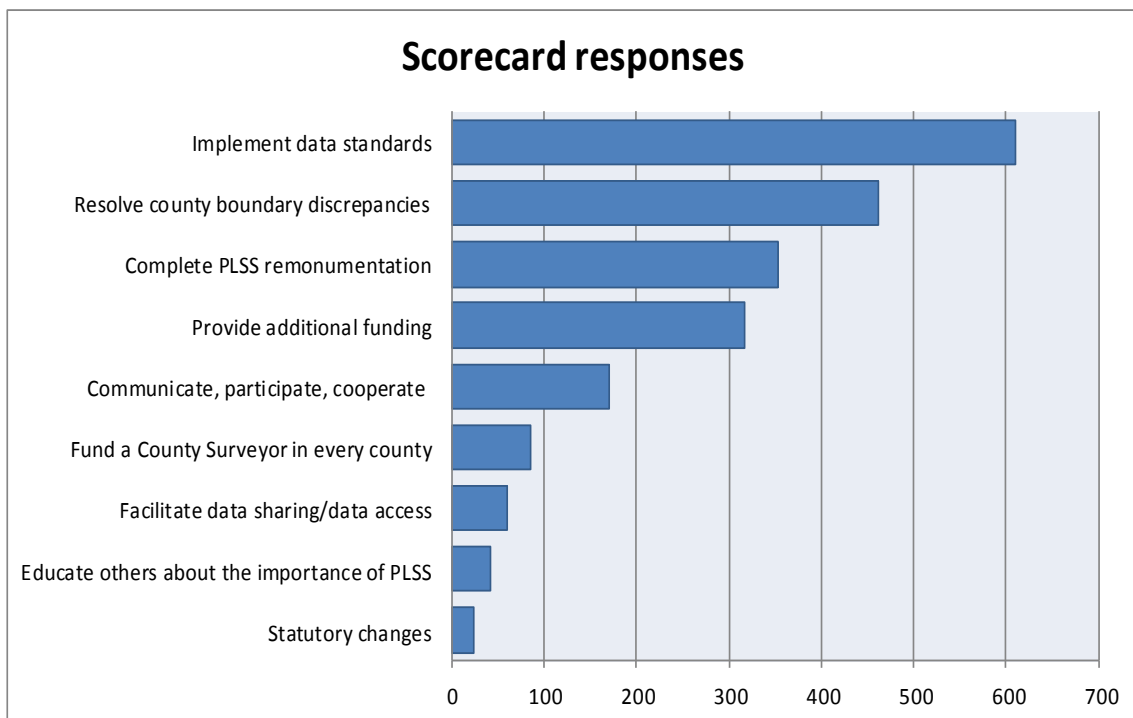➔ Statutory changes could be considered.

Fig. 6. Major ideas mentioned in scorecard responses to the question, "What is one concrete step we can take to build a statewide parcel map everyone can use?" Ranked by number of times the idea was mentioned weighted by the cumulative score for the response.

Discussion

Participants' responses show that there are many common areas of concern related to the statewide parcel map and the role of surveying for this map.

The following list summarizes the core issues, challenges, and solutions identified at the Forum. Note that this list should not be interpreted as a set of recommendations for action, since some ideas are more widely accepted than others, and since important differences exist within the community about what activities should be prioritized.

Common interests, goals and concerns include the following:

➜ The statewide parcel map needs to be accurate. Many business needs require accurate data. Accuracy is needed to ensure that decisions that are made are not erroneous. Users expect data to be accurate and will use the data accordingly.

➜ The map should be tied to an accurate PLSS foundation. Parcels need to align spatially with other datasets.

➜ Keeping the parcel map up-to-date is important, since parcels change frequently.

➜ Users of the statewide map need to be consulted to ensure they are getting what they need.

➜ Funding is needed for parcel map maintenance and updates.

➜ Standards are needed to facilitate efficient data integration and updating.

➜ Cooperation and coordination—as well as awareness and education—are essential for success.

➜ The role of counties in the process is important. Minimal impact on counties is desired, including reducing redundant data requests and making it easy for counties to submit data. Counties should continue to be recognized as the authoritative data stewards. The statewide map should not replicate existing county services.

➜ Disclaimers should be included on the map.

Significant challenges include the following:

➜ A lack of standards for parcel data in the state that make integration and updating a challenge.

➜ Parcel data has a number of unique characteristics that make it hard to work with. These include incomplete tax roll data, gaps in coverage, and change over time.

➜ Resources to do the job—especially time and money—are not always available. Counties may not be positioned to respond to data requests unless they are simple and straightforward.

➜ Privacy concerns and data licensing restrictions may apply.

➜ The optimal level of cooperation and coordination among governmental units does not always occur.

➜ It is not necessarily clear how users will access the data or what their specific needs are.

Suggested solutions and concrete steps include the following:

➜ Focus on funding and resources. Funding is needed for parcel mapping and updating. The process of contributing datasets also needs to be simple and convenient.

➜ Data standards and best practices need to be designed and implemented to facilitate parcel data integration and updating.

➜ There is a need for education, cooperation and coordination among the governmental units involved. Clear direction, goals and leadership from the state are needed. Data access and sharing arrangements between units of government need to be facilitated, and statutory changes could be considered.

➜ An accurate, complete PLSS network including county boundaries needs to be incorporated into the parcel fabric. Discrepancies between county boundaries need to be resolved. PLSS remonumentation needs to be completed to ensure parcels are positionally accurate. Funding is needed for this effort. A County Surveyor should be established and funded in every county. Education about the importance of the PLSS network is important.

➜ The community needs to have realistic goals and recognize that no map will ever be perfect.

Conclusion

The common themes that run through the responses from the Forum indicate that the community has a high level of understanding of the complexity of producing and maintaining a digital statewide parcel map.

A major source of concern—not surprisingly—is the **Public Land Survey System (PLSS)** and the need for accurate corner coordinate data to ensure positional accuracy of parcel data. Another concern is temporal accuracy and the need to keep the parcel map current.

Results also show a significant emphasis on **data standards**—in fact this was the top response for the scorecard analysis. Concern for standards is related in part to the idea that without an efficient way of contributing and integrating parcel data, the statewide map will become out-of-date and unusable.

Respondents also emphasized the need for **stable and sufficient funding**. Tied to this were concerns about the statewide process adding additional time and effort to counties already strapped for resources.

Several respondents cautioned that counties should continue to be the **authoritative data stewards** for parcel data, and that the statewide map should not duplicate a service already delivered by the counties.

Concern was also expressed over **legal issues** such as licensing of data, privacy, liability, and disclaimers.

Respondents also emphasized **cooperation, coordination, and education**—not just to complete the statewide map and keep it current, but also to secure buy-in from decision makers.

Getting buy-in from users was also noted. Several respondents emphasized that **users needs** should be assessed—both to give users what they need and to ensure that data extracts and data quality are aligned to users' expectations.

Next Steps

We are interested in your thoughts about the results in this report. We are also interested in your suggestions for next steps to keep momentum going on this effort. We are encouraged by the high level of interest in the Forum and the informative comments provided by Forum attendees.

If you have thoughts or comments please contact us!

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