



OCONUS SUSTAINABLE RANGE PROGRAM (SRP) REGIONAL SUPPORT CENTER



US ARMY EUROPE SUSTAINABLE RANGE PROGRAM (SRP) GIS INFORMATIONAL SOLUTIONS

Jeff Andrews

USAREUR ITAM Operations Coordinator



OVERVIEW



- **BACKGROUND**
- CUSTOMERS
- SYSTEM
- DATA WAREHOUSE
- TOOLS and PRODUCTS
- FUTURE CHALLENGES



THE FIVE PROGRAM COMPONENTS

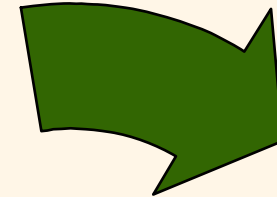
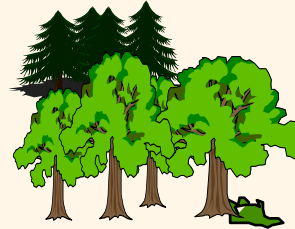


- Training Requirements Integration (TRI)
- Range and Training Land Assessments (RTLA)
- Land Rehabilitation and Maintenance (LRAM)
- Sustainable Range Awareness (SRA)
- Geographic Information System (GIS)

RANGE & TRAINING LAND ASSESSMENTS (RTLA)



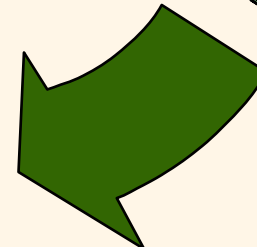
- SURVEYING
- MONITORING
- EVALUATING
- MODELING



TRAINING REQUIREMENTS INTEGRATION (TRI)



- ASSESSING LAND "CARRYING CAPACITY"
- SCHEDULING
- SITING



CONTINUOUS CYCLE

GEOGRAPHIC INFORMATION SYSTEM

- FOUNDATIONAL SUPPORT TO ALL COMPONENTS

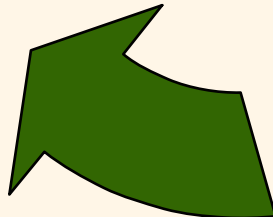


- INFORMING USERS
- REDUCING IMPACTS

SUSTAINABLE RANGE AWARENESS (SRA)

LAND REHAB & MAINTENANCE (LRAM)

- MANEUVER
- DAMAGE REPAIR
- DAMAGE PREVENTION
- RECONFIGURING TRAINING AREAS





OCONUS Sustainable Range Program RSC Experience



- ITAM support in Germany for 20 years
- GIS program was initiated:
 - ✓ In 2000 - ITAM program
 - ✓ In 2004 – RTLP program
- Provides support for:
 - ✓ EUCOM
 - ✓ CENTCOM
 - ✓ AFRICOM





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- GIS program was initiated:
 - ✓ In 2000 - ITAM Program
 - ✓ In 2004 – RTLP Program
- Provides support for:
 - ✓ EUCOM
 - ✓ CENTCOM
 - ✓ AFRICOM
- Over 120 supported training areas
- 25 planned sites





OCONUS Regional Support Center (RSC)

“To develop, manage, and distribute authoritative information critical to the management of USAREUR training areas.”



OVERVIEW



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Army Range Mapper (ARM) Customers



WHO?

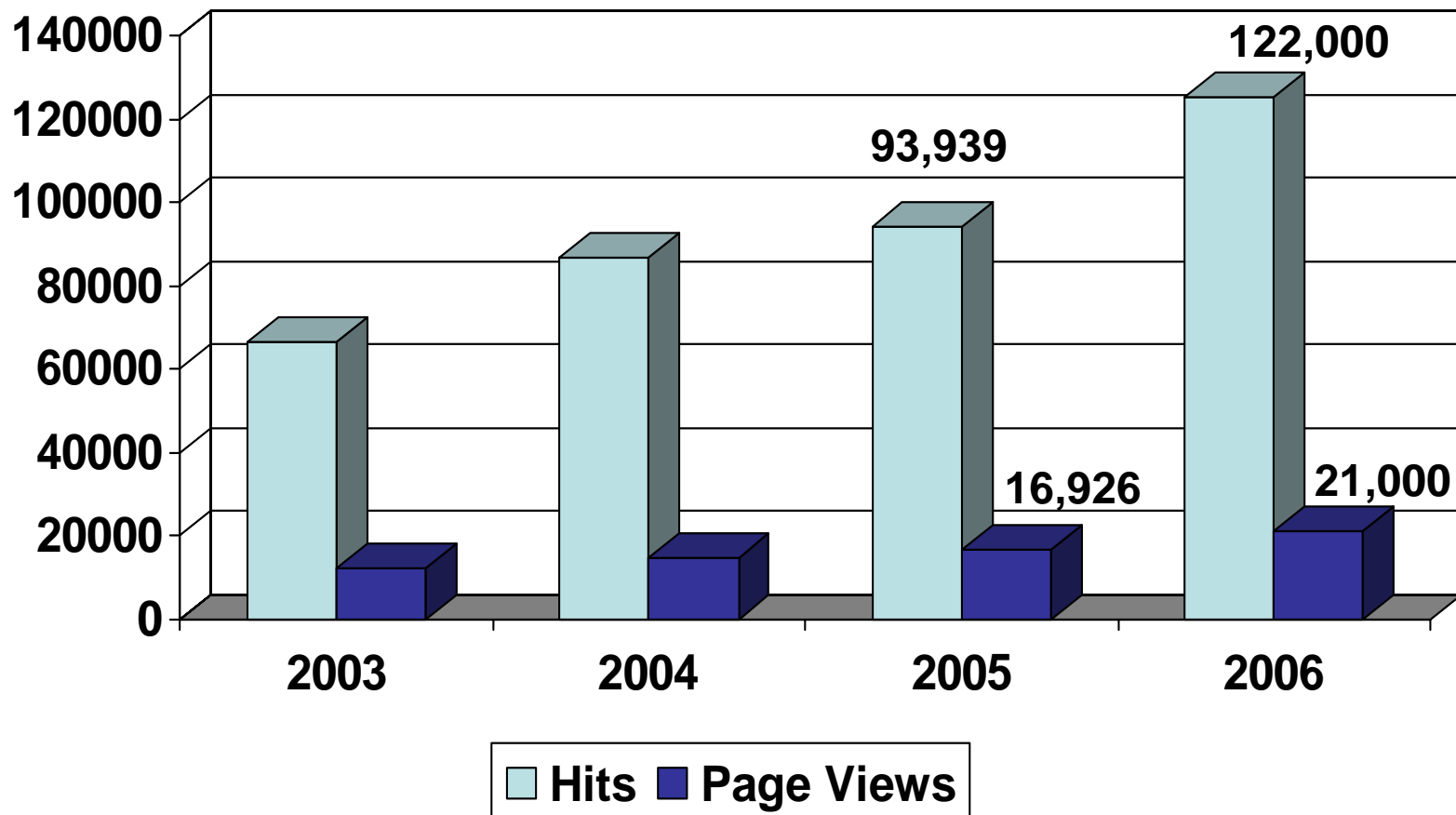
- Range Personnel
- Soldiers
- Trainers
- Environmental
- Engineering
- Force Protection

WHAT?

