

# *Headquarters Air Combat Command*

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## *Expeditionary Site Mapping (ESM) Application*



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This Briefing is:  
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# ***Overview***

- **AF Chief of Staff (CSAF) Requirement**
- **AF Doctrine**
- **Application Components**
- **Data Sources**
- **User Features**
- **Demo**
- **Way Ahead**



# CSAF Requirement

## ESM - Global Mobility Support

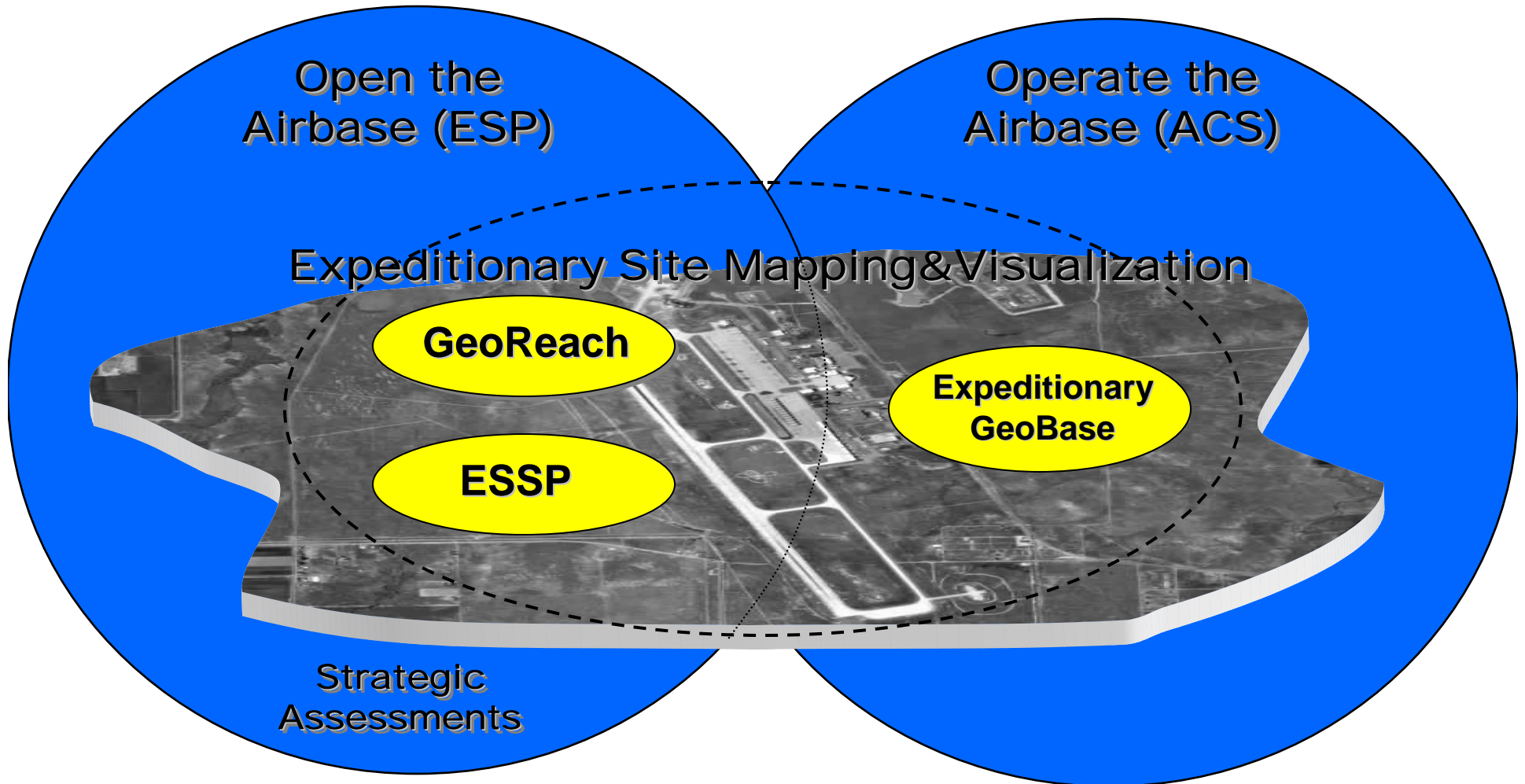
- Global Mobility Concept of Operations calls for capability to:
  - Provide assets around the globe anytime, anywhere
  - Provide tailored capabilities to **stand-up** and **sustain** combat operations at prepared and austere locations
  - **Capability to rapidly assess an airbase**
  - **Perform pre action assessments**
  - **Plan base layout**

*“Collect/update data on runway and base infrastructure from airfields, remote and en-route to provide runway and basing capability and capacity, at frequent intervals prior to crisis development. Perform pre-action assessment. Maintain Worldwide awareness of airfield capabilities to support mobility operations”* **Para 5.1.1.2.1, GM CONOPS**



