
Annex E – THRUST 1 – GEOSPATIAL TERRAIN AND MOBILITY MAPPING

Note: This Annex appears in its original format.



Geospatial Terrain and Mobility Maps

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Agenda

- **Introduction to Thrust Area 1 and geospatial information**
- **Goals of Thrust Area 1**
- **Methodology for NRMM geospatial data**
- **Collecting and organizing geospatial data (Data sources and geodatabase)**
 - Elevation data
 - Soil data
 - Related data
 - Using in a geodatabase
- **Intermediate formats for processing**
 - Terrain files
 - GeoTIFF
 - ? - TIN based interchange for vendor input
- **Visualizing mobility outputs**
 - Mobility results
 - Derivative products

Introduction

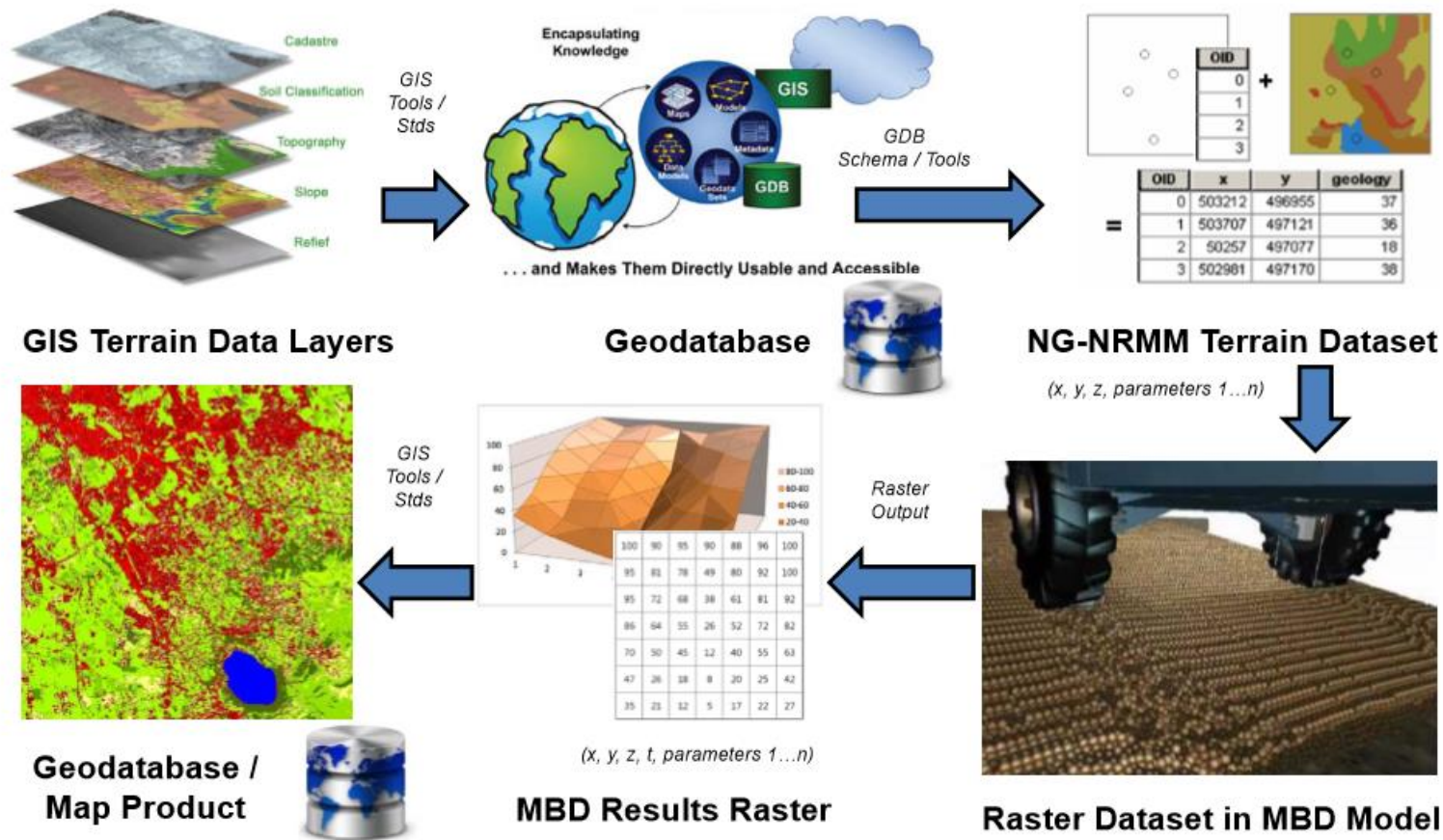
Country	Name
Czech Republic	Marian Rybansky
Estonia	Kersti Vennik
Croatia	Marko Zecevic
Germany	Petra Zieger
South Africa	Phumlane Nkosi
South Africa	David Reinecke
USA	Matthew Funk
USA	Brian Wojtysiak
USA	Susan Frankenstein
USA	Shoop, Sally
USA	Andy Jones
USA	Mark Cammarere
USA	Jeffrey Niemann
USA	Joseph Scalia

