Army Sustainable Range Program (SRP)

Developing the Army Range Mapper (ARM) - Lessons Learned

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Abstract

- In spring 2009, U.S. Army Europe (USAREUR) Sustainable Range Program (SRP) rolled out a new Army Range Mapper (ARM) application built upon ArcGIS Server version 9.2. Facilitating the dissemination of geospatial data in support of military training activities in the European theatre and beyond, ARM also hosts several training support tools including the web-enabled version of the DoD's Surface Danger Zone (SDZ).

- Due to a range of technical challenges however, both the performance and usability of ARM fell short of requirements. To overcome these challenges, and in fulfillment of the role of USAREUR's SRP as a Test and Development Center for Army-wide SRP GIS solutions, a number of development strategies were pursued and implemented - including a comprehensive application upgrade to ArcGIS Server 9.3.1 technology.

- This presentation will elaborate the lessons learned during the process of migrating ARM, detail some of the enhancements made and provide comparative performance statistics of the solutions employed.

Background

- The USAREUR SRP GIS mission is to create, manage, and distribute authoritative standardized spatial information, products, and services for the execution of training on U.S. Army Europe ranges and training lands.

- The ARM has been developed as an integrated platform for supporting the USAREUR SRP GIS mission online

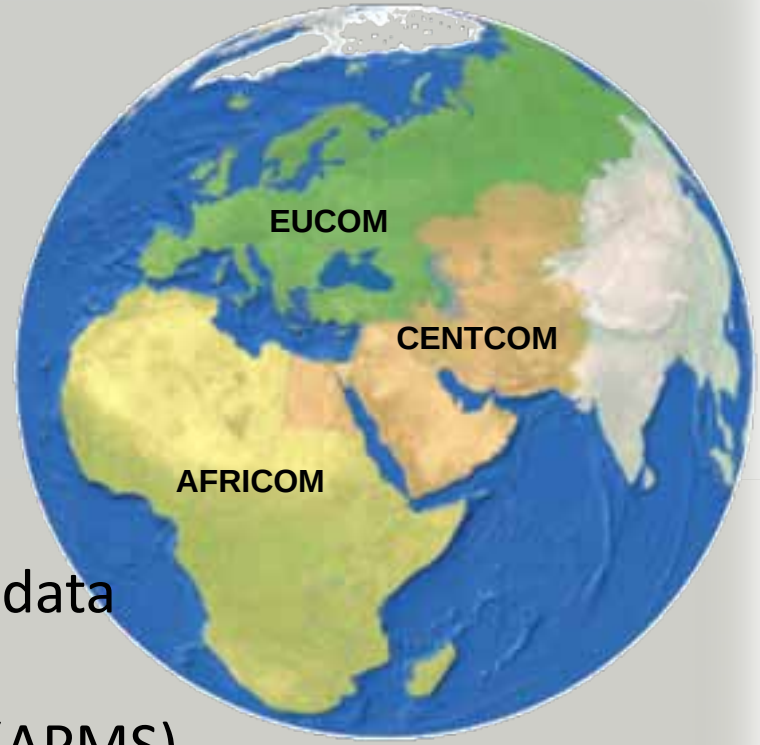
- ARM currently disseminates geospatial information for training areas, ranges, Forward Operating Sites/Cooperative Security Locations (FOS/CSL) spread throughout EUCOM, AFRICOM, and CENTCOM

- ARM aims to provide a one-stop-shop for all USAREUR SRP customers, including the training war fighter community, range safety personnel and environmental GIS analysts

Application Overview

- NIPR solution

- Serving FOUO data
  - -180 training areas
  - -across 23 countries
  - -3 commands



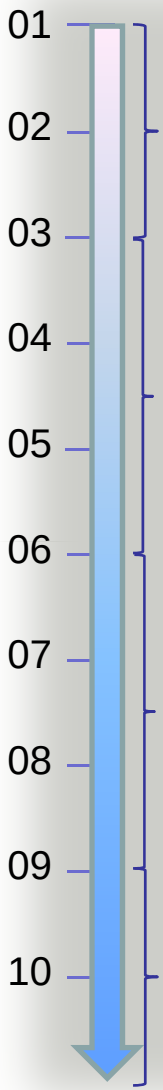
- ARM draws upon a 5 GB store of vector data and serves 15 GB of raster data