- New Ranges
- Range Upgrades
- Training Exercises
- SDZ Generation



Army Range Mapper - Hits/View Statistics





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GIS Accessibility



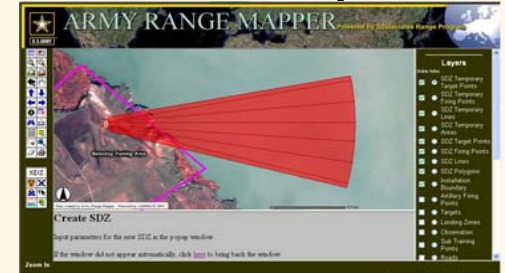
ARCGIS/ArcView
GIS Analyst



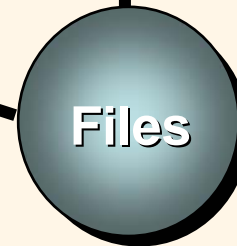
ITAM Viewer
DVD Solution



Army Range Mapper
Internet Map Server

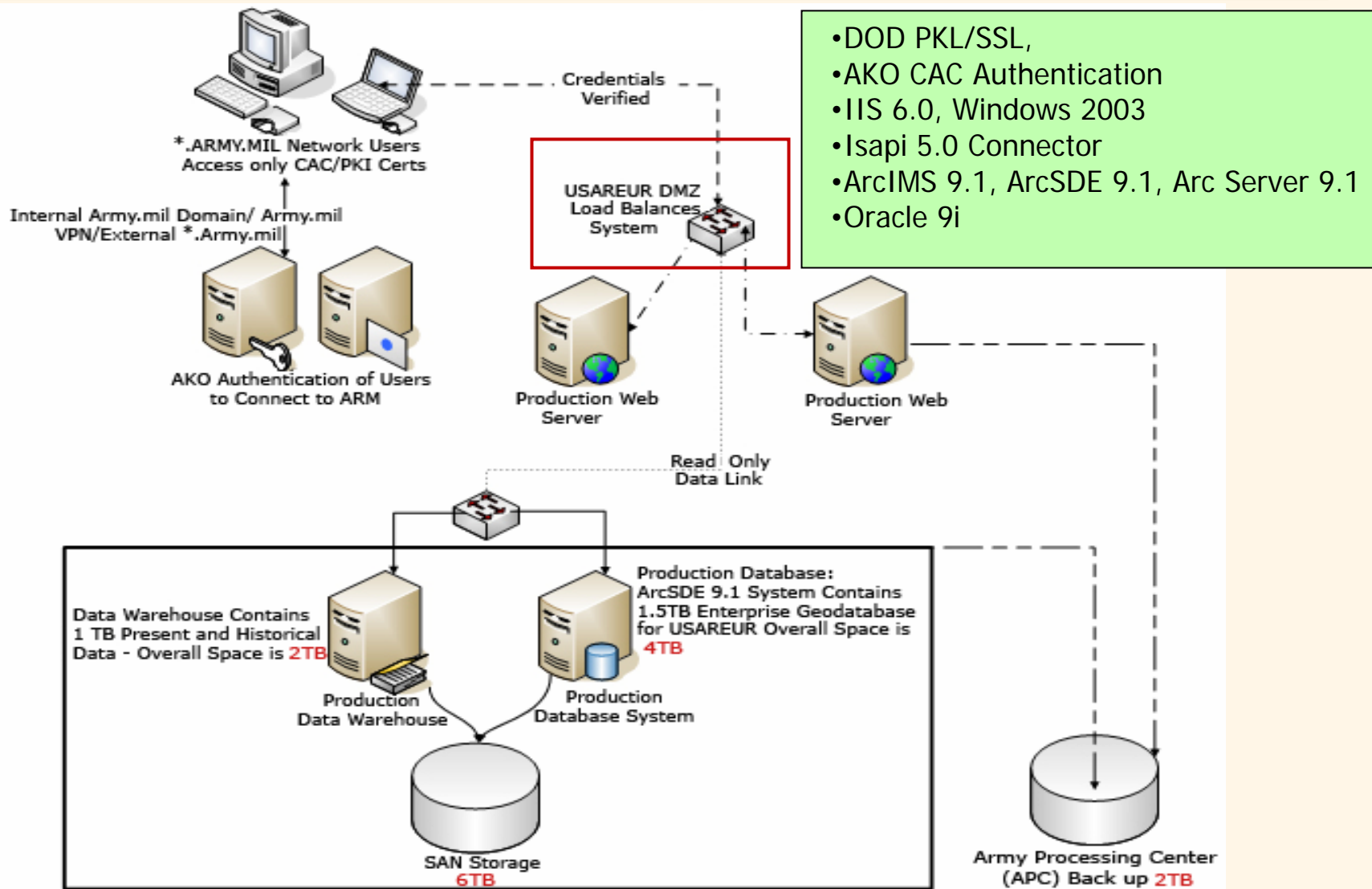


GIS
DATA





OCONUS Sustainable Range Program RSC System Configuration



- DOD PKL/SSL,
- AKO CAC Authentication
- IIS 6.0, Windows 2003
- Isapi 5.0 Connector
- ArcIMS 9.1, ArcSDE 9.1, Arc Server 9.1
- Oracle 9i



OCONUS Sustainable Range Program RSC Accreditations – Established System



- **DITSCAP** (The DoD Information Technology Security Certification and Accreditation Process) Accreditation
 - ✓ **Authority to Operate** – Chief of Staff, 7A/JMTC
 - ✓ **Certificate to Operate** – HQ USAREUR/7A G6

- Listed on the **APMS** (Army Portfolio Management System)

- **Security;**
 - ✓ Utilized **PKI SSL** (Public Key Infrastructure Secures Sockets Layer)
 - ✓ Implemented **AKO SSO** (Single Sign On)
 - ✓ **CAC Card Authentication** (no user name & password required – only CAC pin-code)



OVERVIEW



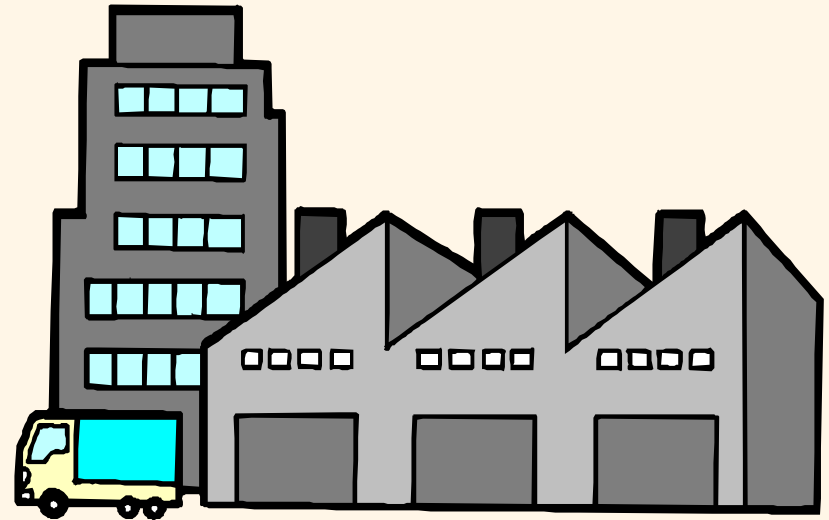
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DATA WAREHOUSE



