Leveraging the ArcGIS Platform for Data Integration

Discovering US Army Europe Training Resources

US Army Europe
Joint Multinational Training Command
Training Support Activity Europe
Sustainable Range Program

UNCLASSIFIED
Sustainable Range Program

Responsible for management of **ranges** and **training areas** with the goal of maximizing the **capability, availability, and accessibility** of those assets to support doctrinal training, mobilization, and deployments, and ensure long term sustainability.

The USAREUR SRP GIS mission is to **create, analyze, manage, and distribute** authoritative standardized spatial information, products, and services for the execution of training strategies and missions on U.S. Army ranges and training lands.
7th Army JMTC: the U.S. Army's largest overseas training command.
Training Support Activity Europe (TSAE): A directorate of the JMTC.

- JMTC provides realistic, tailor-made training solutions to U.S., NATO and partner-nation units and leaders (customers).

  - Customers becoming increasingly NATO / ISAF (International Security Assistance Force). TSAE needs tools for centralizing information and better service.
The TSAE Challenge

- Training resources (+800 facilities) geographically dispersed across Europe.
- Training related data is dispersed across IT systems.

*TSAE needs solutions to make it as easy as possible to find training support information.*

**Goal**
Identify, acquire, manage and sustain training planners to provide state-of-the-art training support

Make it as easy as possible to find the training support information training planners need.

**Solution = TAP IN**
GIS web application that provides a user-friendly means of locating and exploring training resources and facility scheduling data.
What is TAP IN?

A user-friendly map-driven application enabling location and exploration of training resources and facility scheduling data

• Web based map portal for discovering all TSAE training support resources (e.g. ranges, simulators, devices)

• Locate training resources and locations

• Find SOPs, handbooks, access maps, directions

• Search scheduling calendars for training facilities across USAREUR (Range Facility Management Support System – RFMSS)

• Share Lessons Learned, Tactics, Techniques & Procedures with training community
What is TAP IN?

Better way of interacting with Range Facility Management Support System (RFMSS) scheduling data

• Command (USAREUR)
• Sub-region (Training Support Centers)
• Facility (Ranges, Training Aids and Devices (TADS))
Service Oriented Approach

- ArcGIS Server for map data and imagery services
- JSON and SOAP Web services for Oracle data and resource library

Interface combines the ESRI JS API with jQuery and ASP.NET

- Slideout panels
- Keyword search using jQuery smart search plugin
- Leveraged jQuery for enhanced user experience and efficient design

Application mobility: deployable to other .mil networks and groups within the JMTC.
Configurable via embedded database.
Oracle 11gR2, ArcGIS Server 10.1, ArcGIS JavaScript API

jQuery – customization for

• Slideouts
• Information Window controls, accordions
• Keyword search

SOA approach

• Esri Map, Image services
• Custom web services for RFMSS, Resource Library

Misc

• Clustering
• Custom graphic labeling, tooltips
Data Integration

Enterprise GIS Data
- ESRI ArcGIS Server
- ArcGIS JavaScript API
- ArcGIS Desktop
- Enterprise geospatial databases
  - installation data
  - aerial imagery

Non-Spatial Enterprise Data
- Oracle databases
- Document repository (file databases)
- Information Feedback
Data Integration

Spatial data
• Dynamic vector map services
• Feature layers
• Graphics layers
• Clustered graphic layers
• Image service layers

Non spatial data
• Oracle DB scheduling system (RFMSS)
• Document repositories (resource library, maps, SOPs, and more)
Features

Map-centric GUI with Smart Search

- Clean design, limited inputs
- Focus on map
- Enhanced user experience
Map Centric Interface
Search for Resources

Search is single text box...

...with auto-suggest
Features

Map-centric GUI with Smart Search
- Clean design, limited inputs
- Focus on map
- Enhance user experience

RFMSS - smart results grid, calendar control, output to file

Smart search, Map Active Facilities
Oracle Scheduling Reports (RFMSS)

Range Facility Management Support System

Information Windows with search tool and dynamic content
Oracle Scheduling Reports (RFMSS)
Updated GUI with Smart Search
• Clean design, limited inputs
• Focus on map
• Enhance user experience
RFMSS - smart results grid, calendar control, output to file
Smart search, Map Active Facilities
Resource Library file browser, AF Survey Sheets
Feedback – Tactics, Techniques & Procedures
STRONG SOLDIERS, STRONG TEAMS!