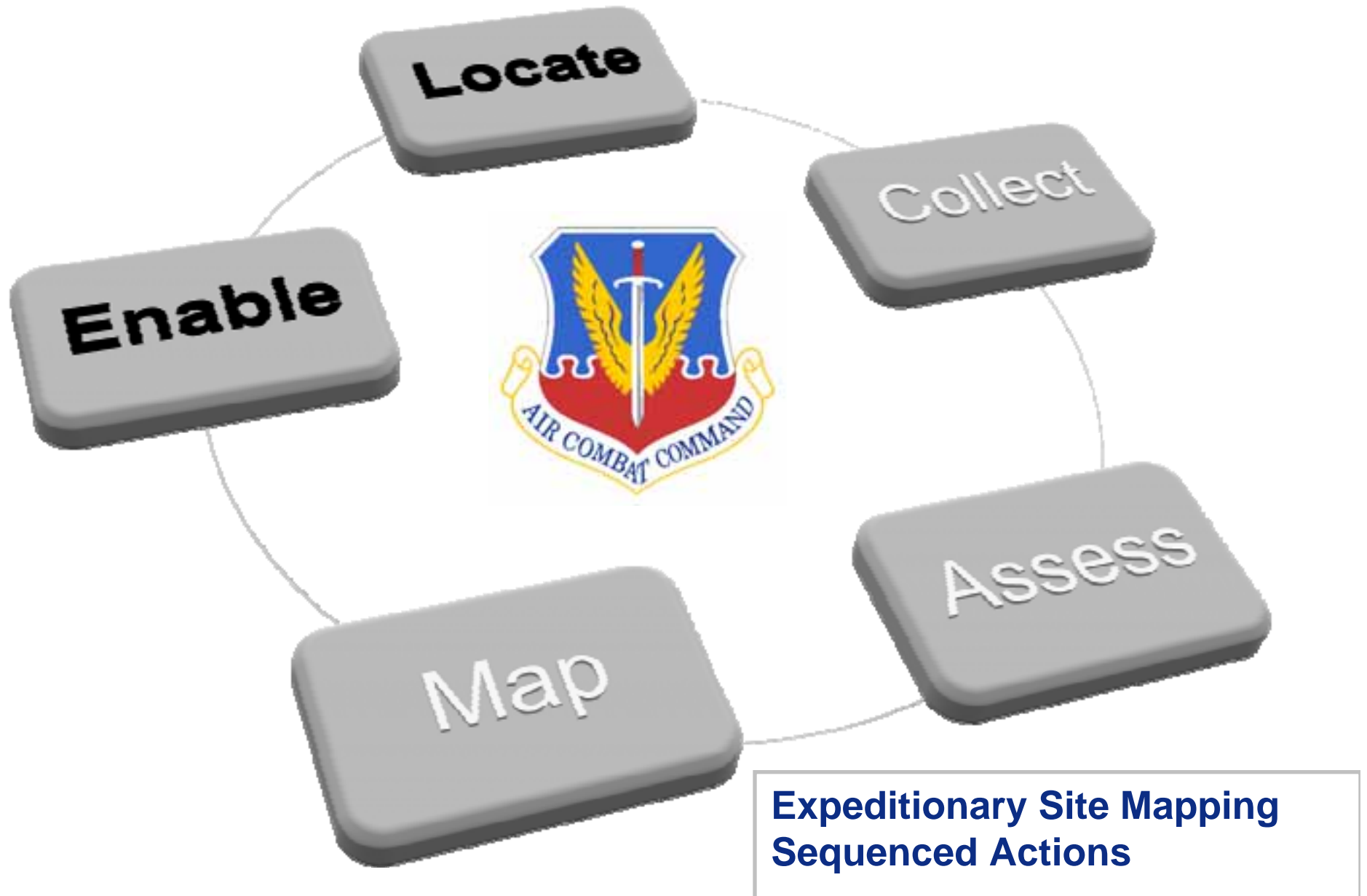


# ***Air Expeditionary Forces Strategic Doctrine***





# ***GeoReach Program***





# ***Application Components***

- **Adobe Flex API**
  - Adobe Flash
- **Leverages ACC Architecture**
  - ESRI ArcGIS Server 9.3.1 Cache Tiles
  - ESRI ArcSDE Single Schema & Database Replication
  - DISA Global Information Grid (GIG) Content Delivery Service
    - Edge Serving
    - Performance Bursting
- **Global Combat Support System – AF (Unclass only)**
  - Security Services
    - Role Based access control for need to know
  - AF Portal Reduced Sign On - Cross domain access
    - .com & .mil access via CAC anywhere/anytime