- Army Portfolio Management System (APMS)

- DIACAP – IATO, ATO

- Service Certificate of Networthiness (CoN)

Evolution of ARM

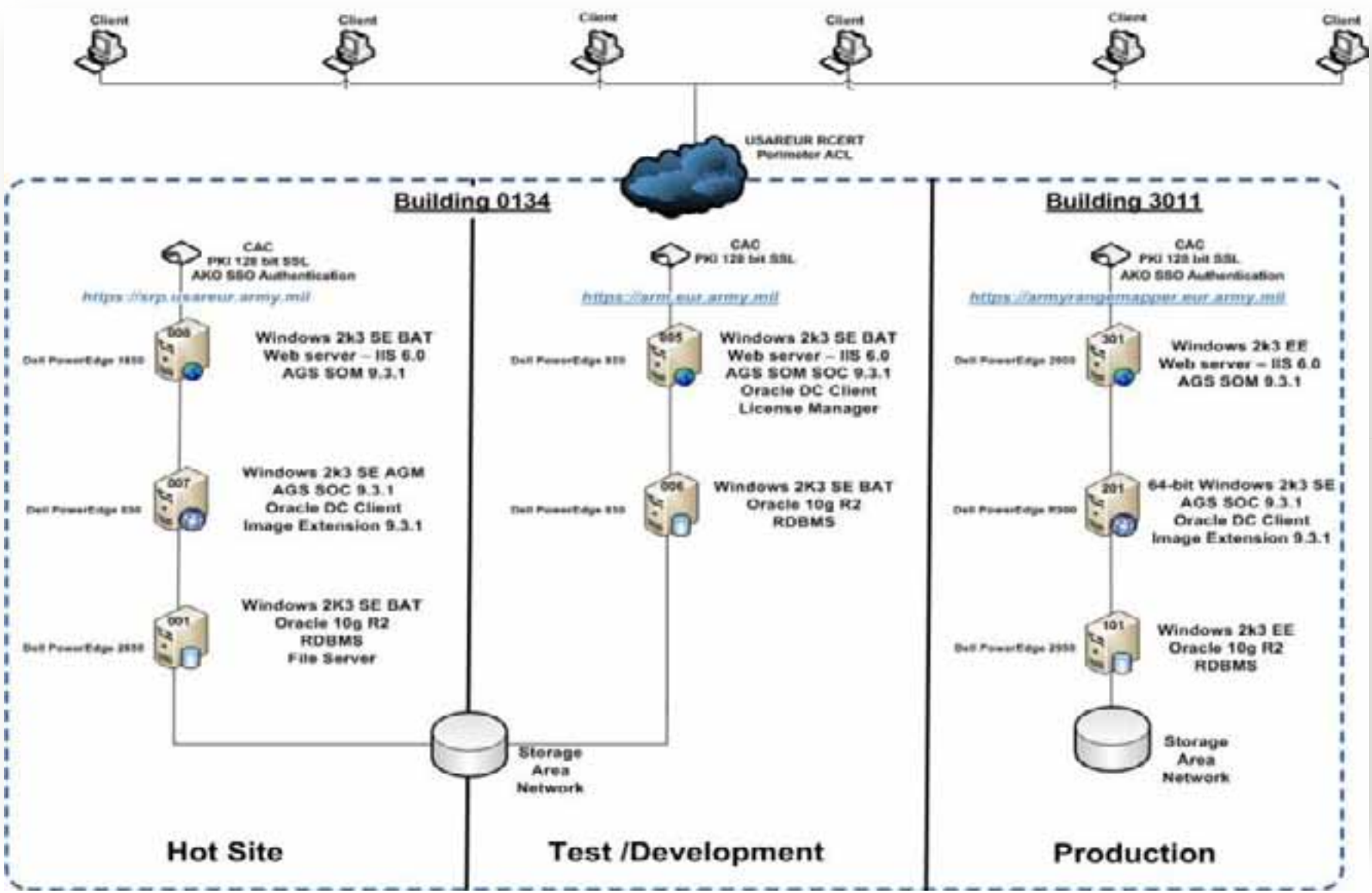


- Out-of-the-box web-based image viewer. No customization, limited functionality, no vector visualization
- ITAM Mapper – USAREUR's pioneering application, tailored, based upon ArcIMS. Vector and raster data visualization, core GIS toolset. Performed well but little scope for future growth
- Subsequently redeployed using WebADF as an ArcGIS Server 9.2 application – improved service publication workflow and functional scalability
- Advances in functionality tempered by performance degradation. Optimization of application yielded minimal gains. A different approach was required
- Current application represents a move from server-side approach to one that places more of the workload on the client browser
- Significant performance gains, clearing the way for better integration of USAREUR SRP GIS products and services
