

Federal GIS Conference 2014

February 10–11, 2014 | Washington DC



Leveraging the ArcGIS Platform to Support your Mission

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Kevin Knapp, Tierra Plan: U.S. Army Training Support Activity Europe
(TSAE)

Location Analytics

Mapping Platform for your entire
Organization



Why Is Location So Compelling Now?

- **Maps** communicate
- **Spatial analysis** is powerful
- **New technology** is making location easier



Accountability and Management

Government Transparency

Business

Science & Technology

Climate Change

Education

Transportation

Defense & Security

Infrastructure

Water Resources

Oceans

Nature Conservation

Urbanization & Development

Energy

Human Health

Utilities

Environment

Agriculture

Location

Smart Growth

Government

Delivers Value

Social Conflicts

Natural Disasters

Economic Recovery

Mapping

Research



Across Many Organizations, Missions, and Projects

ArcGIS Is a Platform

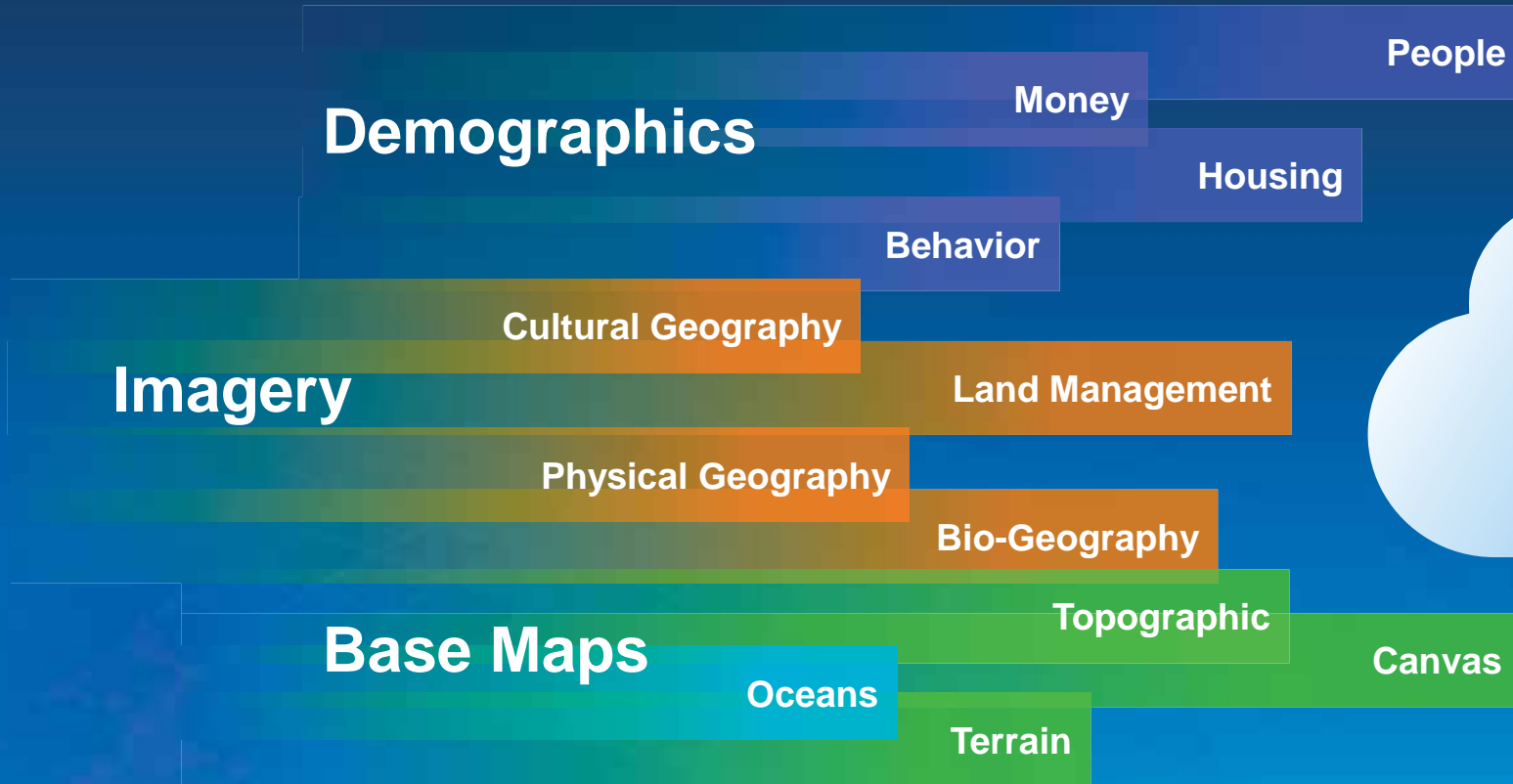
Enabling Web GIS Everywhere

Simple
Integrated
Open



*Available in the Cloud . . .
. . . and On-Premises*

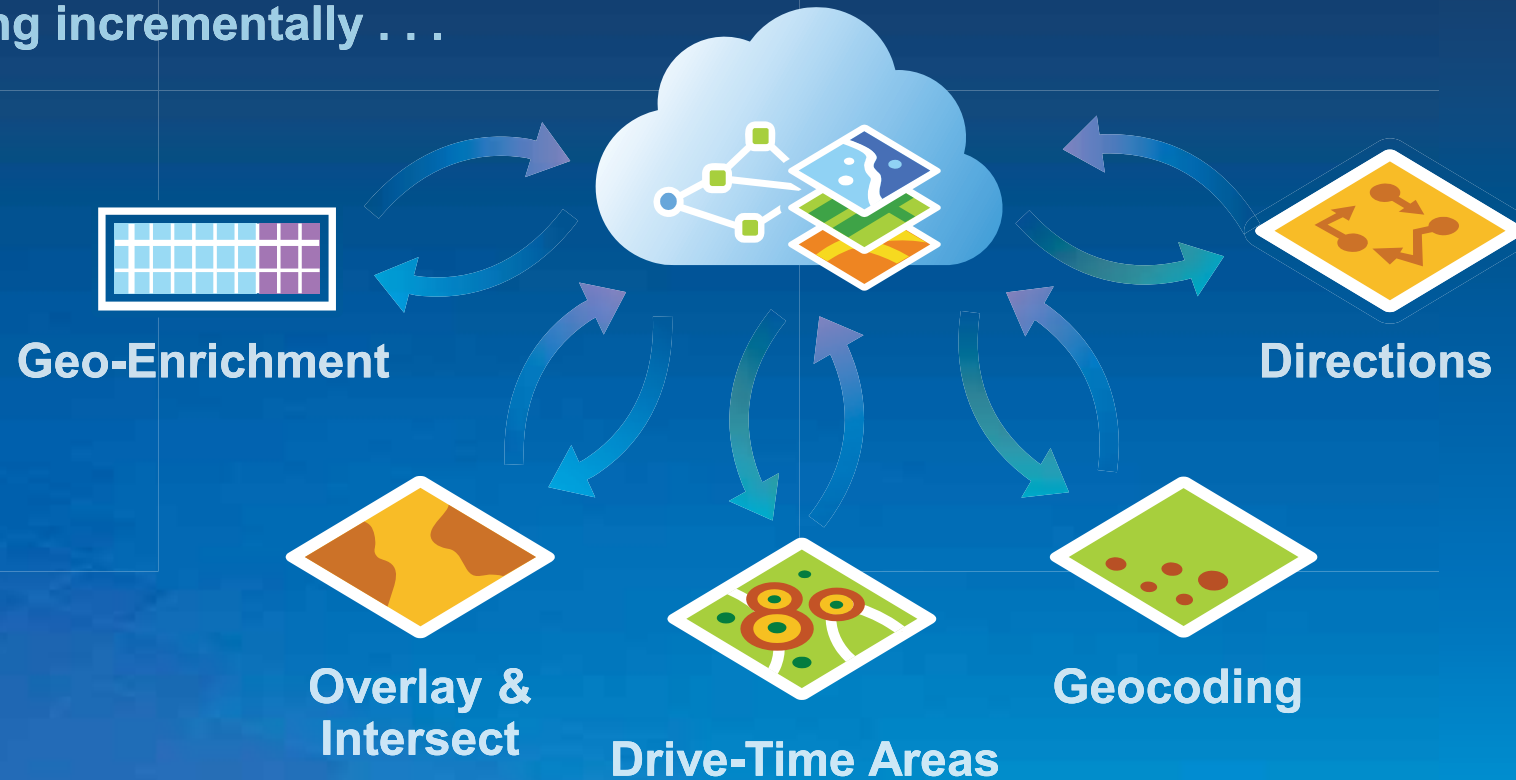
Web GIS Includes Online Content Services