- Data custodians
- Centralized system
- Provide comprehensive information to decision makers

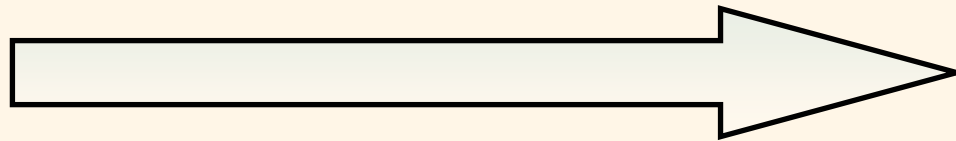




DATA WAREHOUSE



“To develop, manage, and distribute authoritative information critical to the management of USAREUR training areas.”

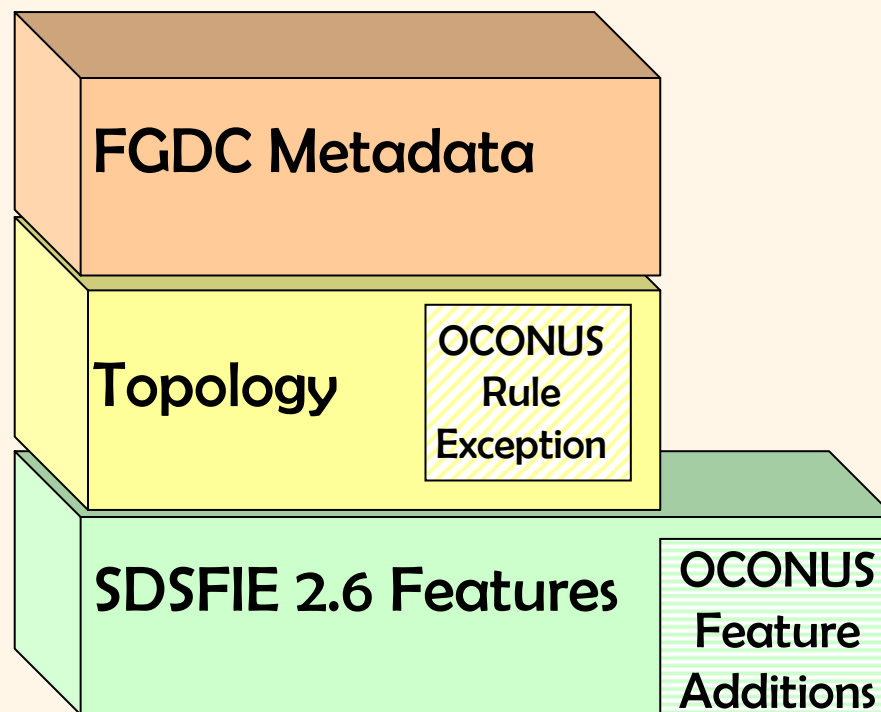




OCONUS Sustainable Range Program RSC Database Design



OCONUS RSC Data Standardization





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ITAM VIEWER

Ever Growing, DVD Based Mapping Tool



DVD based collection of vector and raster GIS data

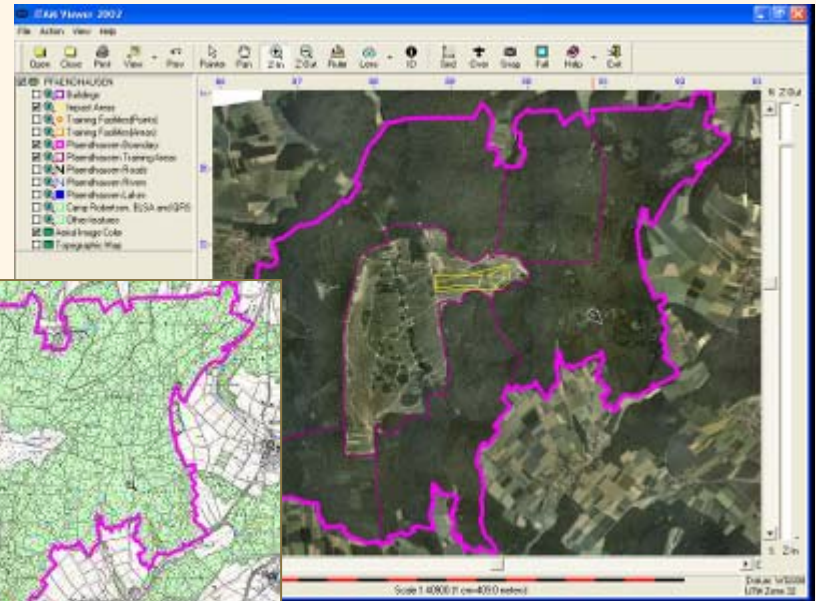
- ✓ Since 2001 – updated 14 times
- ✓ Coming soon - new aerial imagery for :
 - Babadag (Romania)
 - Novo Selo, (Bulgaria) and
 - RTSC Italy

Easy to use, intuitive software

- ✓ Current software version 2002
 - ✓ Planned software update
- December 2007 - ITAM Viewer 3.0

Product updates based on:

- ✓ New Data Availability
- ✓ Customer Feedback





FLIGHT SIMULATORS



- Developed by the Rapid Terrain Visualization (RTV) Laboratory at Fort Belvoir VA.
- 10 Flight Simulations packaged in 5 double DVD cases:
 - ✓ Grafenwoehr Training Area and JMRC Hohenfels
 - ✓ Baghdad, Iraq
 - ✓ NTC/Ft. Irwin and JRTC/Ft. Polk
 - ✓ Ft. Benning and Ft. Hill
 - ✓ Ft. Lewis and Ft. Hood

- Also available upon request:
 - ✓ Afghanistan and Afghani/Pakistani Border Flight Simulator
 - ✓ Currently impossible for mass distribution – file size – almost 25GB





USAREUR GeoPDF MAP ATLAS



- GeoPDF
 - ✓ GIS data and information in an easily accessible, georeferenced PDF format
 - ✓ Customized GeoPDF/ARM toolbar



- USAREUR GeoPDF Map Atlas
 - ✓ Set of georeferenced maps of various, level-dependant scale (from small scale overview maps to precise range maps), linked together for easy browsing
 - ✓ Representing training areas within USAREUR
 - ✓ Live, constantly expanded and updated product
 - ✓ Distribution: USAREUR SRP Website's Resource Matrix, DVD's



USAREUR SRP WEBSITE

<https://srp.usareur.army.mil>



The screenshot shows the website's header with the title "Sustainable Range Program" and navigation links for "ITAM", "RTLTP", and "ONLINE STORE". A search bar is located on the left. The main content area features a "New!" announcement for the "Army Range Mapper" (ARM), which provides shaded relief maps and aerial photography. Below this, there are three news items: "2007 USAREUR SRP Workshop" (June 12-14), "EFMB Tour Project" (EFMB course construction in Germany), and "GTA Live Fire IED Lane" (completion and testing in April 2007). A globe graphic labeled "USAREUR" is positioned to the right of the news items, with a legend for "EUCOM". A sidebar on the left lists "Home", "Library", "Photo Gallery", "News and Events", "Resource Matrix", and "Links". At the bottom of the sidebar, there is a "Most Visited Pages" list and an "RSS" feed icon.