- New approach – release of initially lightweight application upon which further iterations will build

Current System Environment

- Application: ArcGIS Server 9.3.1, JavaScript
- Webserver: Microsoft Internet Information Services (IIS) 6.0
- Geospatial Middleware: ArcSDE 9.3.1 Direct Connect (Oracle 10g/11g client), ArcGIS Server Image Extension 9.3.1
- Database Backend: Oracle 10g release 2
- Operating Environment: Microsoft Windows 2003 Server
- Client – Server Authentication: DoD PKI/SSL
- User Authentication – AKO SSO
- .Mil Network only

Current System Architecture

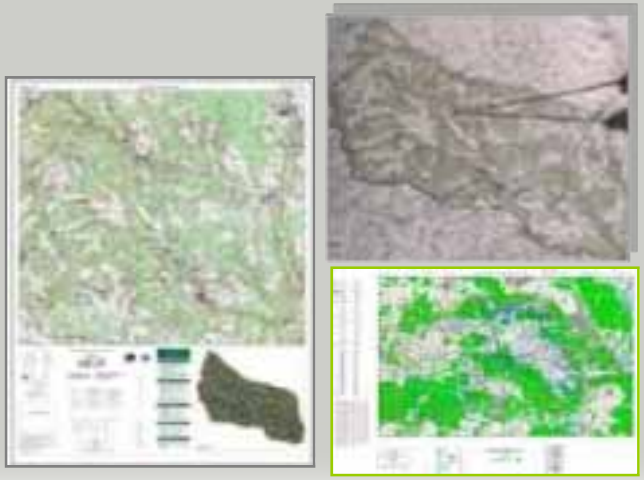


Requirements From User Feedback

- High performance
- Intuitive design
- Locating resources or facilities
- Screenshots for presentation
- Reading MGRS coordinate of a facility
- Printing facility maps
- Coordinate conversion

Requirements From User Feedback

- Download military standard maps
- Change detection
- Share extent
- Use graphic tool

