



STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

GLORIA JEFF
DIRECTOR

MR-RST Technology Exchange Meeting State DOT Roundtable

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Michigan Department of Transportation
Geodetic Surveying, Topographic and Aerial Mapping Services Unit
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Responsibilities of the Geodetic Surveying, Topographic and Aerial Mapping Services Unit

- Organizational structure
 - A new Governor, Jennifer Granholm, was sworn in this year
 - A new Director for MDOT, Gloria Jeff was appointed
 - Aerial Mapping Unit is part of a combined unit also responsible for Design surveys, automation support, standards and training
 - Unit currently consists of six people in one central office to cover the entire state
 - Currently under the Operations- Structures Section of the Design Support Area
- Original role was to provide planning and design grade base mapping for a Central Office group of 4 Road Design squads, 2 Early Preliminary Planning squads and all 7 Regions
- Current responsibilities of Aerial Mapping Services Unit will stay mostly the same
 - The functions of the rest of the unit are being shifted and reorganized
 - The entire Design Support Area is in the process of Reorganization
 - Deployment of Central Office Design Engineering staff to the 7 Regions
- Aerial Mapping Services Unit Functions
 - In-House Production
 - Photogrammetric Project Planning
 - Airplane and Aerial Photography
 - Targeting and Ground Control for Aerial Mapping GPS Crew in Unit
 - Photogrammetric AAT and Map Compilation
 - Ortho-photo Production
 - Consultant Project Management
 - Special Requirements
 - Helicopter and Very Low Altitude Photography
 - LIDAR to Assist in Rapid Ortho-photo Generation
 - Large projects going beyond present In-house capacity
 - Aerial Mapping included as part of larger Mapping/Engineering Design Package and awarded to a Design Team of Consultants

- **Uses of Mapping Products**
 - Early Planning
 - Preliminary Design
 - Design Grade Engineering Plans
 - Public Hearings on Project
 - Traffic and Route Studies
 - Evidence in Highway related Litigation
 - Other State Agency Use – DNR, DEQ, etc.

- **Future direction of Aerial Mapping Services Unit**
 - Expand Softcopy capabilities
 - Adapt Photogrammetry as needed to merge with new technologies such as Laser Scanning and LIDAR
 - Use of Aerial mapping with ground survey or other data in providing a hybrid merged mapping product

Programs and Funding

- **The Governor and MDOT's Director have changed the focus for the department to "Preserve First"**
 - The new transportation policy will focus on improving roads rather than expansion
 - The goal will be to have 90% of Michigan's roads in good condition by 2007
- **Funding for transportation projects comes from gasoline and diesel taxes and the federal government**
 - Like many states Michigan is in a budget crisis for most of our state government
 - MDOT is currently a donor state and is aggressively pursuing increased funding coming back from the federal government
 - Michigan's transportation budget is currently about \$3.1 billion

New Initiatives

- **Aerial Mapping Services**
 - Lower altitude photography
 - Increasing use of computer-aided and automated project setup
 - Delorme flight planning
 - Beginning use of airborne GPS data to supplement ground control
 - Increased demand for Ortho-photos only and in conjunction with mapping
 - Add another soft-copy station
 - Better tracking and reporting final accuracies of mapping
 - Obtain new aircraft
 - Add IMU to Camera

- **Geodetic Surveying and Topographic Services Unit**
 - Laser Scanning
 - Densification of GPS CORS Network stations across state

- Height Modernization project to provide elevations to CORS stations

Challenges and Barriers Encountered

- Lack of staff
- Lack of experience and expertise
- Data format compatibility problems in transferring data between soft-copy and analytical stations
- No specific accuracy standards applicable directly to transportation projects
 - Higher accuracy for hard surface data
 - Lower accuracy for terrain data
 - Presentation of accuracies for mixed data types and hybrid projects
- Funding Issues and Appearances of New Purchases

Issues for Research

- Smooth out data translation between soft-copy and analytical platforms
- Accuracy document covering mixed mapping accuracy data
 - Very low altitude photography
 - Hard surface data
 - Terrain data – lower accuracy
 - Methods for QA/QC to meet these accuracies
- Other software that provides more comprehensive flight planning and setup
 - Outputs ASCOT data, target plan, etc.
- Remote Sensing – more automated feature recognition from photography

Contact Information

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