Gateway to:

- Army Range Mapper
- SRP Resource Matrix
- SRP Online Store
 - ✓ Data Request Form
 - ✓ Coming up – the Online Store

Visit us at:

<https://srp.usareur.army.mil>



USAREUR SRP WEBSITE

Resource Matrix



The catalog of available geospatial products and resources.

Sustainable Range Program

Search by selecting RTSC or TSC: or

Click on folder to see Training Facilities in TSC
Link Available Click on Image
Link Not Available

... or Click for Training Facility Master Index »

| Garrison | TSC | LTA/Range | Map Book | Strip Map | Range Map | ITAM Mapper | Installation Special | TRMS |
|---------------------|-------------------------------------|------------------------|----------|-----------|-----------|-------------|----------------------|------|
| USAG Baumholder | TSC Baumholder DSN: 485-7488 | | | ☺ | | | | ☺ |
| | | LTA | | | | | | |
| | | Baumholder | ☺ | ☺ | ☹ | ☺ | ☺ | ☺ |
| | | LTA US | | | | | | |
| | | Baumholder | ☺ | ☺ | ☹ | ☺ | ☺ | ☺ |
| | | MTA Germany | | | | | | |
| | | Ranges/MOUT/Facilities | | | | | | |
| USAG Kaiserslautern | TSC Kaiserslautern DSN: 483-7311 | | | ☺ | | | | ☺ |
| | | LTA | | | | | | |

Easy access to:

- Map Book pages
- Strip Maps
- Range Maps
- Installation Specific Maps
- Army Range Mapper sites
- TRMS (Training Resource Management System) website



ARMY RANGE MAPPER (ARM)

Web-based Mapping Solution



- Based on ESRI ArcIMS 9.1, ArcSDE 9.1, GIS Server 9.1 and ORACLE 9i
- JAVA Based Client Viewer (provides cross browser viewing – Internet Explorer, Netscape, Firefox)

- Current and historical raster data (maps and imagery)
- Up to date vector layers
- for more than 200 sites in USAREUR (Training Areas, Ranges, MOUT sites)
- Updated frequently, updates based on available data, customer requirements



ARMY RANGE MAPPER (ARM)

Web-based Mapping Solution



Specialized search functions (Search by Countries, RTSC, TSC/USAGs, TAs, Ranges, Facilities)

ARMY RANGE MAPPER Powered by Sustainable Range Program

U.S. ARMY Home Feedback Help Inset Map Zoom In Zoom Out Back Forward Pan Print Measure Clear Select A Map Layer to Identify Select an active layer

Search By

By Training Location

-- Country --

-- RTSC --

Grafenwoehr

-- Training Area --

GTA Range 301

-- MOUT/Facilities --

Search Reset

By MGRS Coordinate:
 By UTM Coordinate:
 By DMS Geographic Coordinate:
 By DD Geographic Coordinate:



ARMY RANGE MAPPER (ARM)

Web-based Mapping Solution



- Tools to view, query and analyze available datasets
- New feature – the Web Safety Danger Zone tool

The screenshot displays the Army Range Mapper web application interface. At the top, the title "ARMY RANGE MAPPER" is prominently displayed in a stylized font, with the subtitle "Powered by Sustainable Range Program" to its right. Below the title is a navigation bar containing icons for Home, Feedback, Help, Inset Map, Zoom In, Zoom Out, Back, Forward, Pan, Print, Measure, and Clear. A dropdown menu on the right of the navigation bar is set to "Select A Map Layer to Identify" and "Select an active layer".

On the left side, there is a vertical menu with three sections: "Search", "Layer", and "Tools". The "Tools" section is currently active and contains the following items:

- Trend Analysis
- Coordinate Calculator
- TRMS- Training Resources Management System
- WebSDZ- Surface Danger Zone

Below the "Tools" list is an "Enter" button. A text box provides a description of the WebSDZ tool:

WebSDZ is used for creating and managing Surface Danger Zones (SDZ) for live fire training exercises. This tool can generate SDZs for those defined in DA PAM 385-63 which includes weapons ranging from 9mm pistols through Multiple Launch Rocket Systems (MLRS).

The main area of the interface is a satellite map of a training range. The map shows a complex network of white lines representing roads and paths, overlaid on a green landscape. A mouse cursor is visible over the map.



RMTK OVERVIEW



- Joint Army-Marine Corps Effort
- Suite of tools designed to assist Range Managers with daily operations and planning tasks
- Requirements vetted through RMTK Workgroup
- Desktop and web-based tools
- Download from SRP and RTAM Websites



RMTK PARTNERS



■ TPIO-Live



■ GISi



■ CSR



■ RTAM



■ ERDC-CERL



■ USAREUR

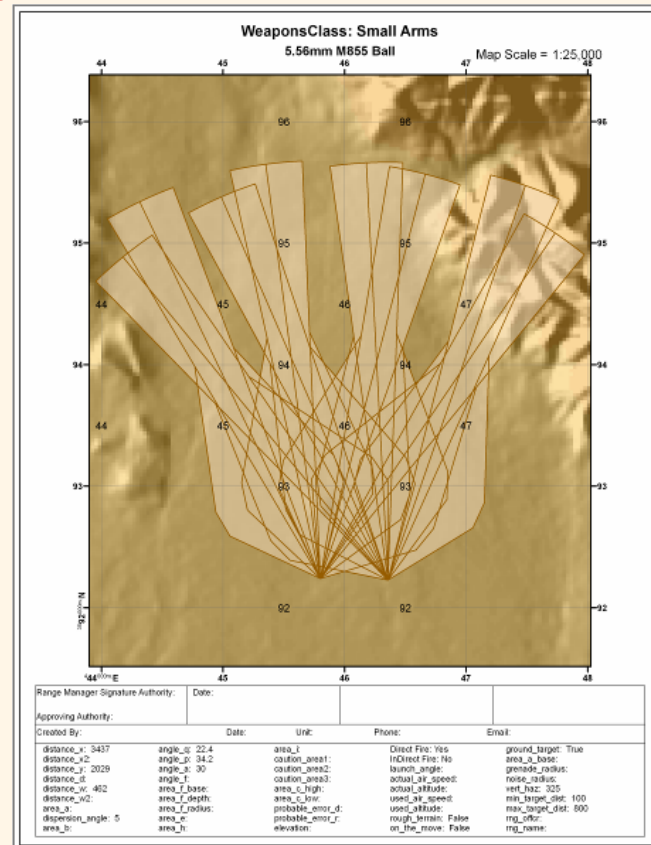




RMTK TOOLS



- Surface Danger Zone Tool
- Weapon Danger Zone Tool
- Range Development and Planning Tool
- Laser Hazard Danger Zone Tool
- Noise Tool
- On Range Ammunition Handling Tool
- Explosive Training Range Tool
- Training Event Planning System





