PEMA NG9-1-1

The Pennsylvania Emergency Management Agency is leading the nation in adoption of NENA NG9-1-1 guidelines and standards. As PEMA and the Commonwealth's Public Safety Answering Points (PSAPs) transition to an NG9-1-1 environment, the need for a robust Geographic Information System (GIS) capability increases rapidly. The advanced location capabilities of GIS are the foundations of NG9-1-1; therefore, PEMA has partnered with Quantum Spatial, Inc, the nation's largest independent geospatial data firm, to acquire and process high quality orthoimagery and remote sensing data that is invaluable in effectively supporting vital tools in routing and Computer-Aided Dispatch (CAD) systems located in county based PSAPs and GIS systems across the state.

NG9-1-1 and the Role of QSI

The evolution of emergency calling beyond the traditional voice 9-1-1 call has caused the recognition that our current E9-1-1 system is no longer able to support the needs of the future. Next Generation 9-1-1 (NG9-1-1) networks replace the existing narrowband, circuit switched 9-1-1 networks which carry only voice and very limited data. A highly standardized system is essential and critical to seamlessly support communications and data transfer across county, state, and international borders, and across the multitude of emergency response professions and agencies, from traditional PSAPs to Poison Control Centers, trauma centers, Coast Guard, and disaster management centers.

NG9-1-1 fully embraces GIS technology, bringing it into the center of the 9-1-1 system. In any 9-1-1 call, there are two GIS-based core services at play: the emergency call routing function, which dictates where to send the call for service, and the location validation function, which determines whether an address is valid for routing and dispatch. For these NG9-1-1 core services to function properly, an authoritative, GIS-based collection of features—such as street centerlines, address points, call center jurisdiction boundaries, and the operating areas for emergency service providers must exist.

QSI will provide the foundation for these GIS services with high quality, orthorectified aerial imagery from which various levels of GIS data can be derived and implemented. Acquisition of this data is achieved with up to 7 aircraft flying a total of 50,341 miles over 1,007 flight lines utilizing the Leica ADS100 pushbroom sensor for full state coverage. Additional full state updated imagery will be acquired by phases in 3 year rolling cycles.

PA NG9-1-1 Estimated Cost Savings vs Upgrading and Maintaining Legacy Systems

Reduction of over $13.7 million in capital costs and $2.48 million annual operating expenses.

Projected ROI - 34:1 in under 3 years.
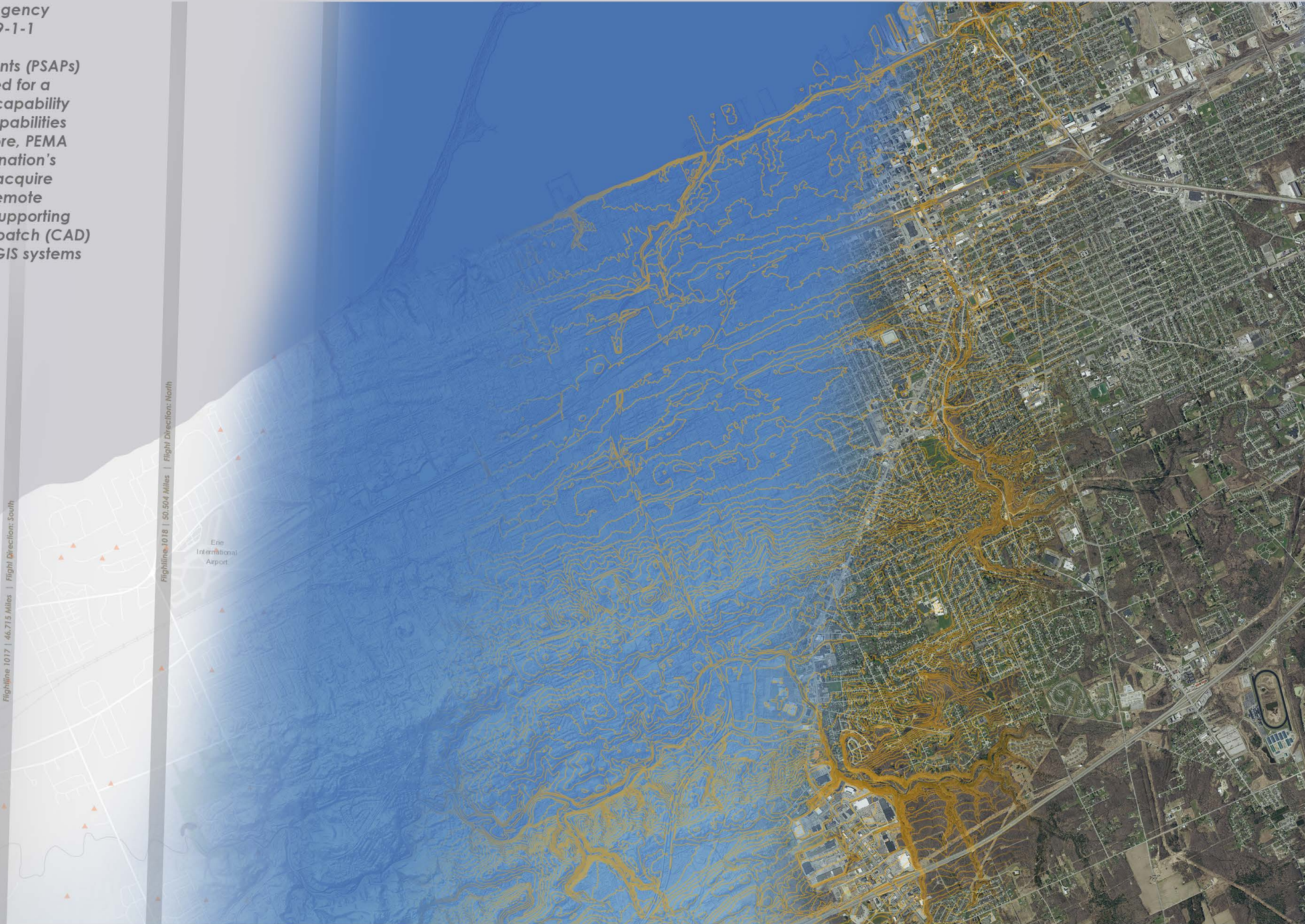
ACQUISITION / AT

Ground Control
Flight Planning
Aerial Triangulation

DEM GENERATION /ORTHORECTIFICATION

3 Meter DEMs Derived From QSI Captured PAMAP LiDAR
Atmospheric Color Correction to L0/L1 Imagery
Validation of Relative and Absolute Accuracy of Orthorectified Images

MOSAICKED IMAGERY - 15cm

L2 Imagery Color Corrected and Seamed
Mosaicked to PEMA Specified Layout
QA/QC to Stringent QSI Standards

Poster illustrating the purpose and phases of the PEMA NG911 project.