... Global maps available to all ArcGIS users

Web GIS Includes Online Analytic Services

More new services
releasing incrementally . . .



. . . Geocoding, analysis, and geo-enrichment functions

Web GIS Includes New Applications



Explorer & Collector
for iOS, Android, Windows



Microsoft Office Add-In
for Excel / PowerPoint



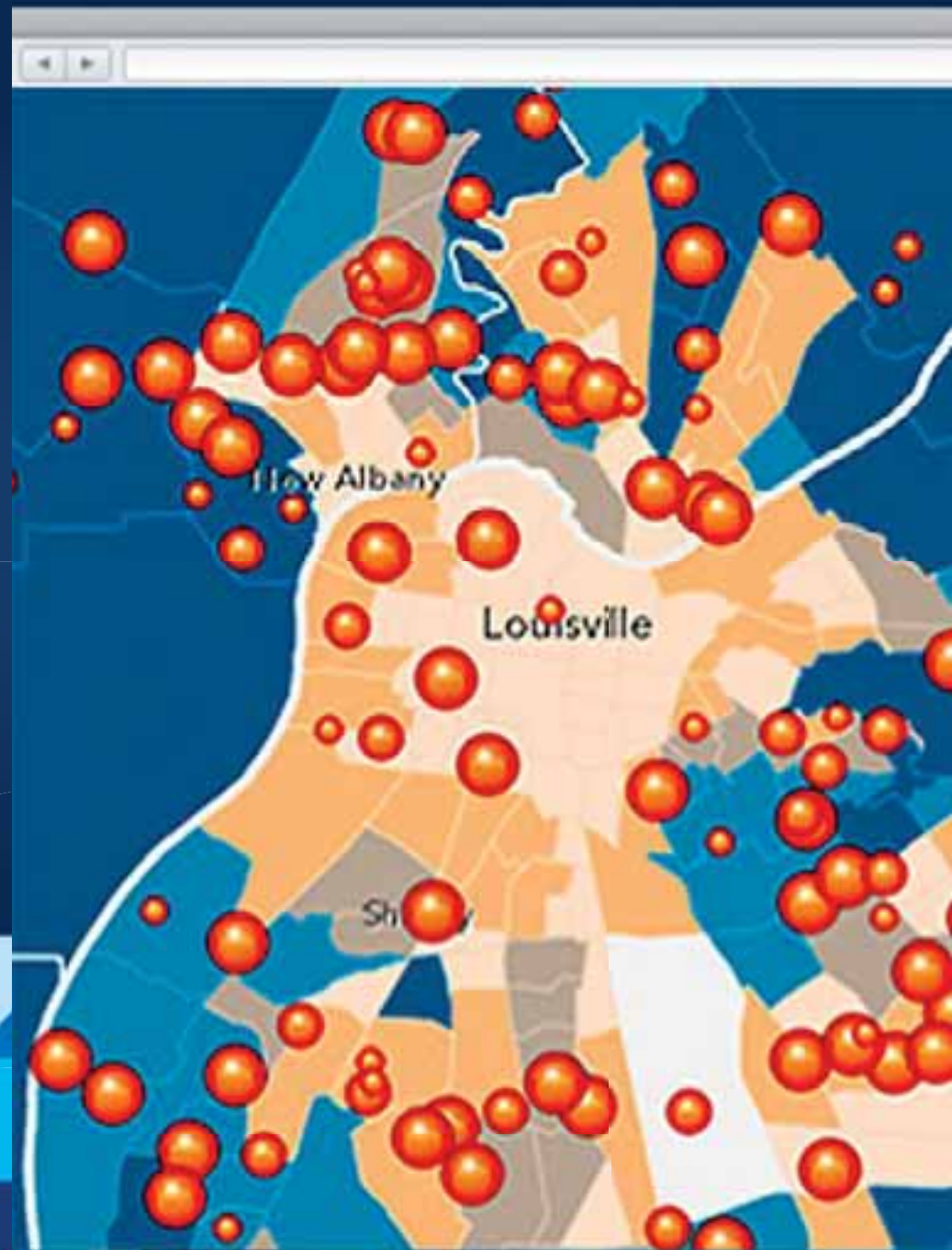
Operations Dashboard
for MS Windows

. . . with your ArcGIS Desktop and ArcGIS Online

Demo

Leveraging the Platform

Evan Caldwell



The Platform Geo-enrichs Enterprise Systems

Providing Mapping, Spatial Analysis, and Reporting



Demo

U.S. Army Training Support Activity Europe (TSAE) – TAP IN

Kevin Knapp – Tierra Plan



Leveraging the ArcGIS Platform for Data Integration

Discovering US Army Europe Training Resources



The Map as a Data Interface

Army Overview



7th Army JMTTC: the U.S. Army's largest overseas training command.

- **Training Support Activity Europe (TS&AE): A directorate of the JMTTC.**
 - **JMTTC 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). TS&AE 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?

