Using GIS to Help Support and Sustain U.S. Army Ranges - A Global Approach

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Agenda / Objectives

- Provide a brief overview of the Sustainable Range Program (SRP)
- Provide an overview of the SRP Geospatial Support Center
- Highlight the agencies, installations, and offices that are directly supported by the SRP Geospatial Support Center
- Highlight procedures, products, and tools created in support of the SRP
- Highlight several projects executed at the SRP Geospatial Support Center
- So, how can Parsons support your geospatial mission?
Sustainable Range Program (SRP)

- DoDD 3200.15 signed in August 2003
  - Established policy for the sustainment of all DoD ranges
- AR 350-19 established in September 2005
  - Defines the SRP and the responsibility within the SRP
- The Army's overall approach for improving the way in which it designs, manages, and uses its ranges to ensure long-term sustainability
- Maximizes the capability, availability, and accessibility of ranges and training lands to support doctrinal training and testing requirements, mobilization, and deployments under normal and surge conditions
The SRP includes two core programs, under the direction of Headquarters Department of the Army (HQDA) G-3 Training Simulations Division (DAMO-TRS)

- **Range and Training Land Program (RTLP)**
  - Range Operations
  - Range Safety
  - Range Modernization

- **Integrated Training Area Management (ITAM) Program**
  - Land Rehabilitation and Maintenance (LRAM)
  - Range and Training Land Assessment (RTLA)
  - Sustainable Range Awareness (SRA)
  - Training Requirements Integration (TRI)
SRP Geospatial Support Center

- As a tenant on Fort AP Hill, have been serving the Army since 1998
- Previously called the SRP GIS Regional Support Center

So why the name change?

- Increased focus on all HQ (G3/5/7) Range and Training Area analysis
- Haven’t been regional since 2006 (Just didn’t want to lose the RSC name)
- Dictate GIS guidance and standards for all Army Ranges and TAs
SRP Geospatial Support Center

Mission Oriented Operation
- Designed to execute achievable goals and tasks
- Provide central service and support to the SRP

Structured Operation
- Standard Operating Procedures.
- Documented tool and application protocols

Flexible Implementation
- Sustainable Range Program is dynamic
- Army ranges and training are dynamic

Basic Goals
- Increasing the utility and cost effectiveness of GIS
- Increasing data compatibility
- Eliminating redundant GIS efforts
- Creating standardized products (Maps, data, etc.)
Geospatial Support Center Teams

- Range Support Team
- Mapping Support Team
- Data Development Team
- Document Support Team
- Quality Control Team
Who we support

Support over 225 Installations / Training Areas / LTAs / Sites
- Installations are divided into Tiers (Tiers 1 – 3)
- Size of Installation, Installation Mission, Active Duty Units, etc.
- Tiers dictate the level of GIS support we provide
GIS Support Structure

- **Sites with a GIS Operator or that are regionally supported**
  - Larger SRP Installations (Tier I and II)
  - Operated locally and supported by Geospatial Support Center ~ 175 Sites

- **Sites without a GIS Operator**
  - Smaller SRP Installations (Tier III)
  - Centrally supported by Geospatial Support Center ~ 56 Sites

★ **Support includes:**
  - SRP GIS Training Program
  - Military Installation Map (MIM) Development
  - Standards for Hardware, Software, Geospatial Data
  - Support in the procurement of Vector Data and Visualization Data/Imagery
  - RFMSS Graphic Fire Desk Data Support
  - GIS Technical Support (Centralized Expertise)
  - Testing and Evaluation of GIS software/applications
  - Data Development / Acquisition / Standardization
  - Site Visits (Training and GPS)
  - Data Repository for HQDA Analysis (Dedicated Offsite Back-ups)
  - Augment Existing Support
SRP GIS Data Repository

- Maintain a database for all SRP Geospatial data
  - Data delivered during Installation QC analysis
  - Includes Non-SRP MIM Support Data
- Merged dataset for inter-installation analysis
- Provide Recoverable Installation backup
  - Offsite Disaster Recovery
- HQDA/ACOM analysis and data sharing
SRP Tools and Application Support

- Execute and document Software Qualification Test (SQT) for all tools
- Provide all technical support to Army range community

- Military Installation Map Toolkit (MIMT)
- Range Managers Toolkit (RMTK)
  - Surface Danger Zone (SDZ) Tool
  - Range Development and Planning Tool (RDAP)
  - Explosive Training Range (ETR) Tool
  - On Range Ammunition Handling (ORAH) Tool
  - Noise Tool (Planning Tool)
- SRP Metadata Editor Tool (SMET)
  - In Development
- SRP GIS Tracker

All tools are downloadable on SRPWeb

https://srp.army.mil
GIS Training Support

- Online SRP GIS Professional Training Course
  - Overview of SRP GIS Program
  - Protocols and Procedures
  - Tips to best support the installation

- SRP GIS Technical Articles
  - Topology Tricks and Tips
  - Quality Assurance Plans for GIS Data
  - Military Installation Map
  - GeoPDF

- SRP GIS Procedural “How-to’s”
  - How to make a data dictionary
  - How to use the SRP QAP geodatabase

- GIS for Range Staff Course
  - Range Safety Tools and basic GIS training

- Workshops and Conferences
SRP Data Standards

- Integral component in defining all SRP Geospatial standards
  - SRP GIS Quality Assurance Plans (QAPs)
  - Defined by the HQ Proponency matrix (DPTMS/Range)

