GIS Colorado Virtual Winter Meeting - January 22, 2021

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Meeting ID: 979 7644 5617
Passcode: 600779

8:30-8:45
Welcome/Announcements & Introductions

8:45-9:00
Changes in the Centroid
Dan Carver and Sophia Linn - Geospatial Centroid at Colorado State University
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For over 10 years the Geospatial Centroid has been actively contributing to the understanding and application of geospatial tools, technologies, and concepts at Colorado State University and beyond. As a service and resource provider, the Centroid has remained successful by focusing on relationship building, positive intern experiences, and supporting meaningful work from a diverse set of partners. This talk will highlight some of the recent accomplishments and changes within the organization that are cementing the Centroid as an indispensable resource at CSU. We hope by sharing this information we can start additional conversations about future directions and collaborations with the greater geospatial community.

9:00-9:30
Big Data Analytics
David Vaillancourt, Shelby Hines, Peter Gamberg - Esri
pgamberg@esri.com

Learn about unique analytic and data storage capabilities with ArcGIS Enterprise to make sure of your organization's big data.

9:30-10:00
Modernizing the National Spatial Reference System

Brian Shaw - NOAA's National Geodetic Survey
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The National Oceanic and Atmospheric Administration's (NOAA) National Geodetic Survey (NGS) has been providing the positioning infrastructure for the nation since 1807 when Thomas Jefferson created the Survey of the Coast. Society continues to learn more about how dynamic our world is, through improvements in technology with satellite based positioning, and other new systems of measurement that did not exist when today's National Spatial Reference System (NSRS) was developed. The world is in constant change and there is a need to track changes in our environment with faster and more accurate observations. This can be accomplished with a modernized NSRS that will provide a precise, consistent and accurate positioning infrastructure that is readily and easily accessible primarily through Global Navigation Satellite System (GNSS) observations. The NSRS will provide the spatial infrastructure for the future of self driving cars, building information models, and improving flood plain mapping for the safety of life and property. The NSRS will be easier and more cost effective to maintain providing the ability to account for dynamic changes in positioning such as plate tectonics; subsurface ground fluid withdrawal induced subsidence -- in some places inches per year of vertical change; and other geophysical phenomena. This presentation will provide an update of how the future NSRS will improve and what can be done to prepare for this paradigm shift in positioning.

10:00-10:30
BREAK

10:30-10:45
Using Mobile LiDAR for Utility Pole Inventory and Engineering Modeling
Eric Sheehan and Sandor Lazslo - WGI, Inc.
eric.sheehan@wginc.com

This presentation will provide an overview of the mobile lidar collection to loading model methodologies for electric utility poles and related infrastructure such as cables, cross arms, insulator, guywires, risers, and street lights.

Collection scenarios for poles close to roadways, back of lot, and areas of lesser accessibility will be discussed. GIS data products derived from features extracted from the LiDAR point cloud and their relationship to the electrical provider's asset catalog will be shown in a GIS application environment in 2D and 3D. Finally, examples will be provided generating engineering modeling using Osmose Corporation's industry leading application O-Calc Pro. An interchange utility operating inside the GIS application creates the source files for performing comprehensive pole loading analyses for joint use, equipment or line upgrades, system hardening, and pole replacement.

10:45-11:00
What's the best route for biking to all of the Fort Collins breweries in one day?
Cara Whalen - Student, Front Range Community College
carawhalen@gmail.com

Let's take brewery rides up a notch and use GIS to determine how to bike to all of the Fort Collins breweries in one day. A network analysis was used to determine the sequence in which the breweries should be visited and the fastest biking route between each brewery. The analysis considered the operating hours of the breweries, such that each brewery is visited when it is open and enough time is spent at each brewery to partake in a beverage. The methods used in this analysis can be applied to planning brewery rides in other cities.

11:00-11:45
NextGen 9-1-1, GIS and You
Sarah Rollins - Datamark
Sarah.Rollins@mbakerintl.com

ESInet, Next Generation 9-1-1, i3, NENA standards… Colorado is on its way to deploying the ESInet, and the time for GIS data preparations for supporting Next Generation 9-1-1 is here! There is a lot of confusion about what exactly the ESInet, NextGen and i3 mean for 9-1-1 centers and GIS professionals alike. We're going to explore these terms and start a conversation about GIS' starring role in future 9-1-1 call workflows.

11:45-12:00
Using the National Map Products and Services
Carol Lydic - USGS
clydic@usgs.gov

The National Map is the collection of mapping products and services produced by the USGS National Geospatial Program. The products and services are accessed via the internet through service calls and graphical user interfaces. The National Geospatial Program has released a series of â€œhow toâ€ videos for people who are working with The National Map data and services. The videos show how to use the services and interfaces to access data and tools for viewing, analyzing and printing geospatial data. This presentation will highlight new additions and access to the video training catalog.</p>

12:00-12:15
What's Missing In My Sidewalk Data?
Nicholas Coppola - PhD Candidate, University of Colorado-Denver
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Data on sidewalks have long been deficient, but advances in remote sensing are beginning to increase data prevalence and accuracy. These sidewalk data sets rarely, if ever, account for static obstructions in the sidewalk such as signs, street furniture, or trees. This paper seeks to determine how much of a difference accounting for static obstructions will make when measuring the clear width of sidewalks.

We extracted the minimum width of sidewalk surfaces' both with and without accounting for static obstructions for the entirety of Cambridge, MA, via new GIS methods described in this paper. We then compared these results against ADA standards for clear width as well as national and federal sidewalk guidelines.

The results suggest a significant decrease in the average clear width of sidewalks when accounting for static obstructions. More specifically, the clear width of the average sidewalk drops from 4.5-ft (1.4-m) to 3.5-ft (1.1-m). The percentage of sidewalk segments meeting the 3-ft ADA standard drops from 78% to 51% when accounting for static obstructions. For the proposed 4-ft (1.2-m) ADA standard, it plunges from 59% of sidewalk segments meeting the width threshold to 31%. These results demonstrate that not accounting for static obstructions could lead to a gross overestimation of seemingly adequate sidewalks and an unrealistic assessment of sidewalk infrastructure and pedestrian accessibility.

12:15-12:45

Delimiting the Transcontinental Arch of the Rocky Mountain Region using GIS-based Structure Contour Mapping

Jennifer C Murdock - Student, University of Denver
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This study leverages geologic maps, historical measured sections, and field work in conjunction with GIS to advance geological knowledge of Paleozoic mountain building in modern day Colorado and resolve what Colorado looked like 500 million years ago. At this time, ancient beaches are thought to have lapped up against an enigmatic, poorly defined mountain range known as the Transcontinental Arch. Current research, though, is not in agreement as to whether a mountain range existed prior to the Pre-ancestral Rockies during the Paleozoic era. A geodatabase was created to organize existing data as well as to search digitally for exposed sections of relevant rock formations. Virtual measured sections were identified and measured to further understand the spatial distribution and thickness of Paleozoic rock formations at a finer scale than has been previously possible. Additionally, Interpolation, hillshading, and 3D geoprocessing tools were used to help visualize the topography of Colorado 500 million years ago. This work helps us understand the Great Unconformity and outlines a base-line model for future geologic applications of GIS, especially for studies conducted at large, areal scales.

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