# ***Data Sources***

- **Vector & Tabular**
  - **National Geospatial Intelligence Agency (NGA)**
    - **Advanced Air Facilities Intelligence Files (AAFIF)**
    - **Digital Aeronautical Flight Information Files (DAFIF)**
  - **ACC Feature Extractions**
    - **Airfield, Fuel Storage, Ammo Storage, Force Protection, Infrastructure**
  - **GPS/GIS Data from Site Surveys**
    - **Topography, Infrastructure, Force Protection, Pavements, etc.**
- **Raster (Imagery)**
  - **GeoEye Imagery – 50cm, 60cm, 1m**
  - **Digital Globe Imagery – 50cm, 60cm**
  - **Natural View – 15m**
  - **USACOE Buckeye Imagery (SWA only) – 10cm**





# User Features – Basic Search

Expeditionary Site Mapping Tool - Microsoft Internet Explorer provided by AECOM

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites RSS Feeds Print Mail Download

Address: <https://www.my.af.mil/accgeoproduct3/esmproto/#?xmax=69.94923823562505;aor=CENTCOM;min=9000;mxmin=61.676533157500046;mymin=37.0617167106251;country=AF;mymin=33.271433> Go Links

Google Search Share Sideski Check Translate AutoFill Sign In

## Expeditionary Site Mapping Tool

Basic Search Map Search

AOR: **CENTCOM** [Search]

Country: **Afghanistan** [Search]

Name:

Runway Length (Feet)

Min:  Max:

Runway Width (Feet)

Min:  Max:

[More Search Options](#)

**Run Search** **Clear Buffer** **Clear Results**

CIP Layers

Visibility	Layer Name
<input type="checkbox"/>	Installation Boundary
<input type="checkbox"/>	Airfield Surface
<input type="checkbox"/>	Buildings
<input type="checkbox"/>	Towers

Map

Show In: Command Viewer

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100 km 50 mi

Current Coordinates: MGRS: 42S WD 242026 349430 Latitude: 34.9430 Longitude: 69.26591944

6 Result(s)

Export Range: All Selected Export As Shapefile Export As Google KML

	Country	Name	Length (feet)	Width (feet)	MGRS	Latitude	Longitude
	AF	NAZAR E SHAR	10433	146	42SUF400676	36.70691389	67.20967778
	AF	SHEBER TOO	11000	113	42SUD615334	34.77900278	67.48669722
	AF	BAGRAM	11819	150	42SWD242026	34.9430	69.26591944

Done Internet





# User Features – Map Search

Expeditionary Site Mapping Tool - Microsoft Internet Explorer provided by AECOM

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites RSS Feeds Print

Address <http://www.mil.af.mil/acceprod3/iesmprod3/iesm.html#6.7,14208632263711,bcy=34.94561563040535,bcx=69.2661210756729,maxx=71.27843886169961,maxy=33.9344439K> Go Links

Google Search Share Sidekick Check Translate AutoFill Sign In

## Expeditionary Site Mapping Tool

Basic Search Map Search Advanced Search

Buffer Distance: 100 Kilometers

Buffer Options: ☒ Define On Map ☐ Enter Coordinates

☐ Latitude/Longitude ☒ MGRS

Next

Run Search Clear Buffer Clear Results

CIP Layers

Visibility	Layer Name
<input type="checkbox"/>	Installation Boundary
<input type="checkbox"/>	Airfield Surface
<input type="checkbox"/>	Buildings
<input type="checkbox"/>	Towers

Map

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Map showing a red circular buffer around a central point. Labels include: PANJSHIR HELIPORT, CHARIKAR, BAGRAM, ASADABAD FIRE BASE HLZ, JALALABAD PRT, JALALABAD, KABUL INTL, BAMYAN, SHEBER TOO, ZAYI, and KABUL INTL. A scale bar indicates 10 km.

Current Coordinates: MGRS: 42SVD194772, 34.96585278, 69.21232778

2 Result(s)

Export Range: All Selected Export As Shapefile Export As Google KML

	Country	Name	Length (feet)	Width (feet)	MGRS	Latitude	Longitude
	AF	BAGRAM	11818	180	42SVD242826	34.9456	69.26591844
	AF	KABUL INTL	11483	164	42SVD194772	34.96585278	69.21232778

Done Internet





# User Features - Reporting

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## Expeditionary Site Mapping Tool

### Site Information

Country	AF
Name	KABUL INTL
Length (feet)	11483
Width (feet)	164
MGRS	428WD1947724920
Latitude	34.56505278
Longitude	69.21232778

Link to ESM Tool with Search Parameters

<https://www.mv.af.mil/acc/operod3/esmtool/#mymin=69.08309518206732-lcy=34.94561563040535-bcy=69.2661210756729-mmax=69.34161821575873-aor=CENTCOM-mymin=34.50661711091496-buynb=kms-bdste=100-mymax=34.625063461012616-country=AF-lmin=9000>