Web Surface Danger Zone (SDZ)



- Designed as a planning tool for Range Safety Officers and unit commanders planning training exercises.
- Stand-alone Intranet application
- Allows user to create SDZs for all weapons and munitions as defined in ARSMMs

The screenshot shows the "ARMY RANGE MAPPER" web application interface. The title bar includes the U.S. Army logo and the text "ARMY RANGE MAPPER Powered by Sustainable Range Program". The main map area displays a satellite view of a coastal region with a red fan-shaped area representing a Surface Danger Zone (SDZ) originating from a point labeled "Babadag Training Area". A pink polygon outlines a specific area on the map. On the left side, there is a toolbar with various navigation and tool icons. On the right side, a "Layers" panel lists various map elements with checkboxes, including "SDZ Temporary", "Target Points", "SDZ Temporary Firing Points", "SDZ Temporary Lines", "SDZ Temporary Areas", "SDZ Target Points", "SDZ Firing Points", "SDZ Lines", "SDZ Polygons", "Installation Boundary", "Artillery Firing Points", "Targets", "Landing Zones", "Observation", "Sub Training Points", and "Roads". Below the map, there is a "Create SDZ" section with instructions: "Input parameters for the new SDZ in the popup window." and "If the window did not appear automatically, click [here](#) to bring back the window." A "Zoom In" button is visible at the bottom left of the interface.



Web Surface Danger Zone (SDZ)



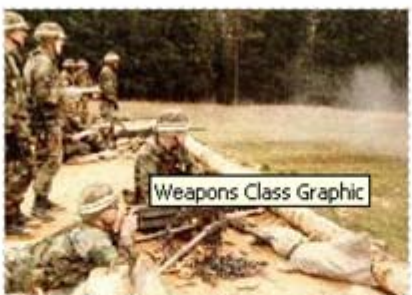
- Assist the user in determining if an SDZ for a given weapon system and associated munitions for a training event will fit on an allocated terrain
- The tool allows users to develop, store, modify, analyze, and print standard Surface Danger Zones IAW DA PAM 385-63/MCO 3570.1B
- Capable of orienting an SDZ

<https://srp.usareur.army.mil>

Select Weapons Class

Select the weapons class that will be used to create the SDZ.


- Small Arms (Up to 20mm)
- Tanks and Fighting Vehicles
- Lasers (select independent or mitigated)
- Mortars and Artillery
- Grenades (Hand and Launcher)
- Aerial Gunnery
- ADA - Air Defense Artillery
- Mines and Pyrotechnics
- Rockets
- Recoiless or Anti-Tank



Weapons Class Graphic

Help Next >> Cancel

Powered by Sustainable Range Program



Layers

- SDZ Temporary Target Points
- SDZ Temporary Firing Points
- SDZ Temporary Lines
- SDZ Temporary Areas
- SDZ Target Points
- SDZ Lines
- SDZ Polygons
- Installation Boundary
- Artillery Firing Points
- Targets
- Landing Zones
- Observation
- Sub Training Points
- Roads
- Firing Line



U.S. ARMY



SDZ



Map created by Army

Create

Input param

If the windo

Zoom In

Create SDZ

SDZ Created

The SDZ has been created and the map has been refreshed to display the newly created SDZ.

2 validation rules failed.
 SDZ intersects one or more features from conflict layer (Buildings).
 SDZ intersects one or more features from conflict layer (Roads).

| | | | |
|-----------------------|------------|-----------------------|----------------------|
| Weapon Class | SMALL_ARMS | Weapon Name | .22 Cal |
| DODIC | A106 | Ammo | .22 Cal; Ball LR M24 |
| ActualAirSpeed | 0 | ActualAltitude | 0 |
| ActualGunAngle | 5 | AngleA | 30 |
| AngleF | 0 | AngleP | 63.4 |
| AngleQ | 30.3 | AreaA | 100 |
| AreaABase | 0 | AreaB | 0 |
| AreaCHigh | 0 | AreaCLow | 0 |
| AreaE | 0 | AreaFBase | 0 |
| AreaFDepth | 0 | AreaFRadius | 0 |
| AreaH | 0 | AreaI | 0 |
| AreaW | 386 | AreaW2 | 0 |
| CautionArea1 | 0 | CautionArea2 | 0 |
| CautionArea3 | 0 | Charge | 0 |
| Creator | 20070301 | Creator | |