- **Web based map portal for discovering all USAREUR 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 (RFMSS)**
- ***Share* Lessons Learned, Tactics, Techniques & Procedures with training community**

Architecture

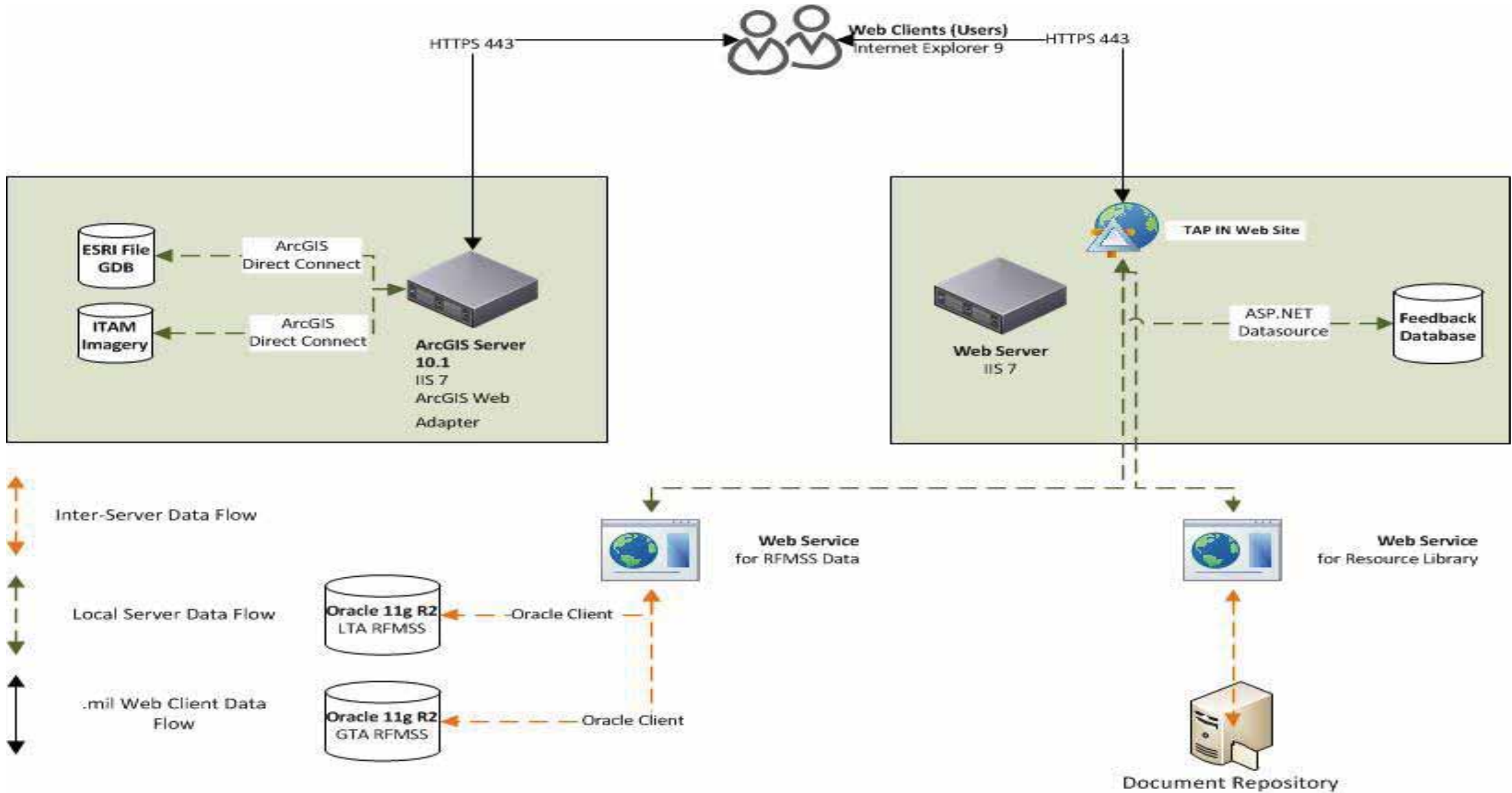
- **Service Oriented Approach**
 - **ArcGIS Server for map data and imagery services**
 - **JSON and SOAP Web services for Oracle data and document repository**
- **User Interface**
 - **ESRI JavaScript API**
 - **Most scalable API, gives us fine grained control over map content.**
 - **Plugins are restrictive in Army network.**
 - **ASP.NET: leverage hybrid server side and client side platforms**
 - **jQuery for rich user experience, improved performance**
- **Application mobility: deployable to other .mil networks and groups within the JMTC.**

Map Centric Interface



User Interface

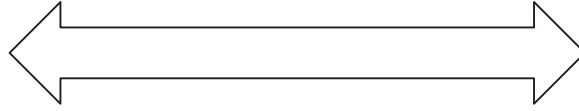
- **Leveraged jQuery for enhanced user experience and efficient design**
- **Combine jQuery components with the ESRI JS API and ASP.NET**
 - Slideout panels
 - Info Window controls
 - Keyword search using jQuery smart search plugin
 - Header tools - Resources, Basemaps
- **Highly configurable via administrative interface**



Platforms

- **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

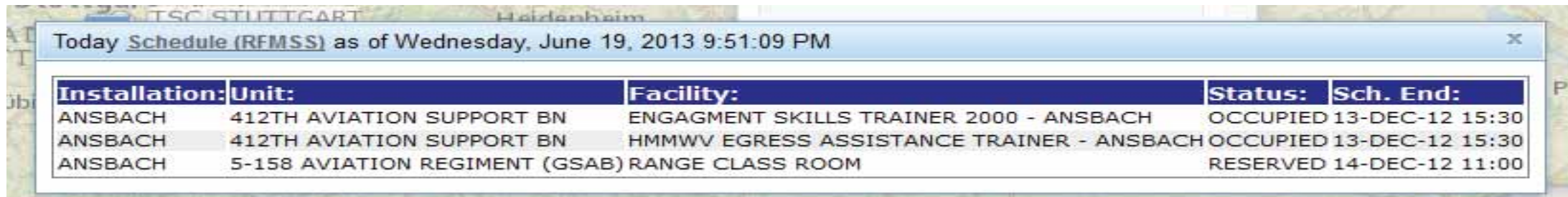
Data Integration

- **Spatial data**

- Dynamic vector map services
- Feature layers
- Graphics layers
- Clustered graphic layers
- Image service layers

