Tools for Topographic Cartography

John Grammer and Kevin Palmer
Topographic Map Production
Produce, Manage, and Share Authoritative Content
Topographic Map Production: Extensions

Production / Defense Mapping

Workflow Manager
Multi-Scale Mapping

Section Subhead
Multi-Scale Mapping
One database, multiple products

Best Scale Data | Automation | Multi-Scale Product
Multi-Scale Mapping

Best Scale Data

Prepare Data -> Data Generalization -> Prepare Cartographic Data -> Cartographic Finishing

Data Automation

Map Automation
Multi-Scale Mapping

Best Scale Data

Prepare Data

Data Generalization

Prepare Cartographic Data

Cartographic Finishing

Multi-Scale Products

Data Automation

Map Automation
# Generalization Themes

<table>
<thead>
<tr>
<th>Transportation</th>
<th>Structures</th>
<th>Skin-of-the-Earth (SOE)</th>
<th>Hydrology</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Road and Rail Networks</td>
<td>• Create Built-up Areas</td>
<td>• Maintains topology of landcover features</td>
<td>• Maintains hydrology network</td>
<td>• Basic simplification and conversion of other types of features</td>
</tr>
<tr>
<td>• Transportation structures (bridges,</td>
<td>• Thin individual point and polygon buildings</td>
<td>(hydro, vegetation, bare ground, etc.)</td>
<td>• Natural and Man-made hydro features</td>
<td></td>
</tr>
<tr>
<td>culverts, etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Generalization Techniques

- Simplify
- Smooth
- Eliminate
- Aggregate
- Collapse
- Thin
- Exaggerate
ArcGIS 10.x - Generalization

50K to 250K Generalization
- Output Intended for 250K Product Creation
- Stand-alone toolbox with models and scripts
Generalization in Pro
Development Approach for Defense and Production Mapping

- One set of geoprocessing models
- Not dependent on data schema
- Not dependent on input or output scale
Defense Mapping and Production Mapping - Pro 2.5

In the Box

Topographic Production GP Tools

- Cartography
- Data Management
- Features
- Generalization
  - Eliminate Polygon
  - Export Generalized Data
  - Fill Gaps
  - Identify Narrow Polygons
  - Import Generalized Data
  - Polygon To Centerline
  - Remove Small Lines
  - Thin Hydrology Lines
- Geodatabase
- Topology
- Validation

Included with Product Data Installers

Theme-Based Models

- 0 Prepare.tbx
- 1_Trans.tbx
- 2_Struct.tbx
- 3_SOE.tbx
- 4_Hydro.tbx
- 5_Generic.tbx
- 6_Finalization.tbx
- Generalization Tools.tbx

Generalization Rules

- CTM 25K to 50K (Production Mapping)
- TDS 50K to 250K
- MGCP 50K to 250K (Defense Mapping)
Generalization
Multi-Scale Mapping

Best Scale Data

Prepare Data

Data Generalization

Prepare Cartographic Data

Cartographic Finishing

Multi-Scale Products

Data Automation

Map Automation
Support Files

- **Independent Install**
  - Default Location
    - C:\Users\Public\Documents\Defense Mapping\Product Files
  - Custom Location

- **Gdb**
  - Layouts
    - Offsets
    - Procedures
    - Styles

- **Mgcp**
  - BatchJobs
  - Cartography
  - DataConversion
  - Schema

- **Generalization**
- **Geonames**
- **GridTemplates**
- **MaskingRules**
- **Mgcp**
- **ReferenceData**
- **Tds**
- **Workflows**
Map Templates

- **MGCP Topographic Map**
  - MTM50
  - MTM100

- **TDS Topographic Map**
  - TM25
  - TM50
  - TM100
Dynamic Elements

- Elevation Guide Bar
- Meter Reference Guide
- Slope Guide
- TM North Arrow
Labels & Symbols

- Label Expressions (Python)
- Symbol Expressions (Arcade)
  - Unique value renderer
Map Production: Preparing Data

- Extract data for Map
- Generate Contours
- Generate Spot height’s
- Ancillary Map Frame Data
Map Production: Cartographic Refinement

- Feature Offsets
- Feature Thinning
- Masking from Rules
Map Production
Presenter(s)
Map Production Workflows
ArcGIS Pro Workflow Goals

- Simple workflows for technicians to use
- Workflows optimized for Pro and integrated with Portal
- Better tracking of overall job progress
- Better tracking of work accomplished by individuals
- Ability to add in more project management and planning capabilities
Production Management

- Using workflow driven systems
  - Increase productivity
  - Preconfigured and repeatable processes
  - Simplification and automation
- Build in quality
  - Process control/configuration management
  - QA/QC process enforcement
  - Accountability
Workflow Production Lifecycle

- Create Jobs
- Data Preparation
- Cartographic Refinement
  - Feature Conflict
  - Annotation
  - Masking
- Quality Control
- Job Status
Enterprise Map Production

Section Subhead
Topo Product On Demand (POD)

- Cartographic Production App
- Self-service
  - Defense Products
  - Civilian Products
  - Custom Products
  - Both Maps and Data
Product on Demand

Presenter(s)
Road Map
Section Subhead
Topographic Mapping Extensions
Production Mapping – Defense Mapping

2.4 Equivalency Focused Release
Geoprocessing Tools
Generalization Tools
Map Elements
Symbology

2.5 Data Extraction / Cartography Workflows
Geoprocessing Tools
Workflows
Map Layouts

2.6 Map Automation
Generate Product Application
Data Ingest / Field Edit workflows

2.7 Automated Workflows
Server object Extension (SOE)
NextGen POD
Planning Production Manager
Questions?
Section Subhead
Print Your Certificate of Attendance

Print Stations Located in 150 Concourse Lobby

**Tuesday**

12:30 pm – 6:30 pm
Expo
Hall B

5:15 pm – 6:30 pm
Expo Social
Hall B

**Wednesday**

10:45 am – 5:15 pm
Expo
Hall B

6:30 pm – 9:30 pm
Networking Reception
Smithsonian National Museum of Natural History
Please Share Your Feedback in the App

Download the Esri Events app and find your event

Select the session you attended

Scroll down to "Survey"

Log in to access the survey

Complete the survey and select "Submit"