Map created by Army

Create

Input param

If the windo

Zoom In

Powered by Sustainable Range Program

Layers

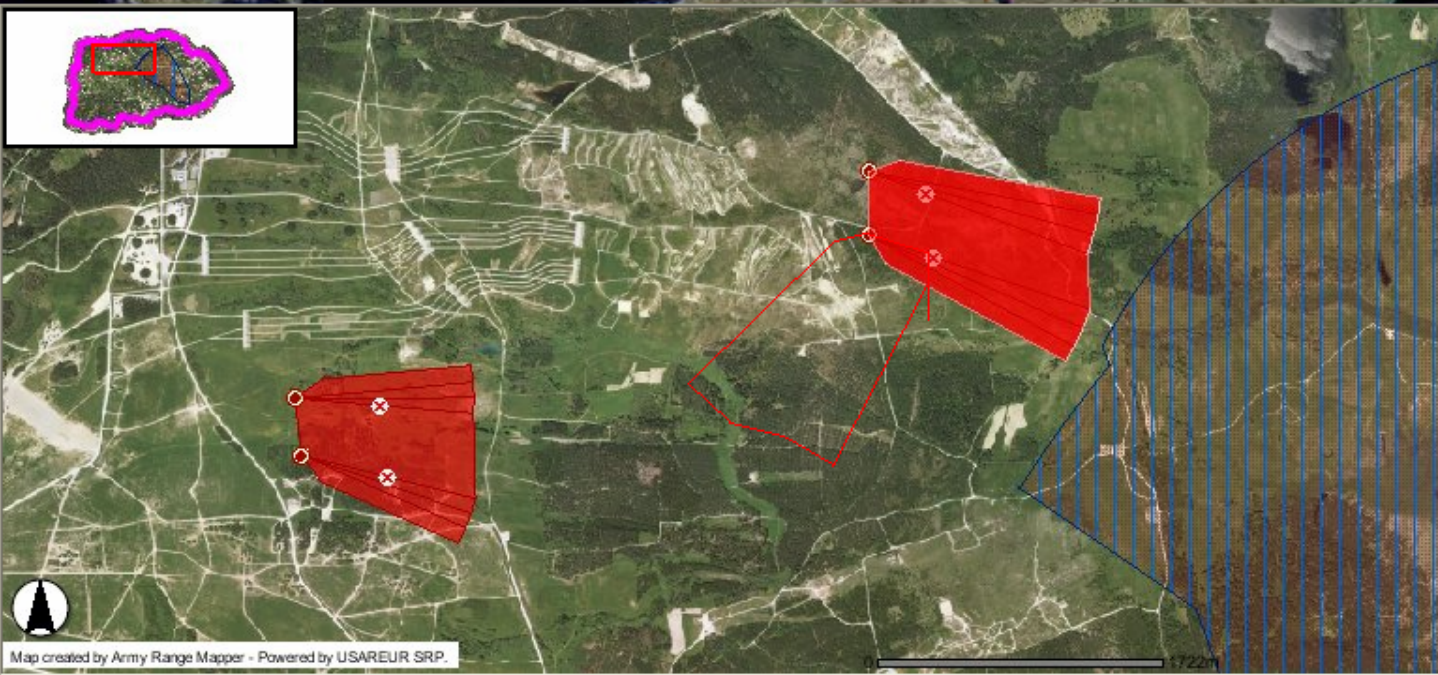
Visible Active

- SDZ Temporary Target Points
- SDZ Temporary Firing Points
- SDZ Temporary Lines
- SDZ Temporary Areas
- SDZ Target Points
- SDZ Firing Points
- SDZ Lines
- SDZ Polygons
- Installation Boundary
- Artillery Firing Points
- Targets
- Landing Zones
- Observation Points
- Sub Training Points
- Roads



ARMY RANGE MAPPER Powered by Sustainable Range Program

-
-
-
-
-
-
-



Layers

Visible Active

- SDZ Temporary Target Points
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- SDZ Lines
- SDZ Polygons
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Map created by Army Range Mapper - Powered by USAREUR SRP.

Rotate/Move SDZ

Click and drag to move the SDZ. Hold down the control key to rotate the SDZ.

[Save Modified Position](#)

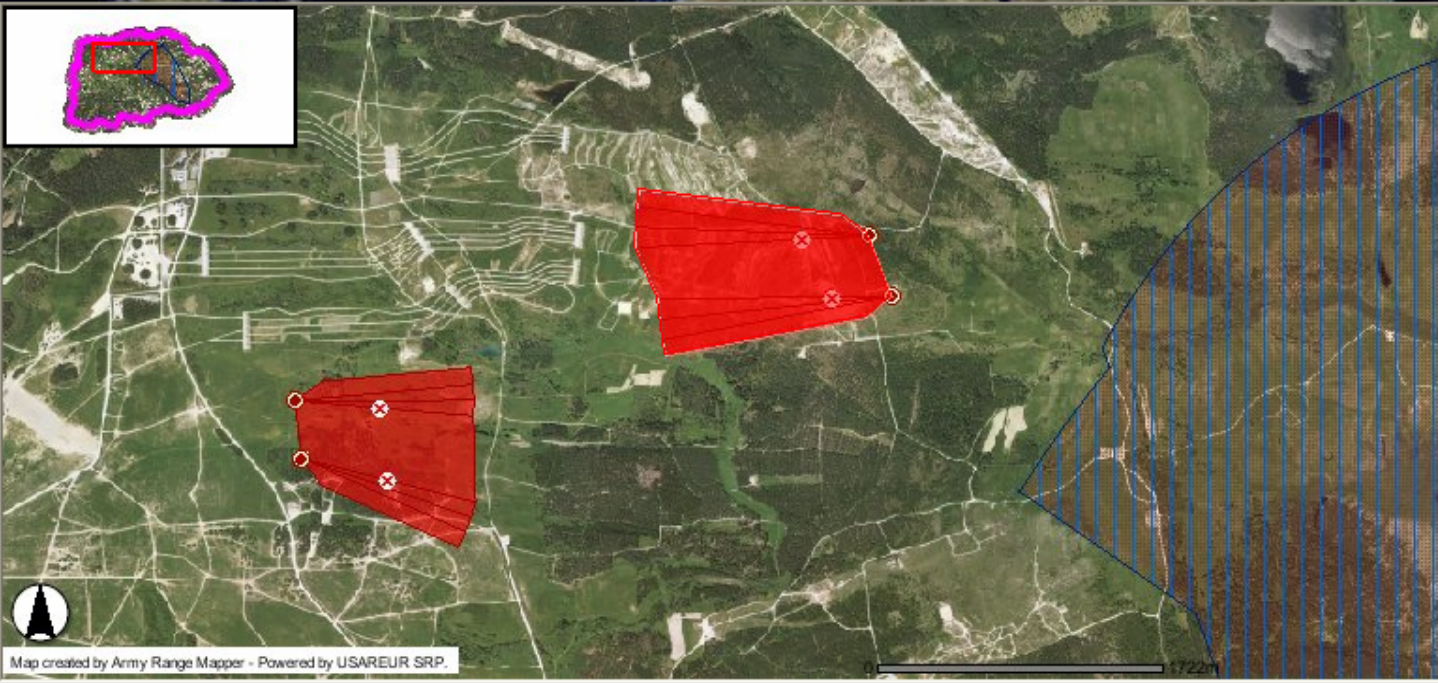
| Delta Angle | Delta X | Delta Y |
|-------------|---------|---------|
| -107.37° | 0m | 0m |

Rotate/Move SDZ



ARMY RANGE MAPPER

Powered by Sustainable Range Program



- ### Layers
- Visible Active
- SDZ Temporary Target Points
 - SDZ Temporary Firing Points
 - SDZ Temporary Lines
 - SDZ Temporary Areas
 - SDZ Target Points
 - SDZ Firing Points
 - SDZ Lines
 - SDZ Polygons
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Rotate/Move SDZ

Click and drag to move the SDZ. Hold down the control key to rotate the SDZ.

[Save Modified Position](#)
[Reset SDZ Position](#)

| Delta Angle | Delta X | Delta Y |
|-------------|---------|---------|
| 0° | 0m | 0m |

Rotate/Move SDZ



WDZ DEFINITION



- The Weapons Danger Zone (WDZ) encompasses the ground and airspace for lateral and vertical containment of projectiles, fragments, debris, and components resulting from the firing, launching, and/or detonation of aviation delivered ordnance.
- This three-dimensional zone accounts for weapon accuracy, failures, ricochets, and broaches/ porpoising of a specific weapon/munition type delivered by a specific aircraft type. WDZs represent the minimum safety requirements designed for aviation weapons training on DOD ranges.



