

Using GIS to Influence Programmatic Change



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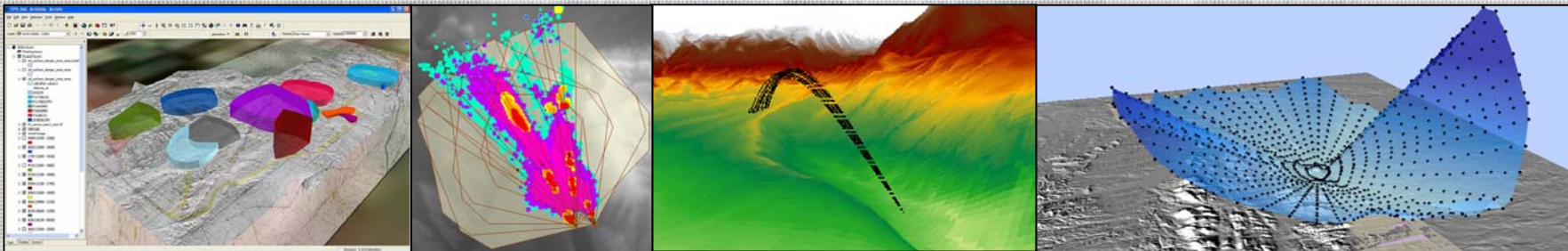
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Agenda

- Set the Stage – a bit of history
- The Army Range Safety Story
- The USMC Range Safety Story
- Supporting the Programs as a Contractor

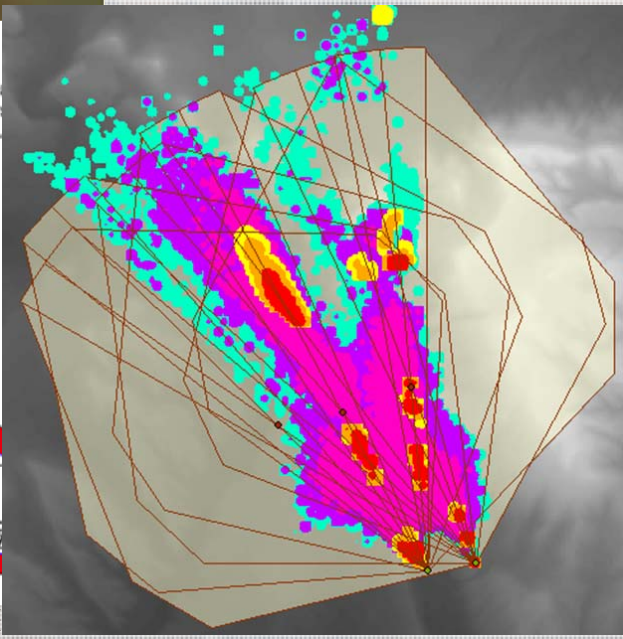
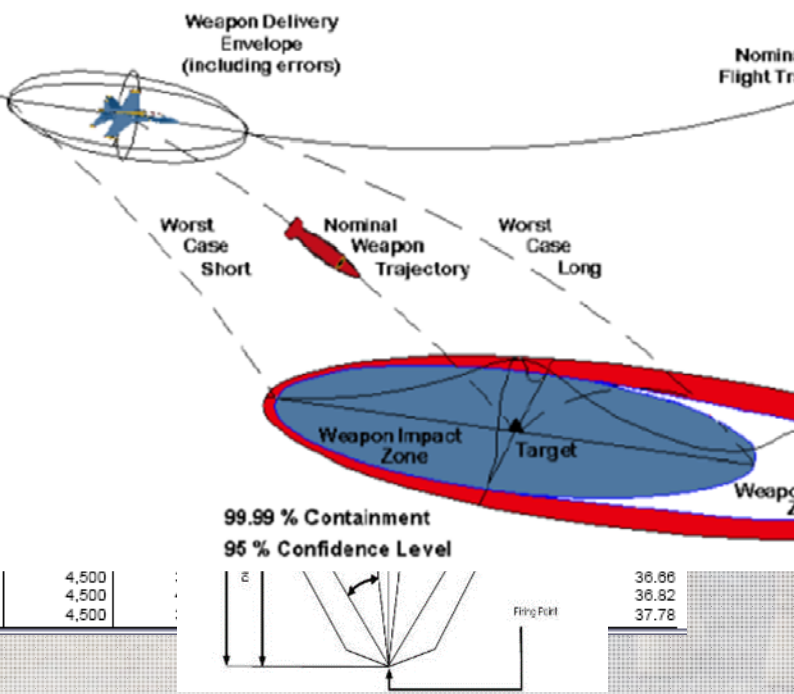
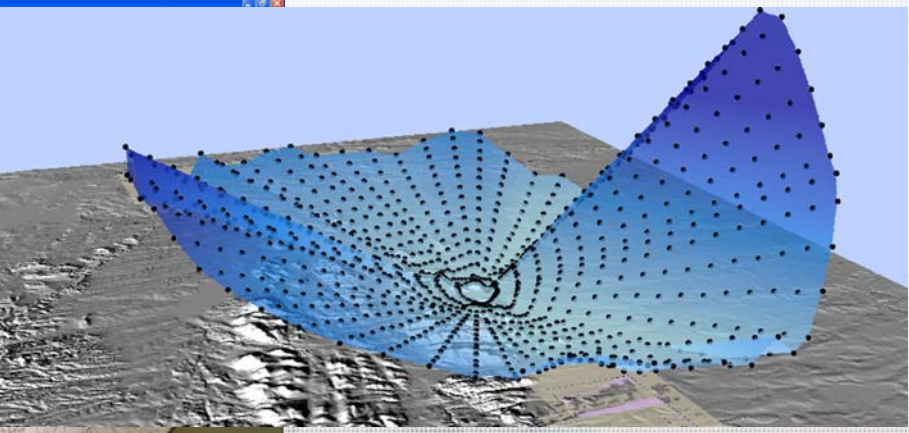
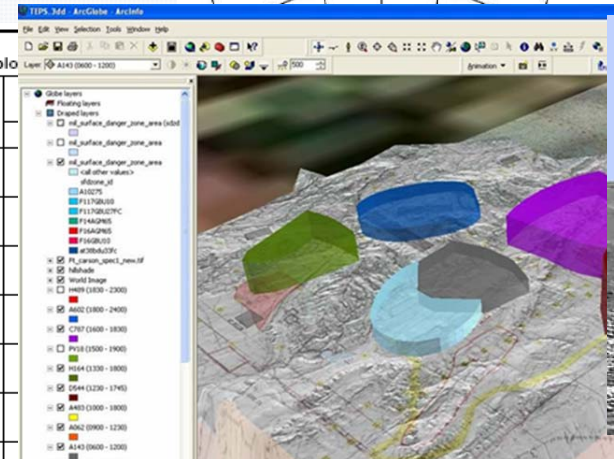