- Created
  - SRP GIS Symbology
  - SRP GIS Map Templates
  - SRP GIS Technical Documents
  - SRP GIS Topology Rules
  - SRP GIS Metadata Standard
  - SRP GIS Data Dictionary
  - SRP Template Geodatabase
Data Development Team Projects

- Following all geospatial standards and SRP protocols, create and maintain geospatial data for 56 installations in support of land management and mission planning
- Created and maintain over 600 military operation feature classes for the 56 installations
- Visit 25 – 30 Installations per year for GPS data collection
- Since this data is used for safety, driving range development decisions, stewardship; all data is GPSed to include every firing point, target, etc.
- Very important as data drives everything we do and support.
Map Development Team Projects

Military Installation Maps (MIM)

- Created a MIM template (.mxt) based on layout of previously produced NGA MIMs and supporting documentation.
- Created standard MIM symbology which contains symbols, labels, and tints based on existing DoD and NGA standards.
- Created MIM Production Guidance Documentation

MIM Production Guidance Documentation

The SRP GIS Program has worked closely with Army G2 and NGA to standardize symbology and graphics in the MIMs they produce. As a result of these collaborations, the MIM Guidance Documentation (MIMGD), are available for download below.

- Memorandum - Production of Military Installation Maps (MIMs)
- Production Specifications for Military Installation Maps (MIMs)
- Appendix A - Required Data Layers for the MIM
- Appendix B - Additional SRP Proprietary Data Layer Requirements
- Appendix C - Non-Proprietary Data Layer Requirements
- Appendix D - MIM Spacing & Font Requirements
- Appendix E - MIM Style Examples
- Appendix F - FAQ Regarding MIM Development and Quality Assurance
- Appendix G - MIM Finishing Review Checklist
- Appendix H - MIM Approval Signature Document

MIM Style (An organized collection of predefined colors, symbols, properties of symbols, and map elements that make up a MIM mapping product.)

MIM Template (A template is created to make it easy to reuse or standardize a layout, or even the same data on different maps. You do not have to manually reproduce the common parts of the map. Like maps and layers, templates can standardize the maps that we produce.)
Map Development Team Projects

Military Installation Maps (MIM)

- G-2, SRP, and NGA signed Memorandum of Agreement (MOA) on 9 Feb 09 to formalize support for MIM production

- 32 MIM sheets have been finalized and validated by SRP since 2007

- 29 of these have been printed by NGA, and are currently in stock at DLA, with 2 more ready for printing

- Export finalized MIMs to GeoPDF format, and they are posted to SRPWeb as well as the Army Geospatial Center (AGC) website, and are available for download
Map Development Team Projects

Custom Map Production

- Training Scenarios
- Land Navigation
- Range Planning
- Range Analysis
- Situational Maps
- Emergency Response
- MOUT Site Maps
- Impacts to Training
- Range Safety
- DoD Proximity Maps
- Land Management
- Land Disturbance
Range Support Team Projects

Range Complex Master Plan (RCMP) Support

- Provide GIS Support by (GPSing) current range data to support installation plan
- Collect natural resource, environmental, and public works data to help identify fit and placement of new range project
- Use the RDAP and SDZ tool to identify range location taking into account all factors:
  - Environmental conflicts
  - Infrastructure (Fiber optics, electrical,…)
  - Topography

Charrette Support

- Range project has been approved and team goes down range to fine tune the analysis using the same techniques used during the RCMP
- Provide GIS Support to the TCM-Live Range modernization (Charrette)
Quality Control Team Projects

Map Production Quality Control

- SRP MIM Production Team performs QA to ensure consistency with symbology, spacing, and layout requirements (report card)
- Created MIM finishing review checklist for users creating their own MIM
- Once validated by SRP, the MIM is sent to NGA for inspection.
- Checked for these items:
  - Absolute horizontal error
  - Relative horizontal (feature to feature) accuracy
  - Circular Map Accuracy Standard (CMAS)
  - Absolute vertical error
  - Relative vertical error
Quality Control Team Projects

Data Development Quality Control

- The RSC is responsible for performing QC on all SRP geospatial data and products (> 225 installations)
- Created and published the following QC documentation
  - SRP GIS Quality Control Protocol
  - SRP GIS Quality Control Protocol Report (Report Card - %)
- Using PLTS and scripts to test:
  - Topology
  - Spatial Accuracy
  - Complete Metadata
  - Complete Attribution
Technical Support

- Annually, the RSC averages over 600 GIS technical support calls
- Topics include:
  - RMTK (All tools)
  - MIM Development
  - QAP/Data Development
  - Data Acquisition
- The RSC created and maintained a technical support log tracker to manage and track all SRP GIS related questions
  - This allows for searching on answers to redundant questions
SRP GIS Website Statistics

- SRPWeb (https://srp.army.mil)

- From 1 Oct 07 to present, there were 39,285 individual SRP GIS webpage hits with over 22,000 SRP GIS files downloaded from the SRPWeb library to include:

  - 7,523 Military Installation Maps
  - 5,653 guidance documents
  - 1081 “How-To” documents
  - 3,920 tools
  - 672 SRP GIS Technical Articles
  - 531 SRP GIS Courses
In Summary

- Provided a snapshot of the work executed at the SRP Geospatial Support Center
- The SRP Geospatial Support Center is:
  - Mission Oriented
  - Structured Operation
  - Striving for standard products and data
  - Dynamic and Flexible
  - GIS Center of Excellence
  - Time tested success (12+ years)
Points of Contact

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