WEAPONS DANGER ZONE



Weapon Danger Zone Area

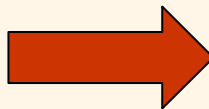
A specific area drawn about a target based on weapon containment within that area:

- Containment is selectable:

- 99.99% (1 in 1:10,000 probability)**
- 99.999% (1 in 1:100,000 probability)**
- 99.9999% (1 in 1:1,000,000 probability)**

Based on specific:

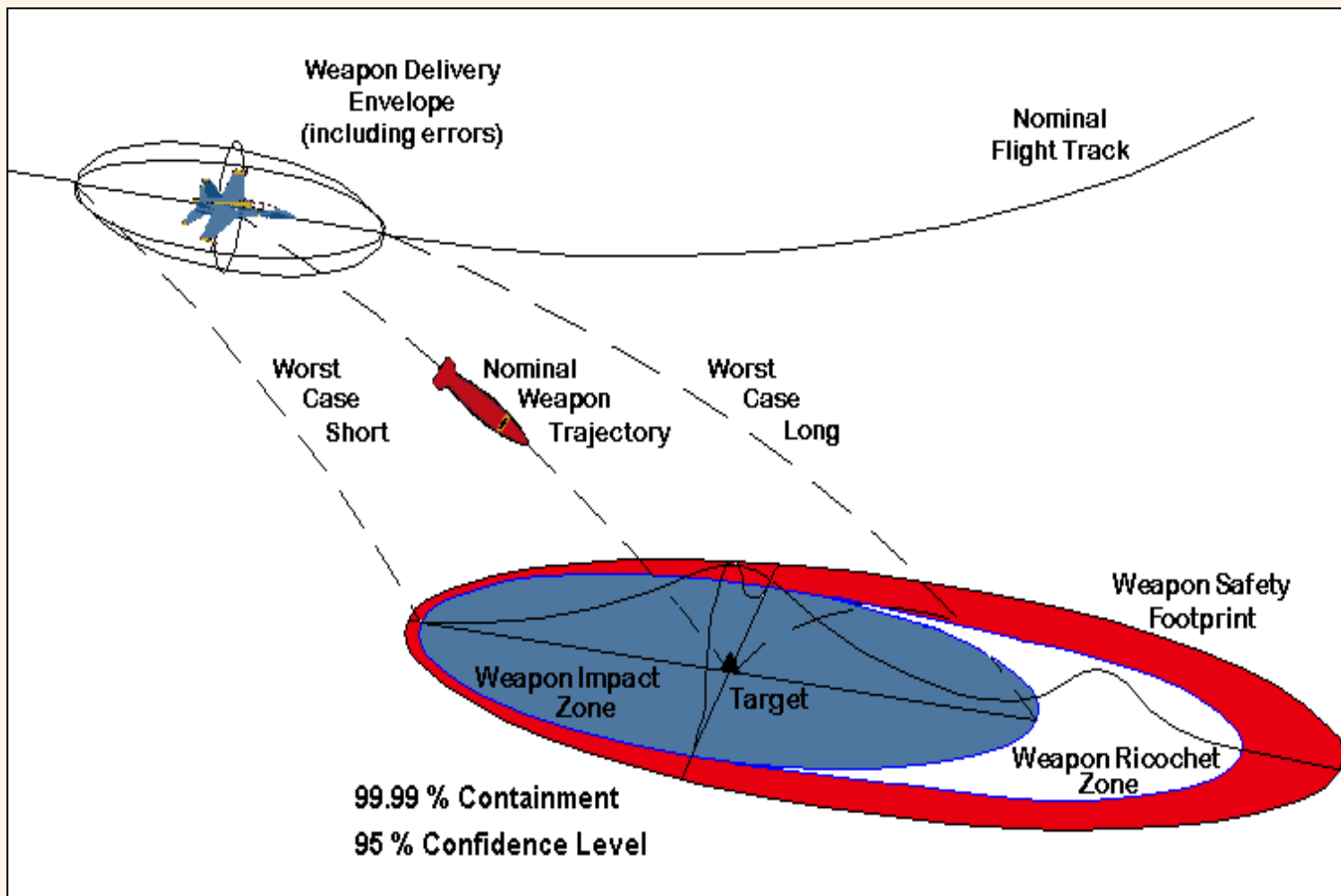
- Aircraft type**
- Delivery parameter**
- Weapon**
- Terrain**



**These Create A Launch Basket That Is
The Starting Point For The Error
Calculations**



WEAPONS DANGER ZONE





RANGE DESIGN



- TC 25-8, Training Ranges
 - ✓ Provides guidance for developing and operating Army ranges
 - ✓ Defines standard range dimensions
 - ✓ Defines targetry, firing positions, course roads, impact areas, etc.
 - ✓ Defines associated range operations facilities
- Standard Buildings Definitive Designs
 - ✓ Defines standard Range Operations Control Area (ROCA) facilities dimensions



RMTK LIMITATIONS



- Tools support published applicable documents (i.e. DA PAM 385-63, TC 25-8)
- Tools produce technically correct output based on user input, incorrect user input will result in incorrect results
- **All RMTK output must be validated by the proper approving authority**



OVERVIEW



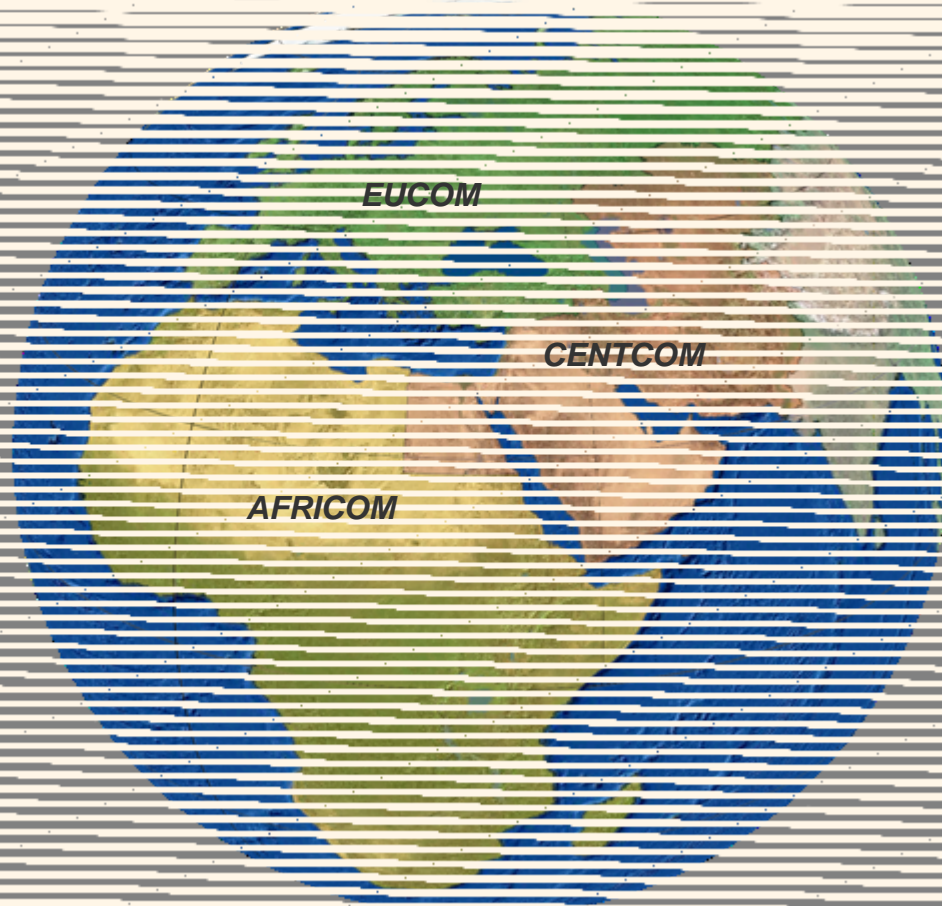
- BACKGROUND
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- DATA WAREHOUSE
- TOOLS
- **FUTURE CHALLENGES**