History

Table B-1
SDZs for direct-fire weapons without explosion

Caliber	Impact media
12 gage Slug	Earth/water Steel/concrete
.22 caliber Long rifle, M24	Earth/water Steel/concrete
.38 caliber M41 Ball	Earth/water Steel/concrete
9 mm M882, ball	Earth/water Steel/concrete
.45 caliber M1911 Pistol/SMG	Earth/water Steel/concrete
5.56 mm M193 Ball	Earth/water Steel/concrete
5.56 mm M196 Tracer	Earth/water Steel/concrete
5.56 mm M855 Ball	Earth/water Steel/concrete
5.56 mm M856 Tracer	Earth/water Steel/concrete
5.56 mm M862 Plastic	Earth/water Steel/concrete
7.62 mm M118 Special	Earth/water Steel/concrete
7.62 mm M80 Ball	Earth/water Steel/concrete
.50 caliber M858 Ball, plastic	Earth/water Steel/concrete
.50 caliber M860 Tracer, plastic	Earth/water Steel/concrete
.50 caliber M2 AP	Earth/water Steel/concrete
.50 caliber M2 Ball	Earth/water Steel/concrete
20 mm M220 TP-T	Earth Water Steel Concrete
20 mm M55A2 TP	Earth Water Steel Concrete





RMTK Services Usage by Tool

	ARMY	MARINES	NAVY	AIR FORCE
SDZ	P	P	U	U
NOISE	P	U	U	
LASER	P	P		P
LRMT	P	P	P	P
RDAP	P			
RDM/RDT		P		
RCT		P		
ETRT	U	P	U	
ORAHT	U	P	U	
PSDZ	P	P		
TEPS	P	P	U	U
WDZ	P	P	P	P

P = Proponent U = User



RMTK Usage by Country

	WDZ	FSDZ	PSDZ	LRMT
United Kingdom	U	A	U	
Canada	U	A		
Germany	U	A		
Denmark	U			
Australia		A		
Oman				
Latvia				
Estonia				
Belgium				
France				



U = Current User A = Available



The Army Range Safety Story

- 2001
- AR 385-63/MCO P3570.1A
 - Manual construction of surface danger zones
 - Partial GIS/CAD based solutions at many bases across the Army
 - Consolidate it all into 1 approved/controlled solution
 - Evolution over the last 15 years
 - Other things RMTK has influenced





Surface Danger Zone Tool

- RMTK SDZ Tool, Feb 2004 approved for use by the Director of Army Safety
 - Is now THE automation tool to use in the Army for creating SDZs
 - Requirements incorporated into range safety policy documents
 - Independent validation and verification process
 - Controlled distribution
 - Maintenance, release schedules, and hotfixes driven by safety issues





GIS and Range Safety Training

- Required Training has changed as a result of RMTK
 - From overhead projector to interactive testing
 - Incorporated into the Inter-Service Range Safety Course (Intermediate)
 - Development of RMTK focused courses
 - GIS for Range Control Staff
 - Weapon Danger Zone Tool Training
 - Laser Range Management Tool Training
 - Training executed world wide at Army and USMC bases





Range Noise

- Migrated highly specialized Noise calculations from PhDs to GIS solution
 - Cultural change
 - Required heavy V/V process
- Now part of daily activity at Range Operations