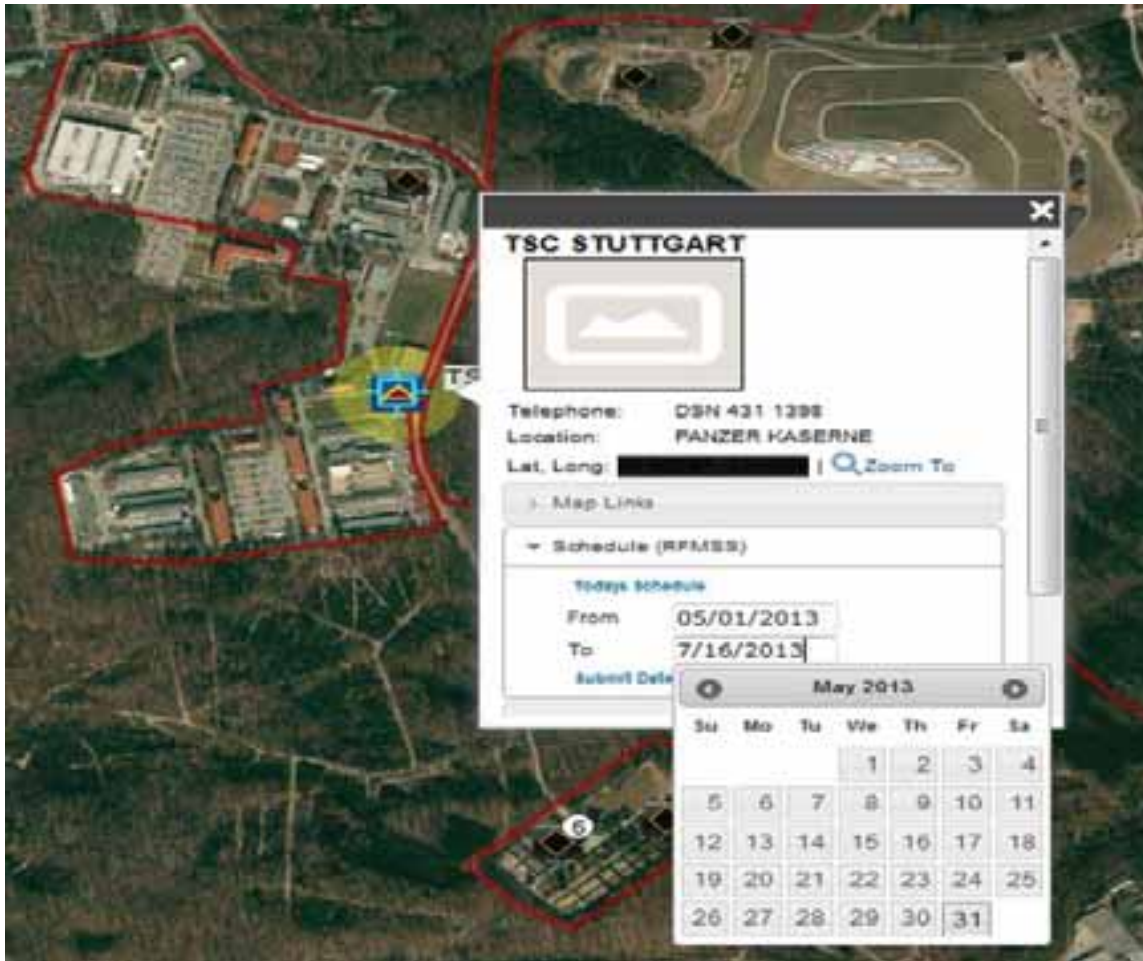
- **Non spatial data**

- Oracle DB scheduling system (RFMSS)
- Document repositories (maps, SOPs, and more)



Installation:	Unit:	Facility:	Status:	Sch. End:
ANSBACH	412TH AVIATION SUPPORT BN	ENGAGEMENT SKILLS TRAINER 2000 - ANSBACH	OCCUPIED	13-DEC-12 15:30
ANSBACH	412TH AVIATION SUPPORT BN	HMMWV EGRESS ASSISTANCE TRAINER - ANSBACH	OCCUPIED	13-DEC-12 15:30
ANSBACH	5-158 AVIATION REGIMENT (GSAB)	RANGE CLASS ROOM	RESERVED	14-DEC-12 11:00

Oracle Scheduling Reports (RFMSS)



Export to XLS

INSTALLATION	START_DATE	END_DATE	FACILITY	UNIT	EVENT
JMTC	05-FEB-13	05-FEB-13	COMMON DRIVER TRAINER - VILSECK	JMTC HHC	MRAP VARIANT DRIVERS TRNG.
JMTC	05-FEB-13	05-FEB-13	HMMVV EGRESS ASSISTANCE TRAINER - VILSECK	JMTC HHC	HMMVV EGRESS ASSISTANCE TRAINER (HEAT)
GTA	07-JAN-13	31-JAN-13	TANK CREW PROFICIENCY COURSE/TTR	JCR	ADMIN-REASONS
GTA	13-JAN-13	26-JAN-13	OP07	AF/ALO	ADMIN-REASONS
GTA	15-JAN-13	31-JAN-13	MFP109A	DUTCH GLOBAL ROYAL MARINES	DISM MTR - HE
GTA	15-JAN-13	31-JAN-13	MFP150	DUTCH GLOBAL ROYAL MARINES	DISM MTR - HE
GTA	15-JAN-13	31-JAN-13	MFP301A	DUTCH GLOBAL ROYAL MARINES	DISM MTR - HE
GTA	15-JAN-13	06-FEB-13	OP04	DUTCH GLOBAL ROYAL MARINES	DISMOUNTED MANEUVER AREA
GTA	15-JAN-13	06-FEB-13	OP06.1-10	DUTCH GLOBAL	DISMOUNTED MANEUVER

Information Windows with search tool and dynamic content

Oracle Scheduling Reports (RFMSS)

The screenshot displays the Oracle Scheduling Reports (RFMSS) interface. It features a satellite map of the Grafenwoehr area with several event locations marked by numbered icons. A table window is overlaid on the map, showing a list of events with columns for Installation, Start Date, End Date, Facility, Unit, and Event. A detailed popup window for 'TSC GRAFENWOEHR' is also visible, providing contact information and a schedule for the period from 1/23/2013 to 2/6/2013.

INSTALLATION	START_DATE	END_DATE	FACILITY	UNIT	EVENT
JMTC	05-FEB-13	05-FEB-13	COMMON DRIVER TRAINER - VILSECK	JMTC HHC	MRAP VARIANT DRIVERS TRNG.
JMTC	05-FEB-13	05-FEB-13	HMMVV EGRESS ASSISTANCE TRAINER - VILSECK	JMTC HHC	HMMVV EGRESS ASSISTANCE TRAINER (HEAT)
GTA	07-JAN-13	31-JAN-13	TANK CREW PROFICIENCY COURSE/TTR	2CR	ADMIN-REASONS
GTA	13-JAN-13	26-JAN-13	OP07	AF/ALO	ADMIN-REASONS
GTA	15-JAN-13	31-JAN-13	MFP109A	DUTCH GLOBAL ROYAL MARINES	ELMH MTR - HE
GTA	15-JAN-13	31-JAN-13	MFP150	DUTCH GLOBAL ROYAL MARINES	ELMH MTR - HE
GTA	15-JAN-13	31-JAN-13	MFP301A	DUTCH GLOBAL ROYAL MARINES	ELMH MTR - HE
GTA	15-JAN-13	06-FEB-13	OP04	DUTCH GLOBAL ROYAL MARINES	DISMOUNTED MANEUVER AREA
GTA	15-JAN-13	06-FEB-13	OP06.1-10	DUTCH GLOBAL	DISMOUNTED MANEUVER

TSC GRAFENWOEHR

Telephone: DSN 476 1388
Location: GRAFENWOEHR
Lat, Long: [REDACTED] [Zoom To](#)

Map Links

TSC Schedule (RFMSS)

Today's Schedule

From: 1/23/2013
To: 2/6/2013
[Submit Date Search](#)

User Feedback

Submit Feedback to TSAE



A screenshot of a web form titled 'Tactics, Techniques & Procedures Report'. The form is intended to capture feedback on real-world use of Training Facilities depicted in TAPDs. It includes an email address: usatttc.support@us.army.mil. The form is for 'TSC GRAFENWOEHR' and contains five text input fields with the following prompts: 'What training was conducted?', 'What was good about the training facility?', 'What about the Training Facility could improve?', and 'Any additional comments?'. The form is enclosed in a blue border.