FUTURE CHALLENGES



- ✓ WebSDZ currently in test environment (deploy **JUNE**)
- ✓ Migrate to ArcServer 9.2 (**JULY**)
- ✓ Test Weapons Danger Zone (WDZ) - (**JULY**)
- ✓ Update Army Range Mapper to ASP.net (**SEPT-OCT**)

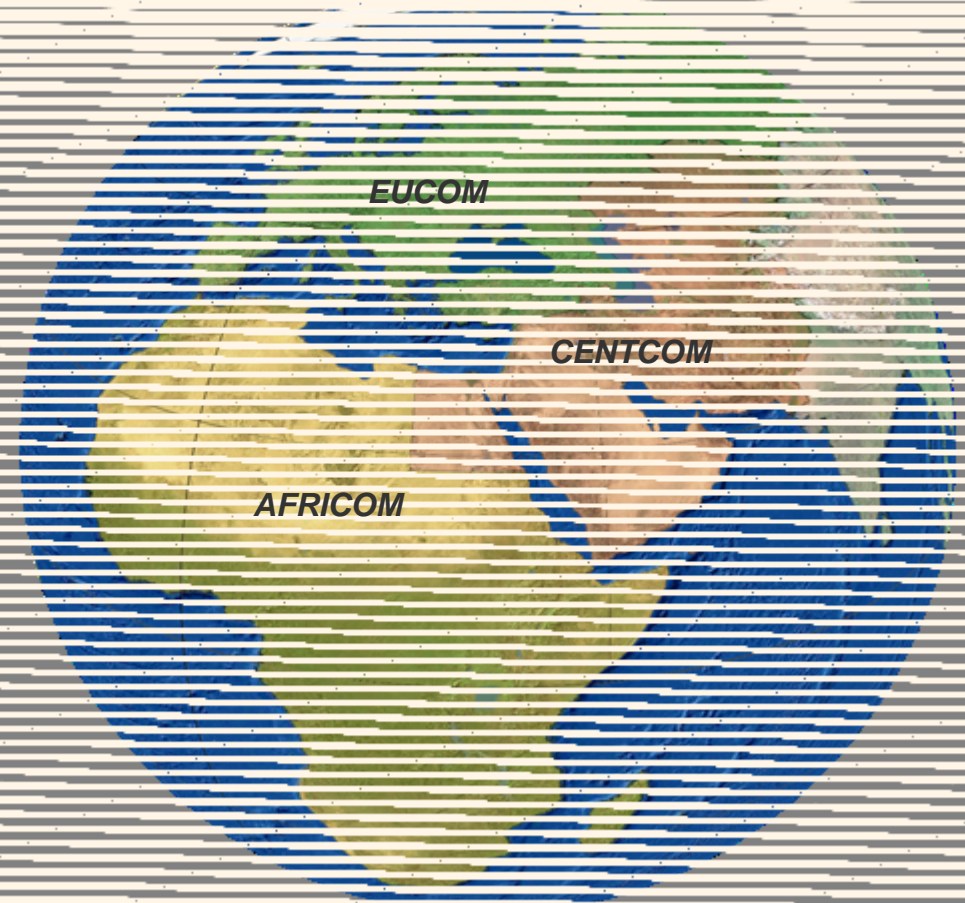




FUTURE CHALLENGES



- ✓ WebSDZ enhancement
(SEPT-OCT)
- ✓ Web RDAP development
(SEPT-OCT)
- ✓ Update accreditations
(NOV)

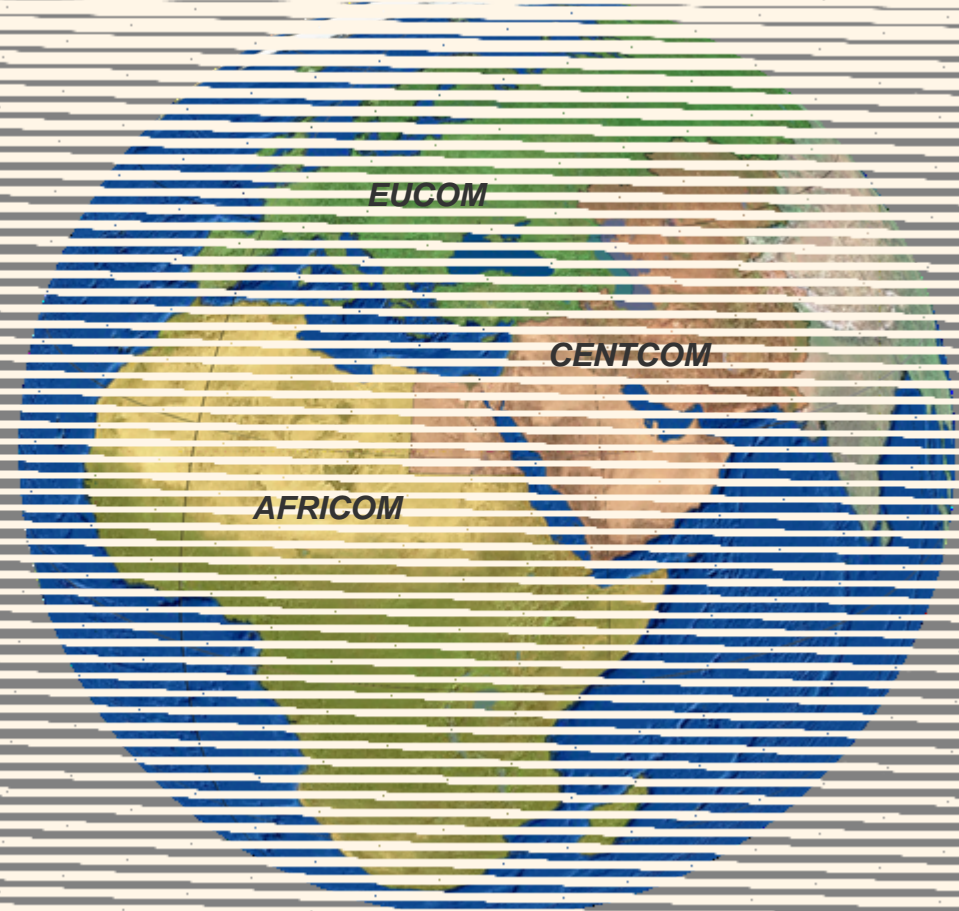




Thank you for your attention



For more information
on the OCONUS SRP RSC,
please visit our booth!



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