

Pacific Air Forces

Integrity - Service - Excellence

PACAF GeoBase Capability Maturity Model: Metrics for Program Sustainment



**MSgt Lance Filler
Mr. Ben McMillan
HQ PACAF GIO**

U.S. AIR FORCE

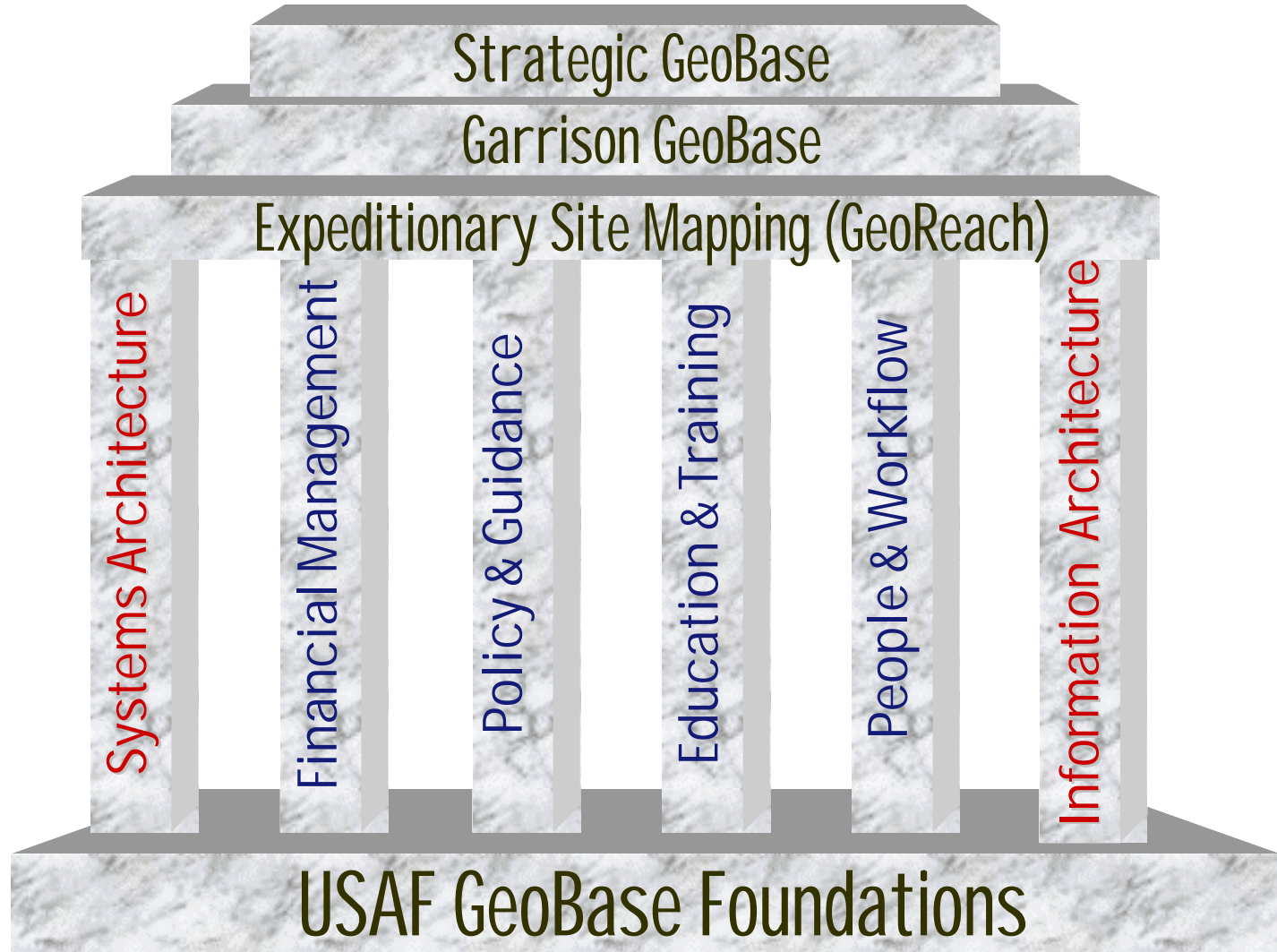


Overview

- **Background**
- **Capability Maturity Modeling**
- **Tailoring the CMMi for PACAF GeoBase**
- **CMMi in Practice**
- **Road Ahead**



USAF GeoBase Program



Integrity - Service - Excellence



Metrics through the years...