TAP In & SharePoint

TAP IN is designed to be easily embedded in a unit's own SharePoint site



Design

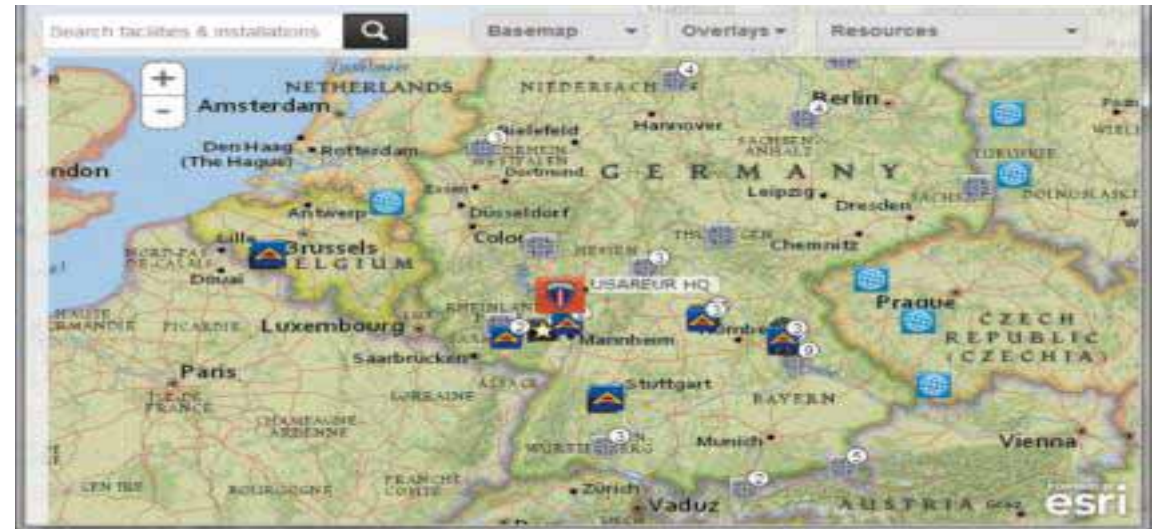
Clean design

- 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

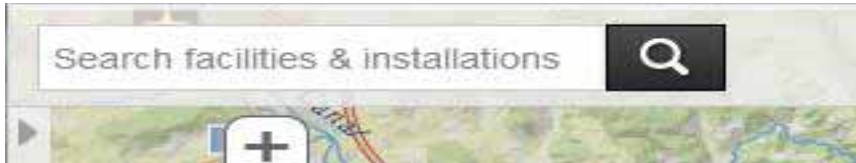


Key Features

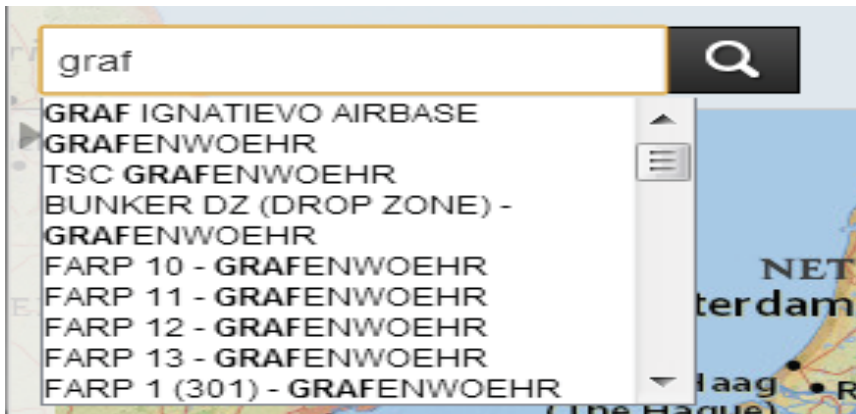
- **jQuery Integration**
- **Keyword Search**
- **Point Clustering**
- **Graphic Labeling**
- **Extending the Popup**
- **Custom Tooltips**
- **Image Services**
- **Security/Encryption**

Search for Resources

Search is single text box...