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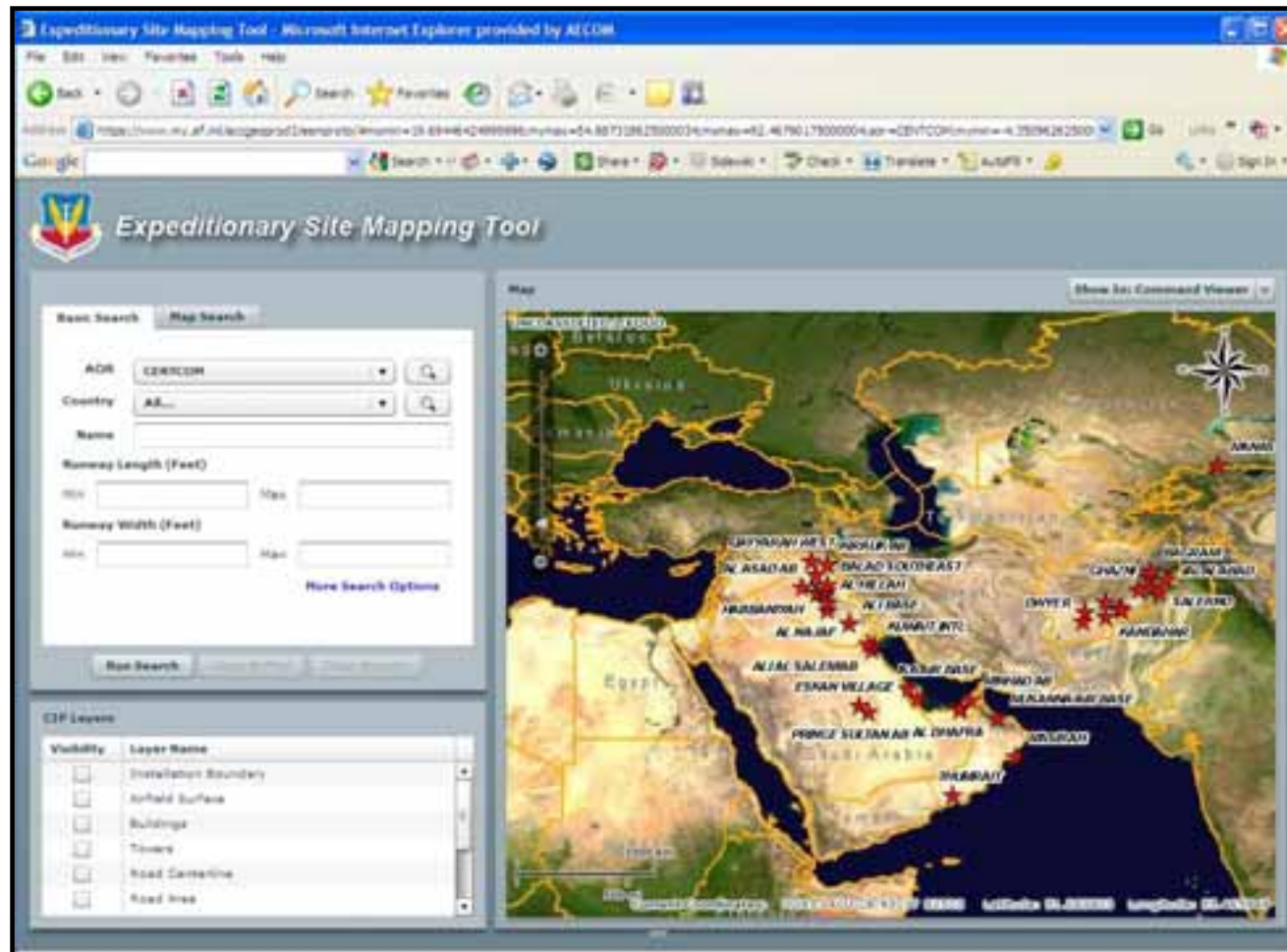




# Demo

- ESM Application

<https://www.my.af.mil/accgeoproduct3/esmproto>





## ***Way Ahead***

- **Integrate the AF Contingency Based Logistics Planner (CBLP) - Algorithms**
  - **Fuels**
  - **Munitions**
  - **Aircraft Maximum On the Ground (MOG)**
- **Integrate Base and Expeditionary Site Planning (BaS&E)**
  - **Expeditionary Site Surveys**
  - **Logistics Readiness**
  - **Base Support Plans**
- **Interface w/ other DoD Services**
  - **Army**, Navy, Marines, others – Camps, Seaports, Logistic routes
- **Integration with additional GEOINT databases/web SIPRNET services – (e.g. DIA JIVA-V, MIDB, etc.)**



# *Questions?*

## **USAF ACC IGI&S**

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[mark.cave@aecom.com](mailto:mark.cave@aecom.com)