Goals

- **Identify geospatial data types and properties to meet terramechanical requirements**
- **Develop method for ingesting geospatial data from various formats**
- **Develop process for transferring geospatial information to terramechanics**
- **Recommendations for visualizing mobility results**

Goals

Methodology



Geospatial data

- <nature of geospatial data>
- <various formats>
- <scale>

Methodology

Collecting and Organizing

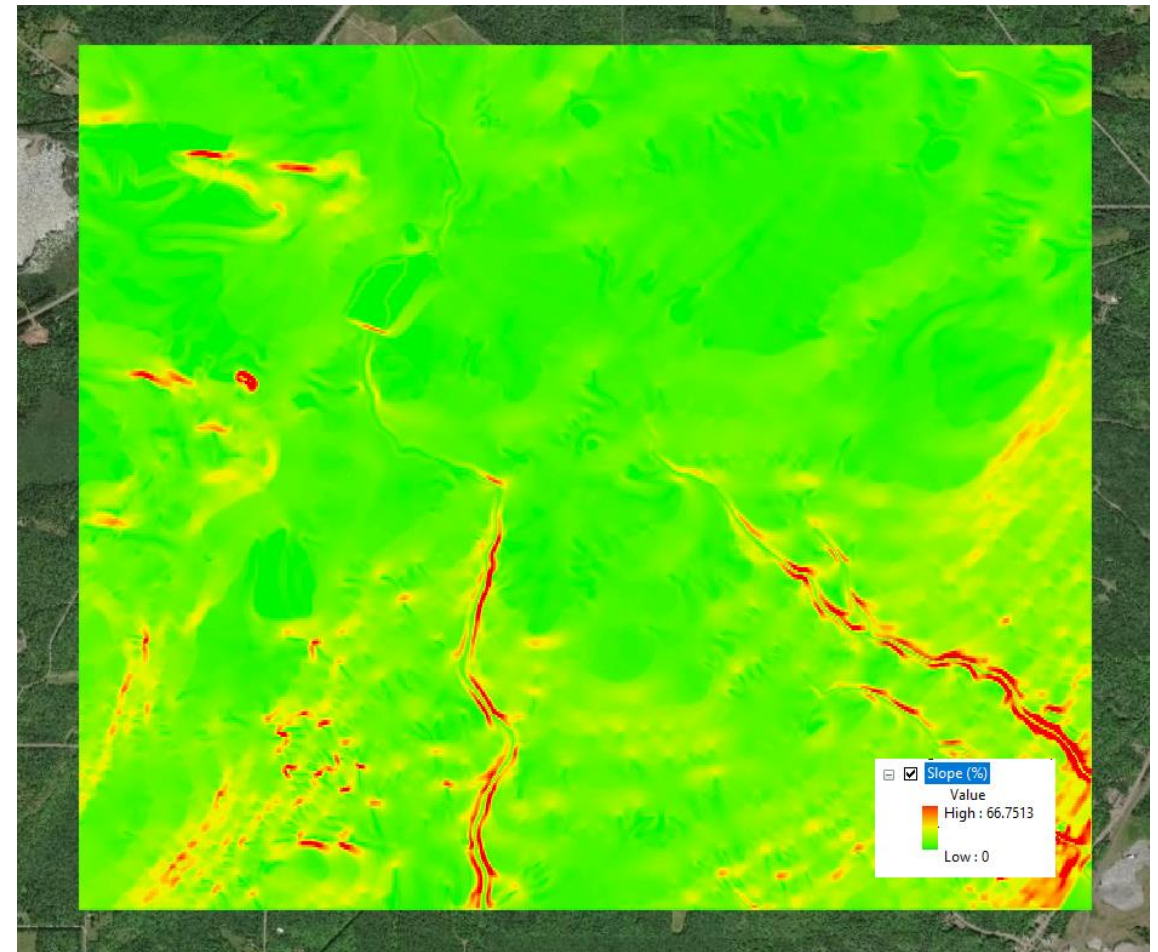
- **Input data varies greatly**
- **Source, format, resolution, recency, intended use, etc.**
- **Combine attribution AND geometry**