...with auto-suggest



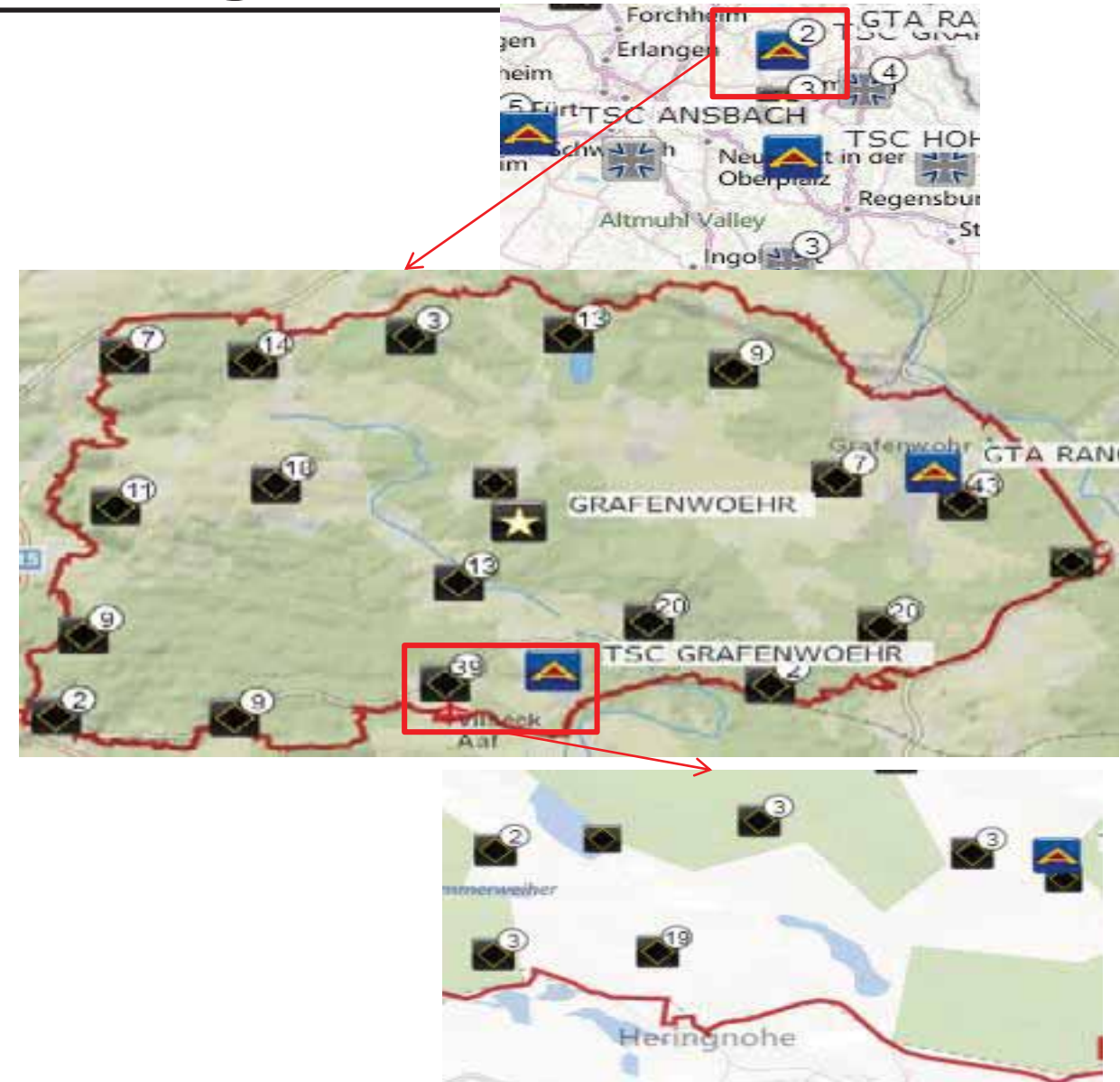
Point Clustering

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



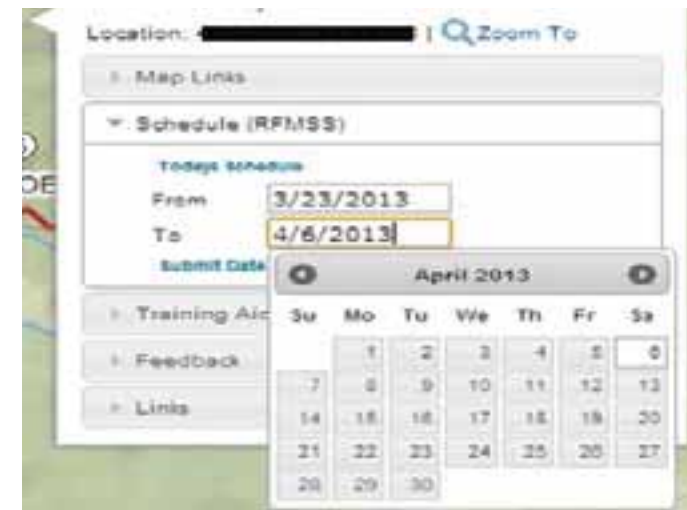
Graphic Labeling

- 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



Extending the Pop Up

- Custom popup style templates and sprite
- jQuery integration – accordions, calendar date picker
- Integration with the clustered points
- Popup content is configurable and dynamic



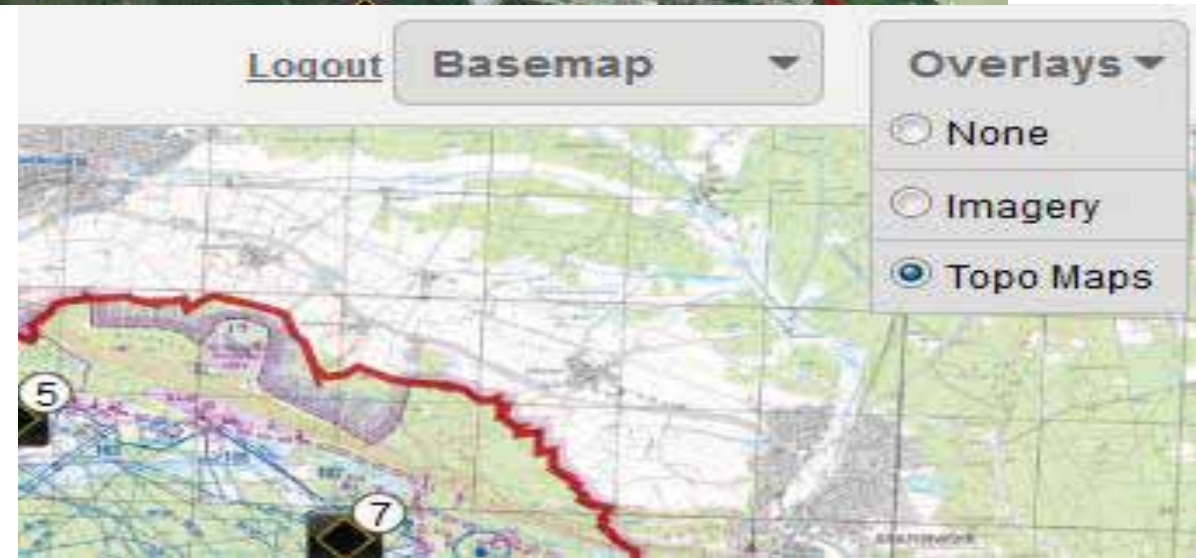
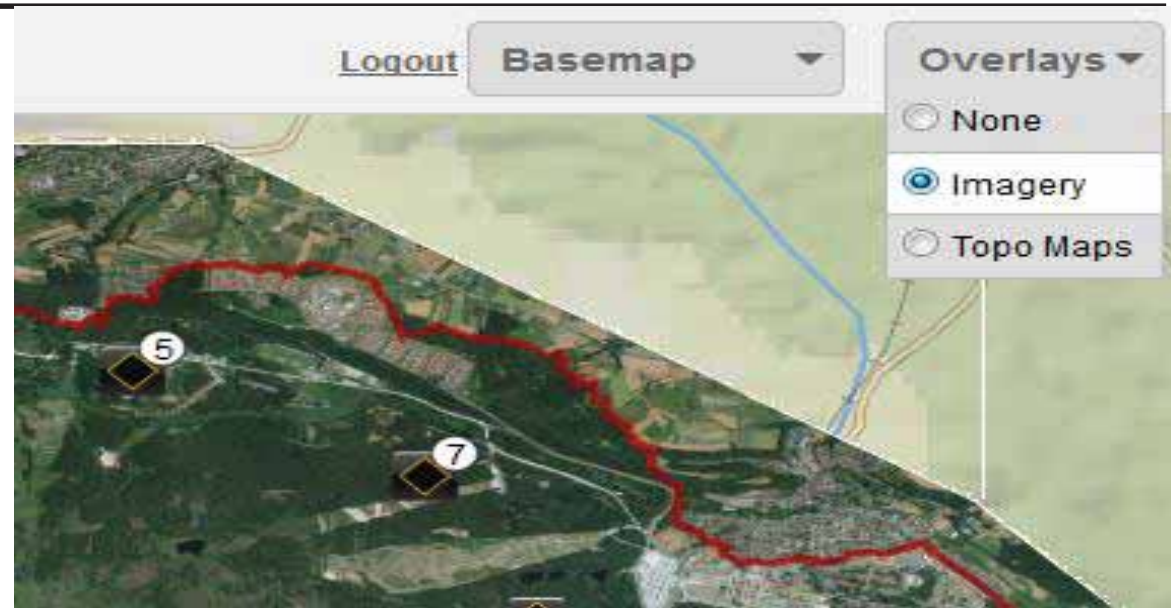
Custom Tooltips

- 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



Image Services

- 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**

Security/Encryption...

- **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



...Security/Encryption

- **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**

What's Next?