**ACC ESM Production URL – (SIPRNET)**

<https://maps.acc.af.smil.mil/esm>

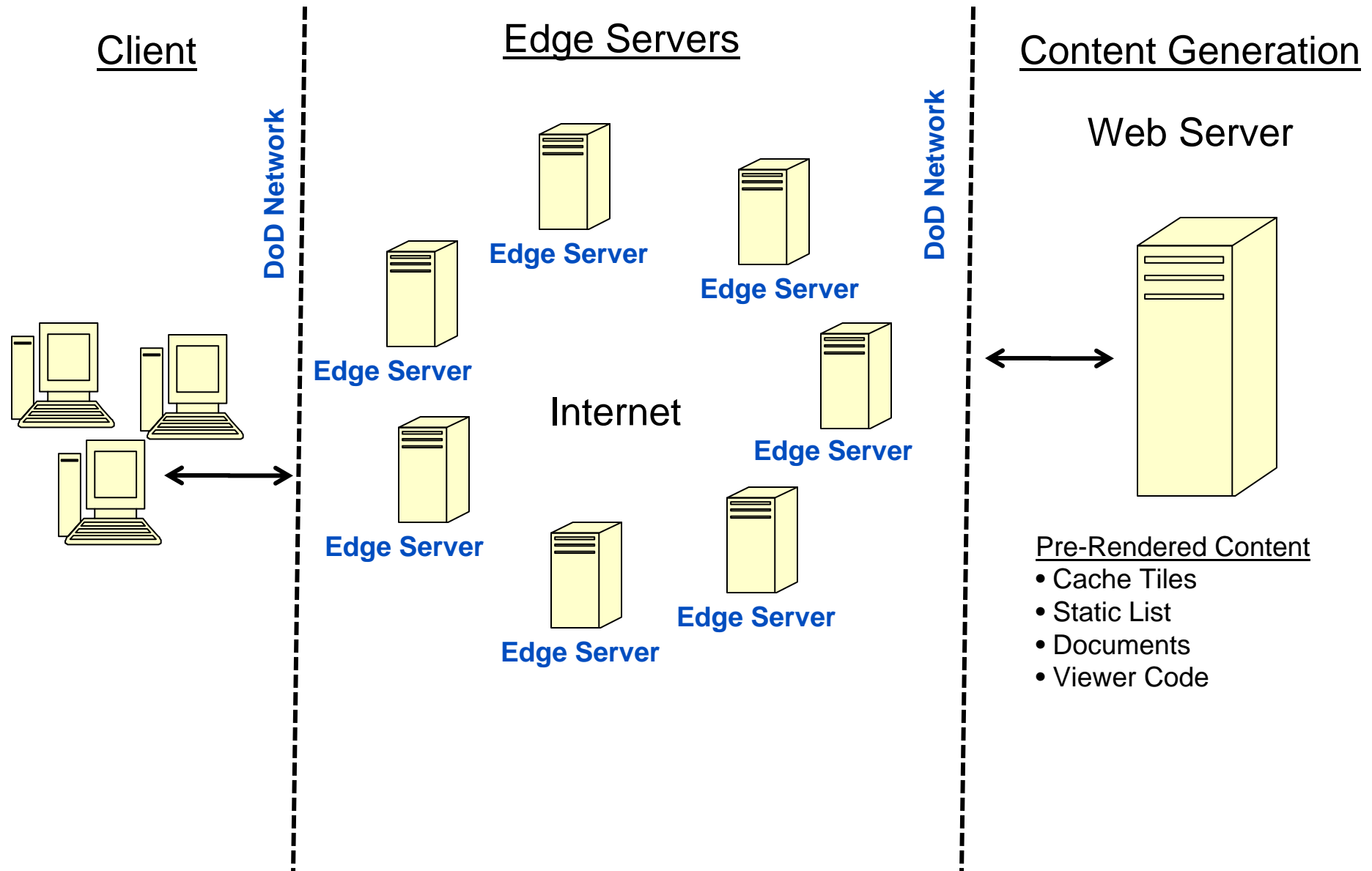




# ***Backup Slides***



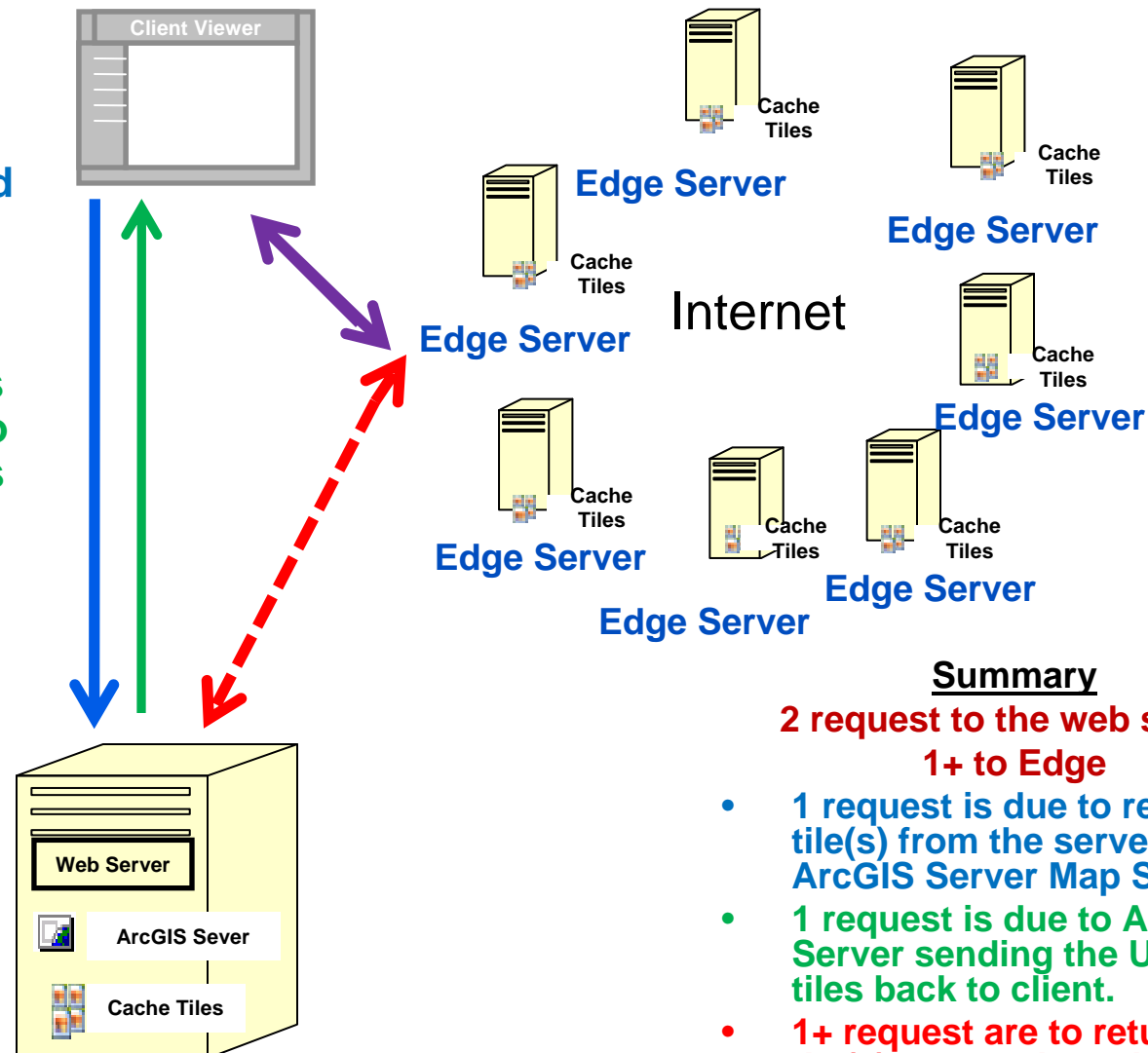
# ***Distributed Computing Platform***





# Method D (Imagery/Vector caching)

- **Step 1. Client sends extents to server and asks what tiles do I need?**
- **Step 2. Server sends URL (Edge server) to client to cached tiles**
- **Step 3. Client pulls tiles from Edge Server. If tile does not exist on edge go to server to retrieve tile, tile then copy's to edge for next use.**



## Summary

**2 request to the web server**  
**1+ to Edge**

- **1 request is due to request an tile(s) from the server's ArcGIS Server Map Service**
- **1 request is due to ArcGIS Server sending the URLs of tiles back to client.**
- **1+ request are to return the tile(s) to the client via Edge Server**

\* ( + = the number of tiles in extent)



## Expeditionary Site Mapping Tool

Basic Search

Map Search

AOR

CENTCOM

Country

Afghanistan

Name

Runway Length (Feet)

Min

9000

Max

Runway Width (Feet)

Min

Max

[More Search Options](#)

Run Search

Clear Buffer

Clear Results

CIP Layers

Visibility	Layer Name
<input type="checkbox"/>	Installation Boundary
<input type="checkbox"/>	Airfield Surface
<input type="checkbox"/>	Buildings
<input type="checkbox"/>	Towers

Map

Show In Command Viewer

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6 Result(s)

Export Range

All

Selected

Export As Shapefile

Export As Google KML

	Country	Name	Length (feet)	Width (feet)	MGRS	Latitude	Longitude
	AF	MAZAR E SHAR	10433	146	42SUF400876	36.70691389	67.20967778
	AF	SHEBER TOO	11000	113	42SUD615334	34.77900278	67.48669722
	AF	BAGRAM	11819	150	42SWD242826	34.9458	69.2603944