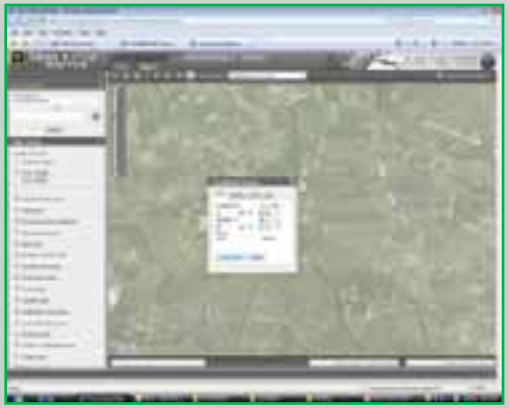


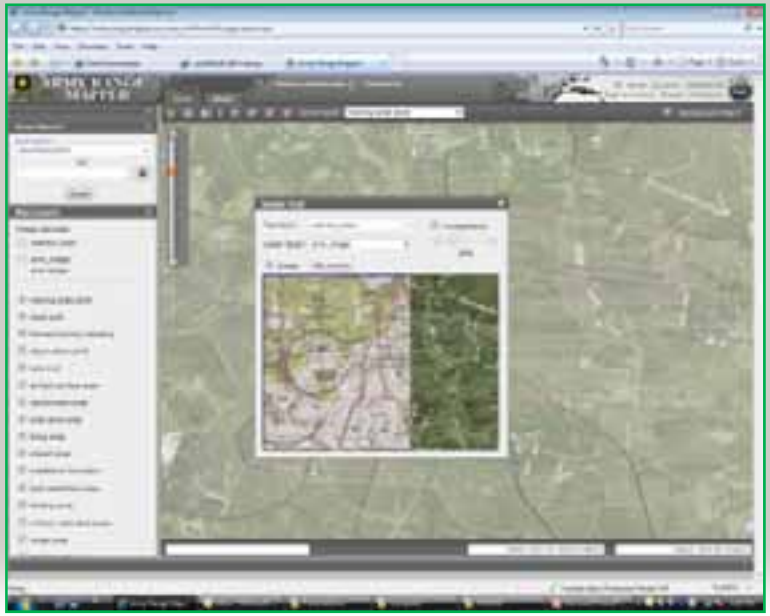
Lesson Learned

- ✓Light weight
- ✓Modular application
- ✓Data Model implemented to allow separation of non-spatial data
- ✓Look out for security filters, updates or patches (STAMIS Container)
- ✓ Limit application calls to local host- Host API locally
- ✓Install latest service pack across ArcGIS Server components
- ✓Leverage Support - ESRI, Developers, Security team

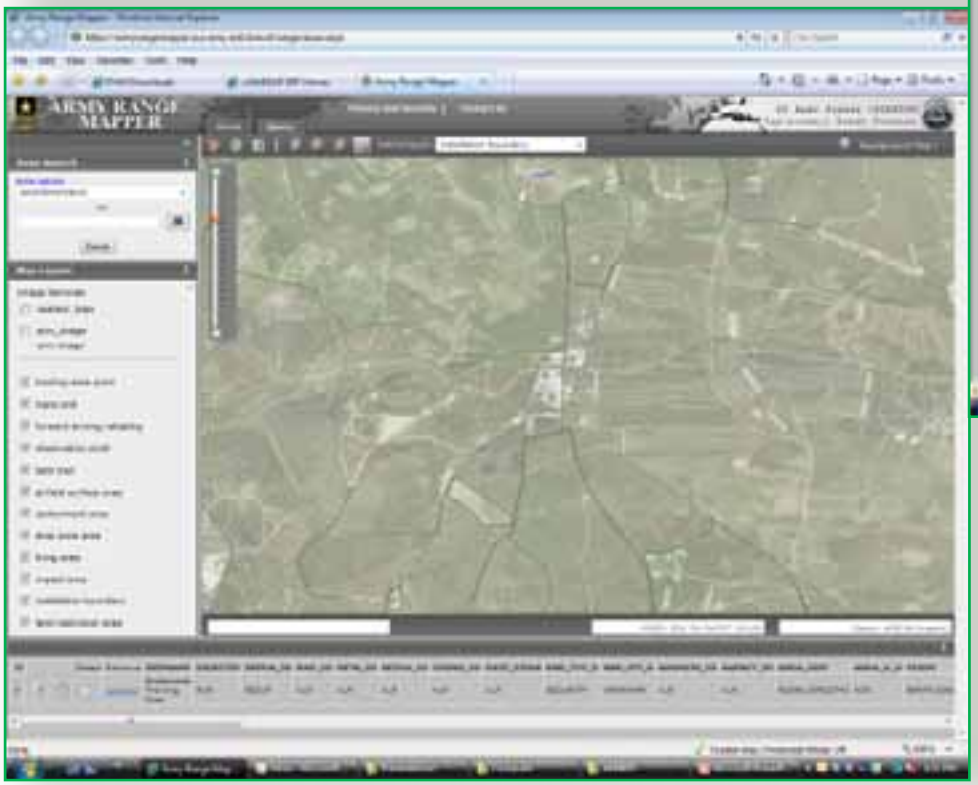
Lesson Learned

- ✓User feedback
- ✓Keep it simple
- ✓Documentation (SOPs, bug tracking, etc.)
- ✓Personnel training
- ✓Data QA/QC
- ✓System recovery (backup, COOP)
- ✓Extensive testing