Integrity - Service - Excellence



GeoBase Status FY00



Not Started



Started



Complete

Strat Plan

Image

BCOP

Data

GeoBase

Andersen



Elmendorf



Eielson



Hickam



Kadena



Kunsan



Misawa



Osan/RHS



Yokota



611 ASG



COBS





Garrison GeoBase Status

30 Oct 02

U.S. AIR FORCE

Not Started Started Complete

	IOC	CIP	RIP	CMD Ctr (DCC/SRC)	Web Enabled
Andersen					
Elmendorf					
Eielson					
Hickam					
Kadena					
Kunsan					
Misawa					
Osan					
Yokota					
611 ASG					
607 ASG					



PACAF GeoBase Metrics

FY03

Installation	Photo	CIP	RIP	CE MDS	Other MDS
Andersen	01, 02	89%	●	●	●
Eielson	01	100%	●	●	●
Elmendorf	00	95%	●	●	●
Hickam	00	90%	●	●	●
Kadena	99	95%	●	●	●
Kunsan	02	90%	●	●	●
Misawa	99	83%	●	●	●
Osan	02	90%	●	●	●
Yokota	99	94%	●	●	●



**A better method was
needed to evaluate our
program...**



Capability Maturity Model Integration (CMMi)

- **Developed by the Software Engineering Institute at Carnegie Mellon University**
 - **A capability maturity model is a reference of mature practices in a specified discipline, used to assess a group's capability to perform that discipline**
 - **Process provides a constructive, high-leverage focus...**
 - **As opposed to a focus on people**
 - Your work force, on the average, is as “good” as it is trained to be
 - Working harder is not the answer
 - Working smarter, through process, is the answer
 - **As opposed to a focus on technology**
 - Technology applied without a suitable roadmap will not result in significant payoff
 - Technology provides the most benefit in the context of an appropriate process roadmap
- **Our discipline is GeoBase**
- **Our process areas are...**



GeoBase Process Areas

- **Planning**
 - **Strategic Plan**
 - Strategic Plan is current and accurately reflects the goals, objectives, and strategies planned for the time period
 - Milestones are clearly articulated, dates and OPRs assigned
 - Anticipated requirements (e.g. sw maintenance) are clearly articulated
 - Anticipated requirements are reported to Flight Chief whenever Strategic Plan is revised
 - **Configuration Management Plan**
 - CM plan is current and accurately reflects the inventory of tech, data & personnel assets associated with GeoBase
 - Processes for data collection, data maintenance, database administration (e.g. backup), service delivery are clearly articulated
- **Capability Development**
 - Data acquisition
 - Data quality control
 - Systems engineering



GeoBase Process Areas (cont'd)

■ Sustain Capability

■ Process and maintain CIP

- Required, if applicable, CIP layers are present
- Layers have correct spatial reference
- Correct SDSFIE layer & attribute names are used
- Layers (features) and required attributes are complete and current
- Average spatial accuracy is known and meets ASPRS

■ Process and maintain Regional Installation Picture (RIP)

- Wing/CC has defined spatial extent of RIP
- ADRG 1:50,000 TLM or USGS 1:24,000 DRG are present
- *IKONOS, QB imagery or other regional imagery, e.g. USGS DOQQ are present*
- SDSFIE nomenclature and appropriate metadata



GeoBase Process Areas (cont'd)

- **Sustain Capability**
 - **Process and maintain raster resources**
 - Raster coverage exists that was captured within the past five years and has one-meter or less resolution
 - An image catalog exists
 - An image mosaic exists
 - **Process and maintain Mission Data Sets (MDS)**
 - Layers have correct spatial reference
 - Correct SDSFIE layer & attribute names are used
 - Layers (features) and required attributes are complete and current
 - Average spatial accuracy is known and meets ASPRS