## Expeditionary Site Mapping Tool

Basic Search Map Search Advanced Search

Surface Asphalt

Runway Condition Good

ICAO

FAA ID

GEOLOC

LCN Data Currentness

PCN

PCH Type Sub. Max Press. Eval

0 AIL AIL AIL AIL

Run Search

Clear Results

Clear Results

### CIP Layers

Visibility	Layer Name
<input type="checkbox"/>	Installation Boundary
<input type="checkbox"/>	Airfield Surface
<input type="checkbox"/>	Buildings
<input type="checkbox"/>	Towers

### Map

Show In Command Viewer

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2 Result(s)

Export Range

Export As Shapefile

Export As Google KML

	Country	Name	Length (feet)	Width (feet)	MGRS	Latitude	Longitude
	AF	KABUL INTL	11483	164	42SWD194772	34.56585278	69.21232778
	AF	KANDAHAR	10500	180	41RQQ704738	31.505873	65.8478



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## Expeditionary Site Mapping Tool

### Site Information

Country	AF
Name	KABUL INTL
Length (feet)	11483
Width (feet)	164
MGRS	42SVD1947724920
Latitude	34.56585278
Longitude	69.21232778

### Link to ESM Tool with Search Parameters

<https://www.mv.af.mil/accegeoproduct/esm/proto/#mxmin=69.08309618206732;bcv=34.94561563040535;bcv=69.2661210756729;mxmax=69.34161021575873;aor=CENTCOM;mymin=34.50661711091496;hulnts=km;hdlet=100;mymax=34.625063461012616;country=AF;limin=9000>



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Google maps

Find businesses, addresses and places of interest.

Search Maps

[Show search options](#)

[Get Directions](#) [My Maps](#)

Go beyond the streets to [ski slopes](#), new in Street View.

[Set default location](#)

Put [your business on Google Maps](#)

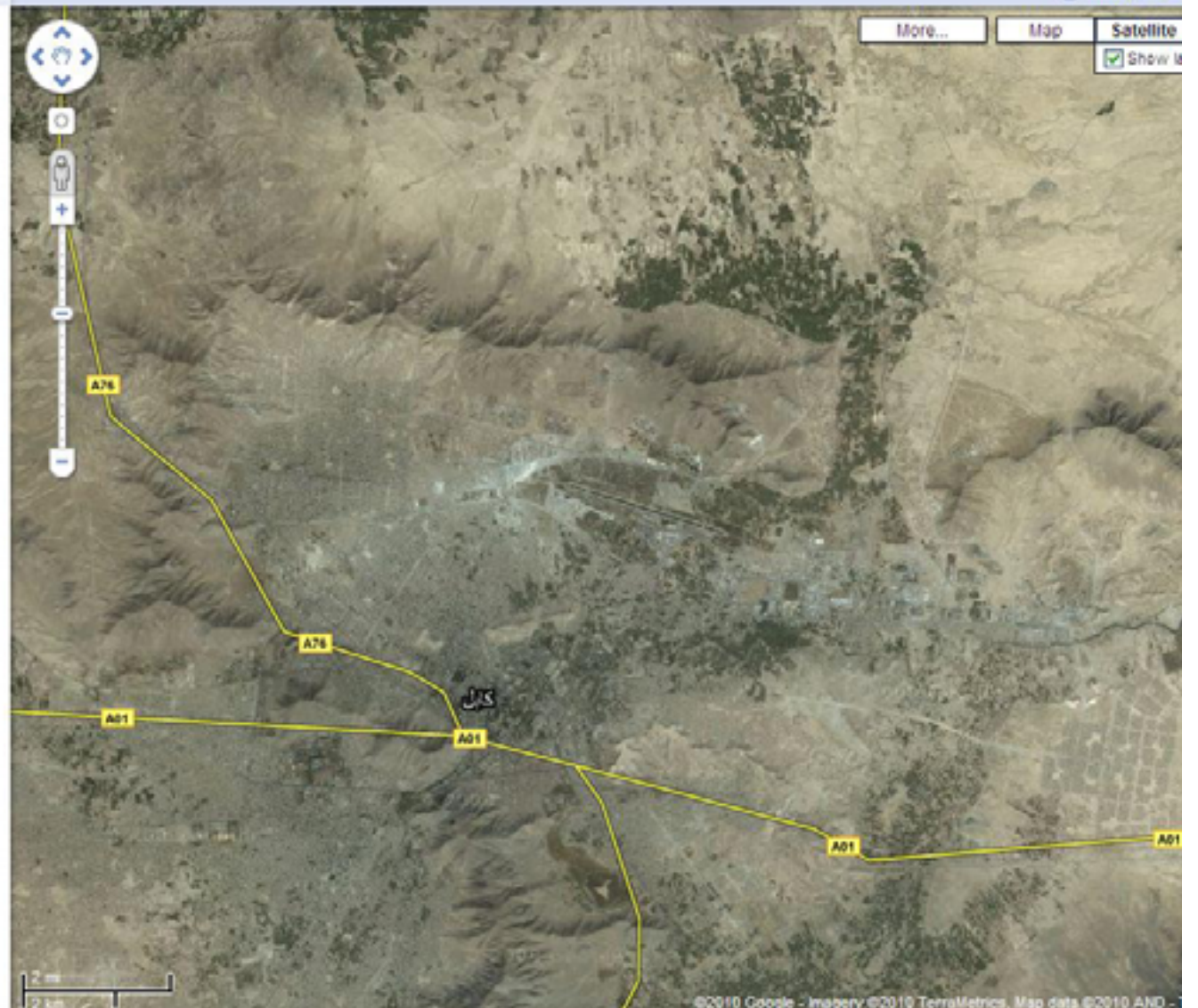
[Print](#) [S](#)