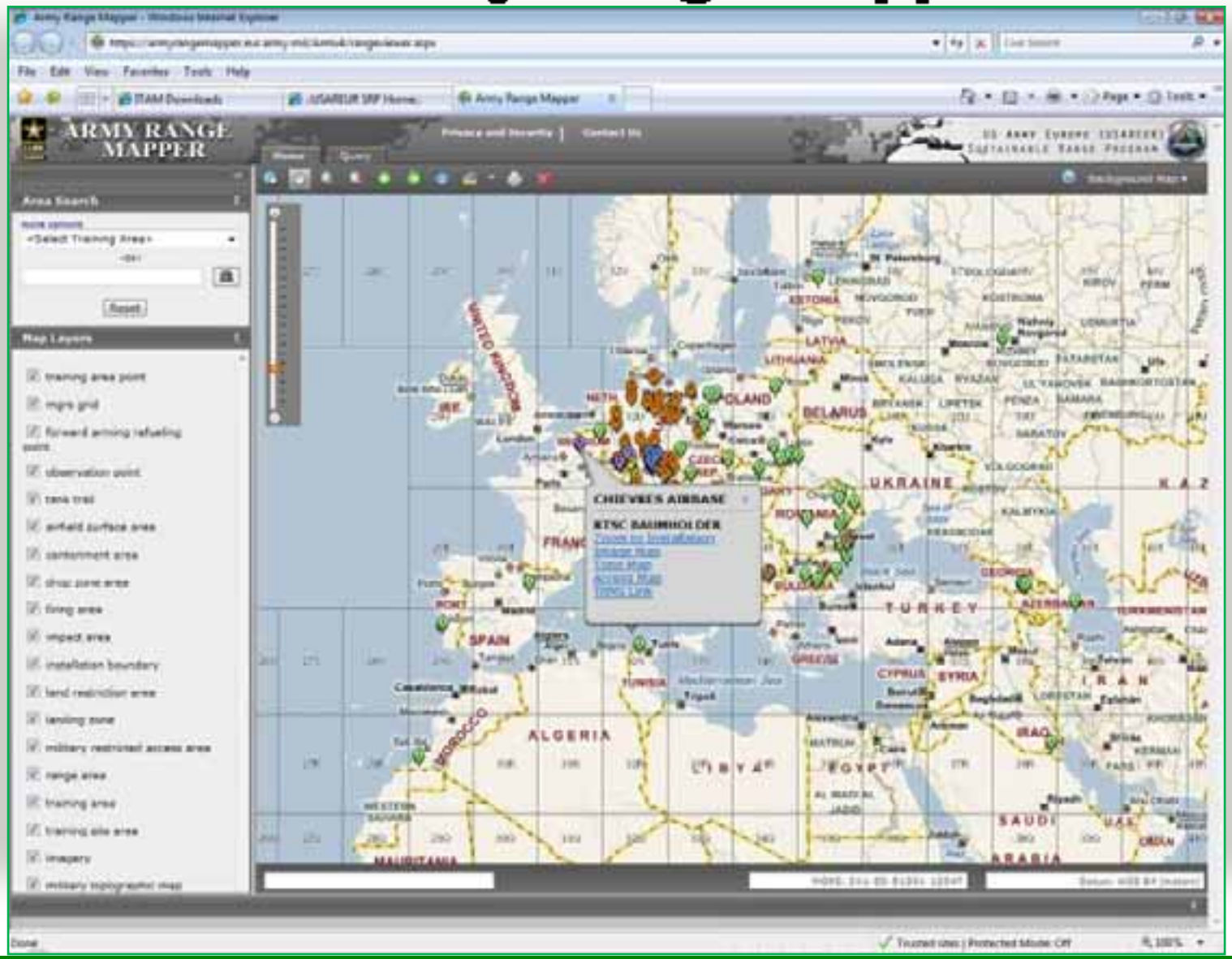




Army Range Mapper



Army Range Mapper



Questions?

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