ABSTRACT(S) IN THIS SESSION

NKYdroneLAB
Ryan Hermann, UAS Analyst and Trisha Brush, GISP, Director of GIS, Planning and Development Services/LINK-GIS, Fort Mitchell, KY

ABSTRACT TEXT: NKYdroneLAB is the URISA recipient for the 2018 Distinguished Single System Award. This presentation will highlight the droneLAB year in review and focus on the current year activities. Stories about active shooter drills, water tank inspections, wildfire detection of hotspots, accident reconstruction and flood data collection will be showcased.

Designing 3D Air Road Networks for Low-Altitude UAV
Junhee Youn, Research Fellow, Korea Institute of Civil Engineering and Building Technology, Goyang, South Korea

ABSTRACT TEXT: With the rapid development of low-altitude UAV (Unmanned Aerial Vehicle) technologies, UAVs are applied to various fields (i.e disaster management, agriculture, logistics, hobby etc.). In the near future, hundreds of UAV will simultaneously fly in small area, and the collision risk will be naturally raised. The collision of UAV in the air can cause property and personal injury. Therefore, national air roads system should be designed similar to ground roads system.

This paper deals with designing 3D air road networks for low-altitude UAV. First, horizontal air road networks generation methods are proposed. To minimize the ground damage, we analyze the land used data, and network will be designed to minimum-risk area. Next, we design the vertical air road networks. Many countries regularize the flying height for low-altitude UAV. Vertical air road network is calculated according the regulations prescribed by the law. In this paper, we propose the calculation methods based upon Korean law. In Korean law, low-altitude UAV should fly up to 300 meters from the top of the building (or obstacles like mountain) within a UAV radius of 600 meters. Therefore, 3D spatial information is used for calculating vertical network.

The result of this paper will be used to UTM (UAV Traffic Management) system. Further study will be focused on algorithm for optimal path finding.

Leveraging sUAV Capabilities in the GIS World
Jason Amadori, GISP, Principal Business Development Director, Data Transfer Solutions, LLC / Atkins, N.A., Orlando, FL

ABSTRACT TEXT: Small Unmanned Aerial Vehicles (sUAV) are becoming widely available and can be used to create GIS datasets using products generated from the collected imagery. The imagery can be processed to produce 3D models, LiDAR point clouds and other geospatial products.

This session will focus on the following sUAV processes:
1. Project Planning
2. Data Acquisition
3. Data Processing
4. 3D Products
5. Integration with GIS

Learning Objective I: Understand how imagery can be used to create 3D models and how these models can be used in a GIS framework.

Learning Objective II: Understand the process for creating GIS vector datasets from the 3D models for use in Enterprise GIS.

Case Studies:
- Calculating the surface volume of a complex concrete structure.
- Calculating the volume of a recycled materials site.

Skills:
- Understanding the acquisition capabilities of a sUAV.
- Understanding how to create GIS vector data sets from sUAV imagery and data.