Collecting and Organizing

- **Develop model for data**
- **Start with existing NRMM (legacy)**
- **Include terramechanic/simulation requirements**

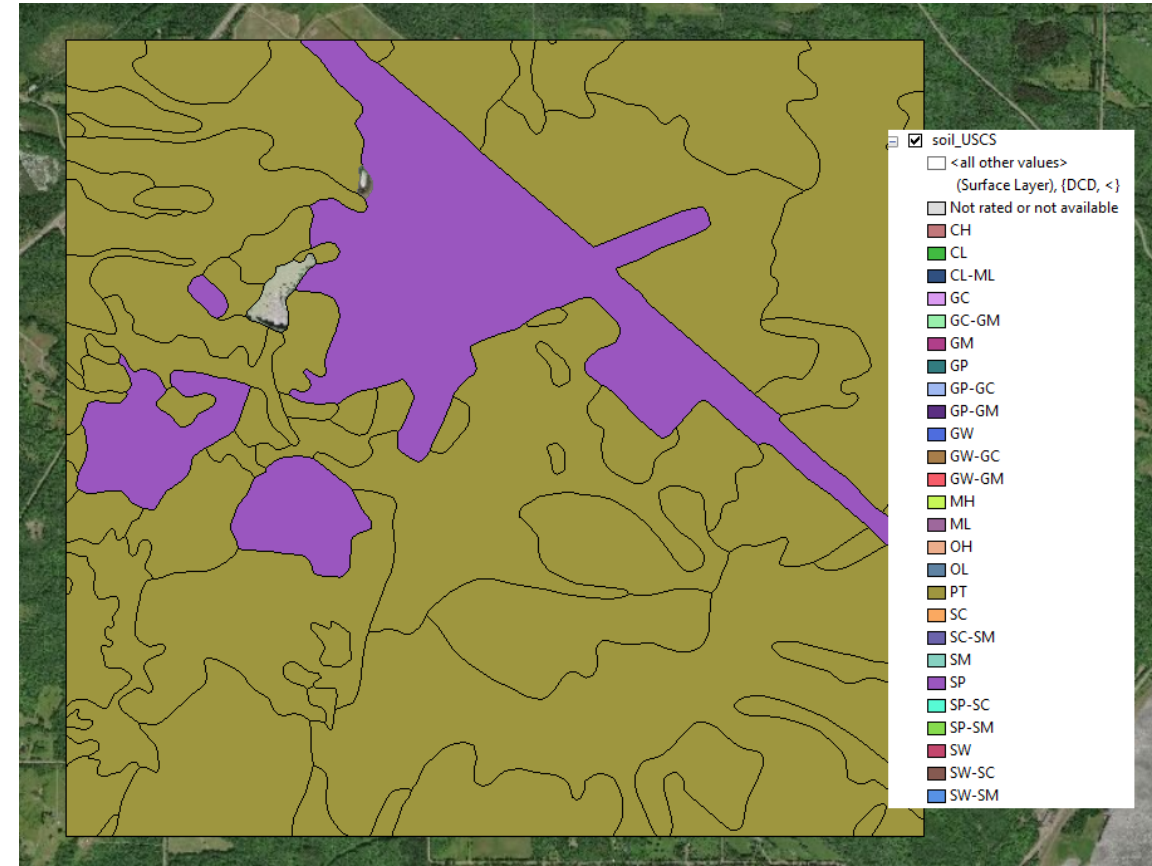
Elevation and Derivatives

- Base elevation data as surface
- Derived data
 - Slope – change in elevation
 - Aspect – Slope-normal direction



Soil Properties

- Soil properties
- Soil code
- Land use
- Used to describe mechanical properties



Soil Moisture

- **<input from TSC/CSU>**

Geodatabase

- **Used to aggregate geospatial data**
- **Combine feature geometry and attribution**

Intermediate Formats

- **Transfer from geodatabase to simulation models**

Intermediate Formats – Terrain File

- **Modified version of legacy NRMM terrain files**
- **ASCII-based files**

Intermediate Formats - GeoTIFF

- **GeoTIFF**
- **Thematic image format**
- **Each file as separate property**

Input to Terramechanics

Visualizing outputs

- **Output of simulation modeling as geospatial data**
- **Terramechanics**
- **Uncertainty**

Secondary outputs

- **Derived from simulation outputs**
- **Operational impacts**
- **Least-cost path/Optimal route**

Future work

- **Improve intermediate format**
 - Standardized scientific formats
- **Simulation by environment: off-road, on-road, urban**
- **Develop methodology to determine soil properties from remotely sensed data**