GeoBase Process Areas (cont'd)

- **Configuration Management**
 - The practices outlined in the Configuration Management Plan are properly executed
 - GeoBase architectures (data and systems) are effectively managed
 - **Customer Service**
 - Hard copy maps available to key personnel
 - MDS available to key mission elements
 - GeoBase client solutions
 - Viewers (ArcIMS, ArcReader, ArcGIS)
 - Analysis (GeoBest, CAPP, GeoBase Toolkit)
 - Geospatial support
 - **Organizational Development**
 - Personnel know roles
 - Training programs exist
-



GeoBase Process Areas (cont'd)

- **Project Monitoring and Control**
 - Review milestones in Strategic Plan
 - Execute reporting requirements
- **Mission Integration**
 - Senior leader awareness
 - Senior leader advocacy



Capability Score

- **Points assessed for meeting requirements in each process area**

SG1 - Configuration Management

Value	Score	Evaluation Criteria
6	0	GeoBase architectures (data and systems) are managed IAW the process identified in the CM Plan
		- Goal is to ensure that GeoBase systems (server, client, production, GPS) and data are managed as specified in the CM Plan
		<-- score one point if the data acquisition/collection process is executed as defined in the CM plan
		<-- score one point if the data maintenance process is executed as defined in the CM Plan
		<-- score one point if database administration procedures are practiced as defined in the CM Plan
		<-- score one point if a backup & recovery process is defined and followed
		<-- score one point if access to GeoBase data is controlled through the use of roles and privileges
		<-- score one point if web administration procedures are practiced as defined in the CM Plan

- **Percentages calculated for each process area**
- **For Sustaining Capability, scores are normalized to allow for the growth of data requirements**
 - Individual percentages for CIP, RIP, Raster, and MDS
 - These percentages are averaged to provide process area score



Capability Score (cont'd)

- **Weights assigned by PACAF GIO used to calculate final score**

Process Area	Score	Weight	Score
Project Planning	0%	1.60	0
GeoBase Capability Development	0%	1.10	0
Sustain GeoBase Capability	0%	1.45	0
Configuration Management	0%	1.10	0
Customer Service	0%	1.00	0
Organizational Development	0%	1.50	0
Project Monitoring & Control	0%	0.90	0
Mission Integration	0%	1.35	0
GeoBase Capability Maturity Score		10.00	0.000



Maturity Model in Practice

- **Structured Assessments**
 - **Staff Assistance Visit (SAV)**
 - **Focus discussions**
 - **Easily pinpoint areas of improvement**
 - **Quantifiable results to provide senior leadership**
 - **Installations required to self-assess each quarter**
 - **Results provided to HQ PACAF GIO**
 - **Continuous reference for program growth and improvement**



Lessons Learned

■ Pro's

- Model can change as program changes
- Normalized values effectively diagnose change, even as requirements grow
- Easier for HQ to target improvement areas
- Provides very graphic status snapshots for commanders

■ Con's

- Some questions are still subjective and may be interpreted differently at each base
- Answers subject to attitude, time, effort
- Distilling diverse program elements into process areas can be problematic



Road Ahead

■ Updates to Model

- Inclusion of MDS defined by FOA's
- Expansion of AF data model to include EKB
- Configuration requirements for enterprise database management
- Configuration requirements for IMS management
- Evaluating customer service
 - Difficult to gauge, many criteria involved
 - CIP is available to everyone through IMS
 - Not everyone has MDS
 - Different customers served at every base
 - How to rate custom service solutions
- Incorporate ideas from other sources including Project Management Institute



Questions?

HQ PACAF Geo Integration Office
pacaf.geobase@hickam.af.mil

MSGt Lance S. Filler
DSN 448-0403
lance.filler@hickam.af.mil

Ben McMillan
DSN 449-7452
benjamin.McMillan@hickam.af.mil