- **Integration with other TSAE Web Sites**
 - **Army Range Mapper (ARM)**
 - **TSAE Catalog**
- **ArcGIS Online Portal**
- **Multiple JMTC deployments**
- **Mobile version - CAC Enabled mobile devices**
- **TAP IN features finding their way to ARM**

Clustering

Search

Responsive design

ARM

Army Range Mapper

The screenshot displays the Army Range Mapper (ARM) interface. The main map shows the Kaiserslautern area with various military installations highlighted. A popup window titled "ARM Identify Results" is open, showing the following information:

Active Installation: KAISERSLAUTERN ARMY DEPOT

ARM Identify Results

Features
<input checked="" type="checkbox"/> cantonment area
<input type="checkbox"/> installation boundary

Instname: KAISERSLAUTERN ARMY DEPOT
EUR_SOURCE: BAUMHOLDER

The map includes a scale bar (0 to 1000 meters), a north arrow, and a legend. The sidebar on the right contains the following tools:

- Pan
- Zoom In
- Zoom Out
- Identify
- Full Extent
- Print

© 2013 Nokia, © 2014 Microsoft Corporation

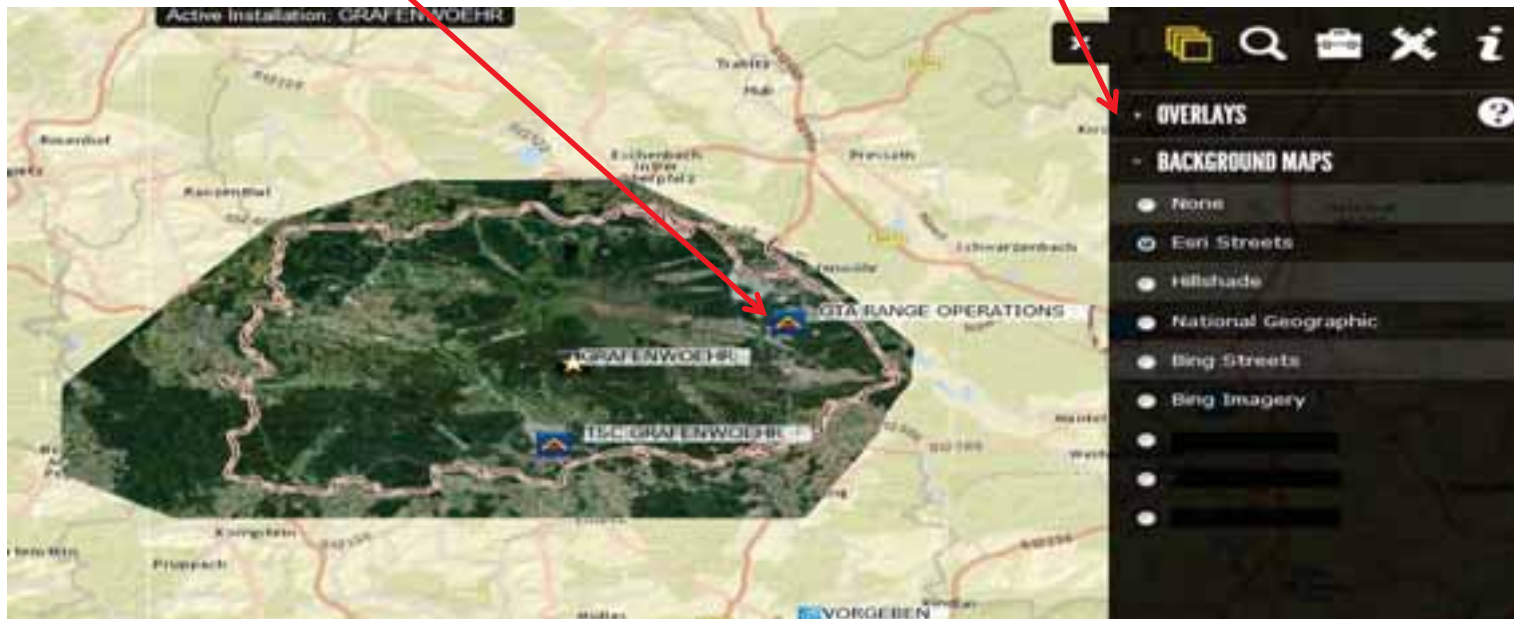
ARM

Army Range Mapper

Fingertip size buttons
Slide out tool panels
Nice on tablet and PC

TAP IN style icons and clusters

GIS layers, imagery, basemaps



User Feedback

Beta testing

Dedicated 1 – 2 hour classroom sessions

Facilities, participants coordinated through local Training Support Centers

10 – 15 soldiers, leaders (event planning, execution)

Sessions

Initial orientation – intent of system, access

Questionnaires – walkthroughs, “Treasure hunts” (map, calendar, product content), closed & open ended questions

Post-session Q&A

Lessons learned

Bugs, data gaps & updates

Simplify workflow, map clutter

In-system guidance – tooltips, help

Avoid acronym overload

Energy:Business Case

Energy industry is competitive and data heavy.

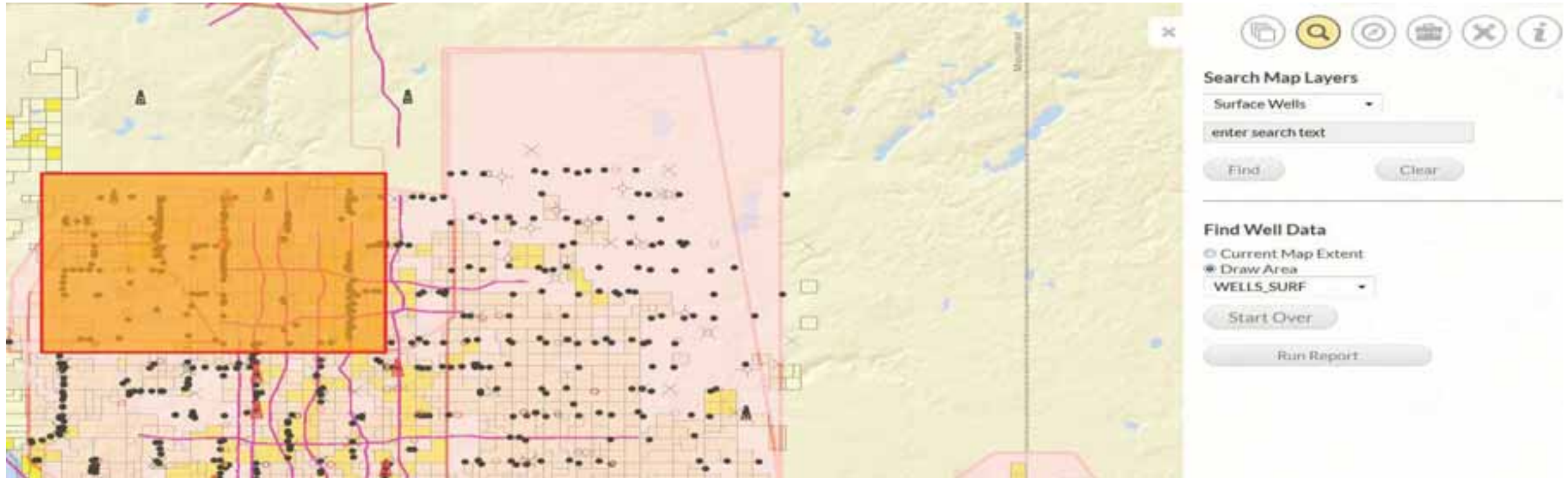
Exploration and Pipeline sectors mine multiple data sources.

GIS is a growing part of the enterprise.

But... GIS data and traditional data are not connected!

GIS & Data Integration in Energy

Use the map to select locations...



GIS & Data Integration in Energy

... get data from six disparate systems.



Please select one or more options from the menu below and create your report.