As of 26 Jun 2014

Esri IUC 2014 San Diego CA
User Feedback

Submit Feedback to TSAE
Updated GUI with Smart Search
• Clean design, limited inputs
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RFMSS - smart results grid, calendar control, output to file
Smart search, Map Active Facilities
Resource Library file browser, AF Survey Sheets
Feedback – Tactics, Techniques & Procedures
Unit SharePoint adoption
TAP IN & SharePoint

TAP IN can be readily embedded in unit SharePoint sites

Full Screen TAP IN: https://armyrangemapper.eur.army.mil/tapin

Deploy to unit SharePoint sites

12th CAB
https://intranet.eur.army.mil/12cab/hq/s3/training

21st TSC
This page contains a presentation slide titled "TAP IN – What went into it". The content is divided into three sections: Content, Workflow, and Functionality.

### Content
- RTSD data call & content scrub
- GIS RSC data development
- Land Forces Assurance event (Pabrade, Lithuania; Adazi, Latvia; Tapa, Estonia)
- 173rd ABCT AF Survey Sheet data

### Workflow
- Reduction data redundancy
- Data Contribution, SharePoint deployment SOPs

### Functionality
- Internal Alpha testing
- Limited Beta test sessions (12th CAB, 173rd ABCT)
Clean design
Limited inputs
Focus on map
Enhances user experience
Simplicity = more dev work
but better for user
Design Elements
Simple search
Slide-outs
Transparency
Clean map graphics
jQuery Integration
Keyword Search
Point Clustering
Graphic Labeling
Extending the Popup
Custom Tooltips
Image Services
Security/Encryption
Point Clustering

Eliminates clutter, avoids overlapping features
Multiple layers are clustered
Hierarchical Layers
Cluster features + clustered info window
Dynamic cluster “count”
Behind the scenes
Extend JS API GraphicsLayer
Mouse over shows singles and tooltips
Offset cluster count in graphic
Separate graphics layer for singles
Challenge to put labels on cluster (graphics) layers

No native support

Created extra graphics layer

- Copy of graphics geometry
- Added white backing
- Added text
- Scale dependency
- Labels are clickable
Custom popup style templates and sprite
jQuery integration – accordions, calendar date picker
Integration with the clustered points
Popup content is configurable and dynamic
Custom Tooltips

Mouse over shows a small “maptip” (not the same as popup window)

Used custom element for tooltips (maptips)

Roll over a cluster and see names of all facilities in cluster

Used onmouseover event

- Set content
- Set position
  - Avoid edges
TSAE has historical aerial imagery and topo maps.

ArcGIS Image Server: mosaic dataset overviews.

- Overlays tool - toggle imagery layers.
- Image layers between base map and vector layers.
Challenges

Design
STIG Compliance
Encryption - SSL (https)
SiteMinder SSO Integration
Implementation on Army network
Foreign Disclosure, Copyright / Distribution
Operational Security
Network Access
Design (again)

Intuitive design is difficult...
...because it’s a deal breaker for user adoption

Limited inputs
Map Centric
Simplicity = more dev work but better for user
Simple search
Slide-outs
Transparency
Clean map graphics
STIG Compliance

- Coding standards
- .NET and system configuration
- Server hardening and group policies
- Software Assurance
- Internet Explorer only (yuk)

Everything must run over SSL (https)

- ArcGIS and Web Adapter SSL
- All API references SSL
- Web services over SSL
- Basemap toolbar thumbnails... yep SSL
ESRI widgets cause mixed content error in IE

- Custom controls to avoid http requests content from ArcGIS online.

ESRI JS API, jQuery all hosted in-house to avoid cross-site scripting issues.

ArcGIS Server configuration lessons learned for STIG and CoN
More content, more coverage
Continue unit SharePoint outreach
ArcGIS Online Portal
CAC Enabled mobile version
Multiple JMTC deployments
NATO engagement
  • BICES (LANDCOM, ACT)
DAMO-TRS – umbrella portal for DA training support systems

Future Challenges
  • Whitelist
  • OS Security
  • Balance lightweight vs functionality
  • ARM – TAP IN convergence
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