More...

Map

Satellite

☒ Show M





ACC GeoBase Web Map Viewer Version 1.0.0.835 - Microsoft Internet Explorer provided by AECOM

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites RSS Print Mail Download

Address [https://www.mylife.af.mil/jccgeoproduct/GeobaseViewer/?minx=69.15012994976752&maxx=69.27939096661322&miny=34.53537039155461&maxy=34.594593566603436&services=Imagery,Data\\_Availability](https://www.mylife.af.mil/jccgeoproduct/GeobaseViewer/?minx=69.15012994976752&maxx=69.27939096661322&miny=34.53537039155461&maxy=34.594593566603436&services=Imagery,Data_Availability) Go Links

Google Search Share Sidewiki Check Translate AutoFill Sign In

**AIR COMBAT COMMAND** Geospatial Viewing Application

1: 62585

Kabul Intl

Base Information

30Aug2009

[Download Data](#)

Runway Orientation: 23-05

[GPS Report](#)

[Weather Report](#)

[AFCEA Pavement Report](#)

Installation ID: OAKB

Common Tasks

- Manage Bookmarks
- Measure Distance
- Measure Area
- Draw Graphics
- Select/Identify/Hyperlink
- Buffer Feature
- Zoom To Lat(Y) / Lon(X)
- Building Search
- Print Layout
- Save Map

Bookmarks

Layers

Auto-Refresh: ☒

Attributes Reload Map

- ☒ Imagery
- ☐ Data\_Availability
  - ☐ Data\_Availability
- ☐ tip
  - ☐ Installation\_Bounds
  - ☐ Buildings
  - ☐ Building\_#s
  - ☐ Tower

Additional Layers

Auto-Refresh: ☒

Attributes Reload Map

- ☐ afcent
  - ☐ IMAGERY

For Official Use Only

Lon (X): 69.17646 Lat (Y): 34.59291

Decimal Degrees

Current Map Extent MinX: 69.158 MaxX: 69.273 MinY: 34.521 MaxY: 34.594

Current Tool: Zoom In Map

Done Internet





# Expeditionary Site Mapping Tool - Microsoft Internet Explorer provided by AECOM

File Edit View Favorites Tools Help



Address <https://www.mil.af.mil/accgeoproduct/esm/proto/#mxmax=69.39521043114165;acr=CD/TCOM;mxmin=69.13668839745024;mymax=35.00901046683113;country=AF;mymin=34.896564> Go Links

Google Search Share Sidewiki Check Translate AutoFill Sign In



## Expeditionary Site Mapping Tool

Basic Search Map Search Advanced Search

Buffer Distance  Kilometers

Buffer Options

☒ Define On Map

☐ Enter Coordinates

☐ Latitude/Longitude

☐ MGRS

Next

Run Search

Clear Buffers

Clear Results

CIP Layers

Visibility	Layer Name
<input type="checkbox"/>	Installation Boundary
<input type="checkbox"/>	Airfield Surface
<input type="checkbox"/>	Buildings
<input type="checkbox"/>	Towers

Map

Show In: Command Viewer

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Current Coordinates: MGRS: 42S WD 24265 87646 Latitude: 34.94553 Longitude: 69.265943

6 Result(s)

Export Range All Selected

Export As Shapefile

Export As Google KML

	Country	Name	Length (feet)	Width (feet)	MGRS	Latitude	Longitude
	AF	MAZAR E SHAR	10433	146	42SUF4008761	36.70691389	67.20967778
	AF	SHEER TOO	11000	113	42SUD618334	34.77800278	67.48668722
	AF	BAGRAM	11819	150	42SWD242026	34.94553	69.26591944

Done

Internet

