 Addresses and Geographic Names as Spatial Reference Systems  
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ABSTRACT TEXT: There are four types of spatial reference systems: coordinate reference systems, linear reference systems, address reference systems, and geographic names (gazetteers). This presentation will look at the two most commonly-used and least documented of the four: address reference systems and geographic names. There are three types of address reference systems. The presentation will review the rules and elements needed to define them (from FGDC address data standard section 2.4.1):

1. Identification: ID, name, authority, extent, type, reference documents  
2. Designation of house numbers, street names, and place names  
3. Spatial definition the address numbering grid: origin point, axes, breakpoints, breaklines, and polygons.

Geographic names include place names, landmark names, and subaddress names/identifiers. Alone, a geographic name identifies a location but conveys no idea of where the location is. In combination, geographic names form a hierarchy that allows one to zero in on a location with increasing precision, from large (country, state) to small (subaddress). Each name must be unique within the area covered by the next larger name. This presentation will set out the rules and elements by which we construct and use the three categories of geographic names: their internal structures, attributes, spatial rules, data rules, and relation to addresses.

Improved 9-1-1 Indoor Location Accuracy For Mobile Devices  
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ABSTRACT TEXT: Today more and more people rely on mobile phones as their primary phone service and are disconnecting wireline service altogether. As a result, more 9-1-1 calls are being placed from mobile phones than ever before, including inside buildings where traditional 9-1-1 mobile phone location technology does not work well. New location technology solutions are emerging that make calculation of indoor positions for mobile phones during a 9-1-1 call possible, and include major technology announcements from both Apple and Google in 2018 in this area. The ability to track mobile phones indoors during 9-1-1 calls will create new demands for 2D and 3D indoor GIS maps for 9-1-1 call takers, dispatchers, and emergency responders. This session will explore these new innovations in the 9-1-1 world, and discuss their impacts to GIS.

How the State of Hawaii Reached Over 99% Synchronization between MSAG and GIS  
Katja Krivoruchko, GIS Manager, Akimeka LLC, Kihei, HI  

ABSTRACT TEXT: In preparation for migration to Next Generation 9-1-1, National Emergency Number Association (NENA) recommends at least a 98% match between the Master Service Address Guide (MSAG) and GIS datasets. During a 9-1-1 call, several pieces of location information are provided to the public safety answering point (PSAP). Whether the 9-1-1 call originated from a VoIP, wireline, or wireless network, the Automatic Location Identification (ALI) is transmitted by the Communication Service Provider’s network, and provides the street address (or in wireless 9-1-1 calls, the pseudo tower/sector address from the tower handling the call). If available, the X/Y location of the caller’s device (along with confidence) is also transmitted to the PSAP. Because Computer-Aided Dispatch (CAD) systems rely on GIS databases to display locations of calls, it is paramount that addresses and/or location data in those databases matches the data transmitted to the PSAP during the 9-1-1 call. In the state of Hawai‘i, the PSAPs, telephone and VoIP companies and wireless providers collaborate to ensure over 99.8 % match between the two databases. This presentation outlines the workflows used to achieve and maintain this level of accuracy, and the efficiencies in dispatching emergency services that result from high level of database synchronzation.