Esri Defense Mapping
Cartographic Map Production
Bo King & G.C. Rice
Agenda

• Solution Overview

• Desktop Cartographic Production

• Multi-Scale Mapping using Generalization

• Product On Demand App (POD)
Solution Overview

Esri Defense Mapping
Esri Defense Mapping
Leveraging the ArcGIS Platform

System of Engagement

Apps

Web GIS

Services

Systems of Record

Desktop

Server
Esri Defense Mapping

Produce, Manage, and Share Authoritative Content

- Defense Mapping as a Platform
  - **Produce** Authoritative Content
  - **Manage** Production Environment
  - **Share** and Collaborate
Providing Authoritative Defense Content

Integrated across the ArcGIS Platform

- Specifications
- Data Models
- ETL
- Workflows

Authoritative Content

Disconnected Editing
- Land Operations
- Map Applications
- Executive Access

Produce

- Server
- Online Content and Services

Manage / Share
Esri Defense Mapping
An Extension to the ArcGIS Platform

- Specification Driven
- Geoprocessing Toolsets
- Predefined Edit Templates
- Quality Assurance / Control
- Cartographic Symbology
Cartographic Production

Esri Defense Mapping for ArcGIS Pro
Cartographic Production
Expediting the Map Creation Process
ArcGIS Pro
Esri Defense Mapping for ArcGIS Pro

- Defense Mapping Extension
  - Edit Tools
    - Modify Features
    - Create Features

- Topographic Production Toolbox
  - Cartography
  - Data Management
  - Workflow
Edit Tools
Esri Defense Mapping for ArcGIS Pro

- Populate Angle
- Geoname to Feature
- Buildings
- Difference Polygon
Geoprocessing Tools
Esri Defense Mapping for ArcGIS Pro

• Cartography
  - Banding
  - Cartographic Refinement
  - Features
  - Layout

- Generate Elevation Bands
- Apply Building Offsets
- Apply Masks From Rules
- Apply Visual Specification To Map
- Calculate Bridge Offsets
- Make Masks From Rules
- Thin Spot Heights
- Generate Adjoining Sheets Features
- Generate Elevation Guide Features
- Generate Spot Heights
- Generate Topographic Contours
- Identify Contours
- Make Grids And Graticules Layer
- Populate Map Sheet Info
Geoprocessing Tools
Esri Defense Mapping for ArcGIS Pro

- Data Management
  - Features
  - Generalization
  - Geodatabase
  - Topology
  - Validation
Geoprocessing Tools
Esri Defense Mapping for ArcGIS Pro

• Workflow
  - Properties
  - Tasks
Support Files
Esri Defense Mapping for ArcGIS Pro

• Independent Install
  - Default Location
    - C:\Users\Public\Documents\Defense Mapping\Product Files
  - Custom Location
Map Templates
Esri Defense Mapping for ArcGIS Pro

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

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

Esri Defense Mapping for ArcGIS Pro

- Elevation Guide Bar
- Meter Reference Guide
- Slope Guide
- TM North Arrow
Labels & Symbols
Esri Defense Mapping for ArcGIS Pro

- Label Expressions (Python)
- Symbol Expressions (Arcade)
Map Production in ArcGIS Pro

Demo
Data Generalization for Multi-Scale Mapping
Multi-Scale Mapping
One database, multiple products
Multi-Scale Mapping

Best Scale Data

Prepare Data

Data Generalization

Prepare Cartographic Data

Cartographic Finishing

Multi-Scale Products

Data Automation

Map Automation
Generalization Techniques

- Simplify
- Smooth
- Eliminate
- Aggregate
- Collapse
- Thin
- Exaggerate
Generalization Tools in ArcMap

- **Analysis**
  - Erase
  - Identity
  - Buffer
  - Graphic Buffer
  - Near
  - Generate Near Table

- **Cartography**
  - Aggregate Points
  - Aggregate Polygons
  - Collapse Road Detail
  - Create Cartographic Partitions
  - Delineate Built-Up Areas
  - Merge Divided Roads
  - Simplify Building
  - Simplify Line
  - Simplify Polygon
  - Smooth Line
  - Smooth Polygon
  - Thin Road Network
  - Detect Graphic Conflict
  - Propagate Displacement
  - Resolve Building Conflicts
  - Resolve Road Conflicts
  - Feature Outline Masks
  - Update Override

- **Conversion**
  - Feature class to feature class
  - Table to Table

- **Data Management**
  - Integrate
  - Add Geometry Attributes
  - Copy Features
  - Delete Features
  - Feature To Line
  - Feature To Point
  - Feature To Polygon
  - Feature Vertices to Points
  - Minimum Bounding Geometry
  - Multipart To Singlepart
  - Repair Geometry
  - Split Line At Vertices
  - Unsplit Line
  - Add Field
  - Calculate Field
  - Append
  - Copy
  - Delete
  - Dissolve
  - Eliminate Polygon Part
  - Make Feature Layer
  - Select Layer By Attribute
  - Select Layer By Location
  - Get Count

- **Spatial Analyst**
  - Topo To Raster
  - Raster Calculator
  - Polygon To Raster
  - Point To Raster
  - Raster to Point

- **Model Only Tools**
  - Select Data
  - Calculate Value
  - Iterators
  - Parse Path
  - Get Field Value

- **Production Mapping**
  - Aggregate Polygons
  - Calculate Visual Specification
  - Convert Polygons
  - Delete Dangles
  - Delete Polygons and Extend Lines
  - Extend Polygon Sides
  - Fill Gaps
  - Generalized Shared Features
  - Increase Line Length
  - Increase Polygon Area
  - Production Centerline
  - Production Clip

- **Defense Mapping**
  - Hydro Centerline
  - Resolve Building Conflicts

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- **Topographic Production**
  - Aggregate Polygons
  - Eliminate Polygon
  - Export Generalized Data
  - Import Generalized Data
  - Extract Data
  - Load Data
  - Remove Small Lines
  - Delete Polygons and Extend Lines
  - Extend Polygon Sides
  - Fill Gaps

Color Scheme:
- Available in Pro (2.4)
- In Pro - Renamed/Moved
- New in Pro
- Not yet in Pro
Leverage Tools Within Models...
...and Submodels
...and sometimes Python
ArcGIS 10.x - TDS Generalization in Esri Defense Mapping

50K to 250K Generalization of TDS 6.1 Data Schema
- 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 2.4

In the Box

Topographic Production GP Tools

- Generalization
  - Eliminate Polygon
  - Export Generalized Data
  - Fill Gaps
  - Identify Narrow Polygons
  - Import Generalization 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_General.tbx
- 6_Finalization.tbx
- Generalization Tools.tbx

Generalization Rules

CTM 25K to 50K (Production Mapping)

TDS 50K to 250K (Defense Mapping)
Generalization in ArcGIS Pro 2.4

G.C. Rice
Topo Product On Demand (POD)
Esri Defense Mapping Web Application

- Installed with Esri Defense Mapping for Server
- Cartographic Production App
- Self-service
  - Defense Products
  - Civilian Products
  - Custom Products
  - Both Maps and Data
Product on Demand Application
G.C. Rice
Additional Sessions

• Esri Production Mapping: Advanced Cartography
  - Thursday @ 2:30 PM
  - SDCC - Room 30 B

• Showcase Locations
  - Mapping & Visualization
  - Mapping & Statistics
  - Defense & Intelligence
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Log in to access the survey

Complete the survey and select “Submit”