- Seismic Links
- Well Info
- Well Header
- Well Tests
- Tiff Logs
- LAS Logs

Create Report

- Seismic Links
- Well Info
- Well Header
- Well Tests
- Tiff Logs
- LAS Logs

124 Well Tests records found.

UWI	WELL_NAME	WELL_NUM	PREFERRED_NAME	OPERATOR	TEST_DA
33061002070000	HOSETH		NORTH DAKOTA	BROWNLIE-WALLA	NULL
33061002370000	KARBOWSKI	1	NORTH DAKOTA	SOUTH RANCH OIL	NULL
33061003180000	HOSETH	1	NORTH DAKOTA	SOLAR PETROLEUM	NULL
33061003270000	MOEN	41579	NORTH DAKOTA	UNION TEXAS PETR	NULL
33061014490000	AUSTIN		NORTH DAKOTA	EOG RESOURCES II	00:00.0
33061014050000	AUSTIN		NORTH DAKOTA	EOG RESOURCES II	00:00.0
33061015390200	DEAL		NORTH DAKOTA	WHITING OIL & GA	00:00.0
33061018710000	LAHTI		NORTH DAKOTA	WHITING OIL & GA	00:00.0
33061018850000	LAHTI		NORTH DAKOTA	WHITING OIL & GA	00:00.0
33061018340000	LAHTI		NULL	WHITING OIL & GA	00:00.0
33061018470000	LAHTI		NULL	WHITING OIL & GA	00:00.0

Seismic Survey Files		
29 files found.		
IDSub	Datatype	File Name
1	Stack	200254_33.sgy.LOG
1	velocity	200254_155.txt
1	report	200254_153.tiff
1	sp1	200254_150.sp1
1	Stack	200254_30.sgy
1	Migration	200254_35.sgy.LOG
1	velocity	200254_37.sgy.LOG
1	field.sgy	200254_29.sgy.LOG
1	field.sgy	200254_38.sgy.LOG
1	Migration	200254_35.sgy
1	velocity	200254_37.sgy
1	field.sgy	200254_29.sgy
1	field.sgy	200254_38.sgy
1	Stack	204531_1.pdf
1	Stack	200254_30.sgy.LOG
1	Migration	200254_31.sgy.LOG
1	Migration	200254_34.sgy.LOG
1	gather	200254_32.sgy.LOG
1	CR	200254_162.tiff
1	sp1	200254_150.sp1

EST_NUM	BASE_STRAT_UNIT	BASE_STRAT_UNIT	BASE_DEPT
1	NULL	NULL	NULL
1	NULL	NULL	NULL
1	NULL	NULL	NULL
1	NULL	NULL	NULL
	NULL	NULL	14498
	NULL	NULL	NULL
	NULL	NULL	20085
1	306TRFK	THREE FORKS	17171
1	306TRFK	THREE FORKS	18357
1	306TRFK	THREE FORKS	20157
1	306TRFK	THREE FORKS	20002

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<http://www.tierraplan.com>

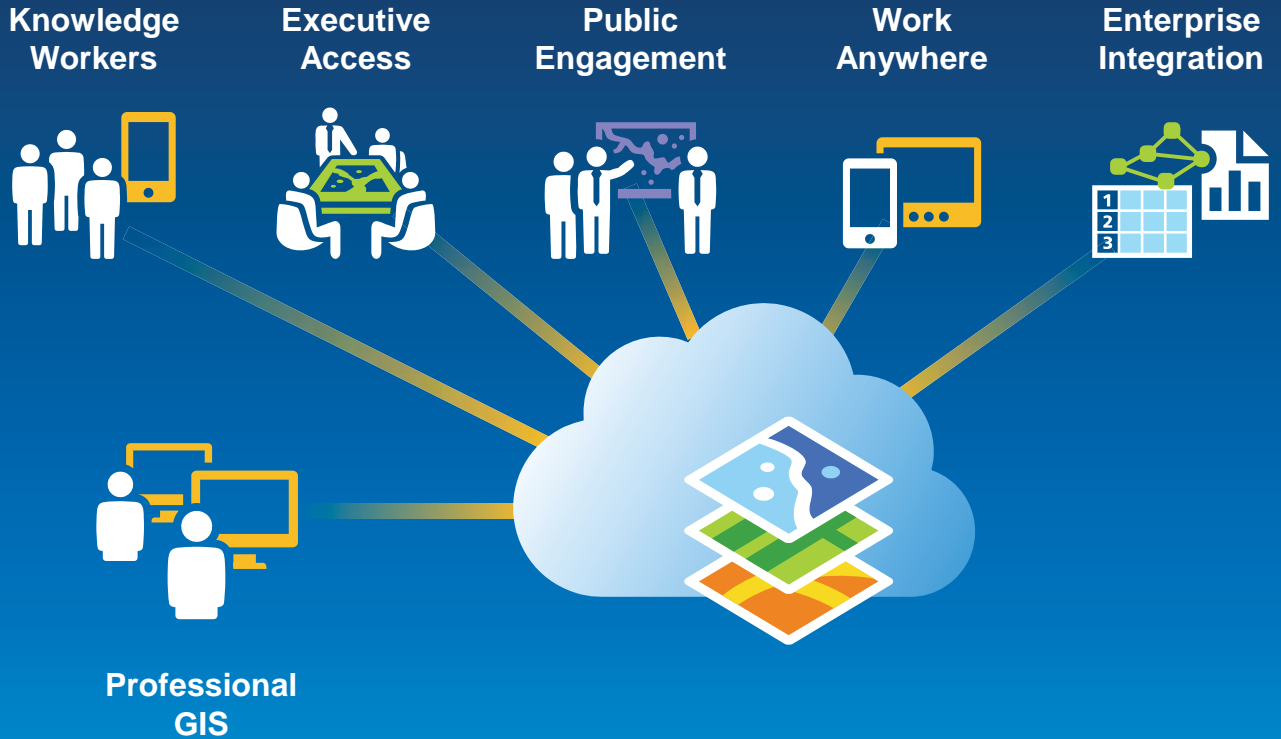
usareur.srp.contact@us.army.mil



Implementing Location Across The Enterprise

Requires More Than Technology

- Vision and Leadership
- Understanding How Location Contributes
- Planning and Governance
- Apps That Are Engaging
- Good People



- Ensure that location is included in your data set
- Create dashboards using Web or Desktop
- Register for 30 day free trial for Esri data
 - ArcGIS Online (arcgis.com)
 - Esri Maps for Office
- Tierra Plan Contact:
 - <http://www.tierraplan.com>
 - Email: kknapp@tierraplan.com



Leveraging Location Analytics

How do I start to demonstrate the value to my organization?

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Print your customized Certificate of Attendance!

Printing stations located in Hall B
and the 140/150 Room Concourse.

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GIS Solutions EXPO, Hall B

Monday, 12:30 PM–6:30 PM

Tuesday, 10:45 AM–4:00 PM

- Exhibitors
- Hands-On Learning Lab
- Technical & Extended Support
- Demo Theater
- Esri Showcase

Federal GIS Conference 2014

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Networking Reception

Smithsonian National Museum of Natural History

Tuesday, 6:30 PM–9:30 PM

Bus Pickup located on L Street

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Interested in diving deeper into Esri technology?

Add a day to your Fed GIS experience and register to attend the Esri DevSummit Washington DC. Stop by the registration counter to sign up.



Understanding our world.

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