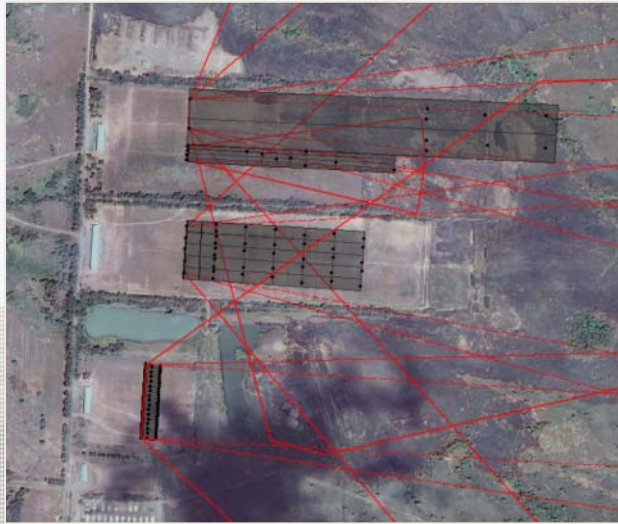
Range Modernization

- Continuous and challenging process
 - Integrated management and comprehensive planning
- Range Development and Planning Tool
 - Generates standard Army ranges
 - Modification of standard configuration due to local conditions
 - Used with other RMTK tools for initial range planning





Expeditionary Training



Range	Lane	Description	MGRS	UTM X	UTM Y	Detailed Description
M203 Qualification	1	Zero Target	51P TT 95881 07001	295881	1707001	Zero Target (200 Meters)
M203 Qualification	2	Small Bunker	51P TT 95806 06997	295806	1706997	Small Bunker (125 Meters)
M203 Qualification	2	Window Facade	51P TT 95781 07002	295781	1707002	Window Facade (100 Meters)
M203 Qualification	3	Automatic Weapon Position	51P TT 95855 06990	295855	1706990	Automatic Weapon Position (175 Meters)
M203 Qualification	3	Troops in Open Emplacement	51P TT 95930 06981	295930	1706981	Troops in Open Emplacement (250 Meters)
M203 Qualification	3	Two Man Bunker	51P TT 95830 06988	295830	1706988	Two Man Bunker (150 Meters)
M203 Qualification	4	Troops Standing	51P TT 96029 06969	296029	1706969	Troops Standing (350 Meters)
M203 Qualification	4	Zero Target	51P TT 95879 06976	295879	1706976	Zero Target (200 Meters)





Army Summary

- Taken a disparate set of solutions to a Programmatically approved and controlled standard – improved safety
- Enhanced the Range Operations Professional Training system
- Noise mitigation capability moved from the labs to the installation level
- Transformed daily range operations and safety tasks regardless of location



USMC TECOM

- TECOM developed the USMC Range Safety Program as GIS technology was developing over that same time frame.
- TECOM sets policy and supports the implementation of that out to the field.
 - Provides a bit more direct control
- Have become a leader in integrating Range Safety Processes across DOD services
- Have become a leader in integrating Range Safety Processes with our International Partners



USMC TECOM GIS general

- TECOM used GIS technologies to shape how policy is implemented
 - Data Modelling
 - Data Layer Standards
 - Collection Techniques
 - Analysis techniques like slope, visibility, hydrography, terrain mitigation, probabilistic analysis
 - Data Management and Storage
 - Web Implementation



USMC TECOM Laser

- TECOM lead the coordination of combining the Laser Safety from Navy, Army and Air Force into an All services tool/process/methodology
 - Leveraging GIS programming and data to change the process of safing ranges for laser use
 - Moving the capability from a few experts to broader use
 - Not without challenges



USMC TECOM WDZ

- TECOM lead the coordination across all DOD services to migrate Air to Ground Range Safety from legacy system to RMTK based system
 - GIS and the integrating system host
 - Programmatic infrastructure (CCWG), DOD level support
 - RMTK WDZ has grown to support many other nations throughout the world



USMC TECOM PSDZ

- TECOM work with UK MOD drove the integration of UK probabilistic ballistic modeling with RMTK tools.
 - Providing a new methodology to the US for:
 - Reducing range safety footprints.
 - Providing forensic analysis tool
 - Creating a common language across Defense/Defence organizations for training with each other and on each others land



USMC TECOM International

- TECOM one of the leaders in the International Range Safety / GIS solutions development
 - Pushing for common processes
 - Pushing regular communications across Nations
 - Providing Contract vehicle for sharing tools and even developing international capability within tools
 - GIS is one of the common cross cutting tools for communicating and implementing



Developing the Program as a Vendor

- Understand the Mission
- Provide the Technological Vision
- Don't be afraid to get Naked
- Success and Failures builds trust
- Become the institutional knowledge
- Play well with others
 - Bring along partners
 - Work well with other vendors in the ecosystem



Developing the Program as a Vendor

- Challenges
 - Sometimes technology is ahead of the Program constraints
 - Managing Versions across Services
 - Navigating Cultures (within US and outside)
 - Staying out of the middle of battles
- Know and Promote the ROI



Questions

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