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# Kickstart your GIS Program



Improve Efficiency & Manage Costs  
Andrew Walter  
The Jones Payne Group

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How many days do  
you need to  
**Improve your  
CAD/GIS system?**







## Meet Hal.

He doesn't know what a feature class is.

He does know that runway markings are disruptive to maintain and it's difficult to track of when the paint was new.



## Meet Gabriel.

He manages the airport budget and oversees operations.

He knows that some paint will fail this year but where is it? How many square feet? What should he expect it to cost?







## An updatable list

New form based tracking tools are deployed.

Hal updates the information as markings on the airfield field are maintained.



## From overwhelmed to in control

Hal takes ownership of the information and shares it internally for others to benefit. He is confident in his forecasts and has more time to manage other assets.

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It's no surprise Gabriel wants to use GIS to help manage his airport.

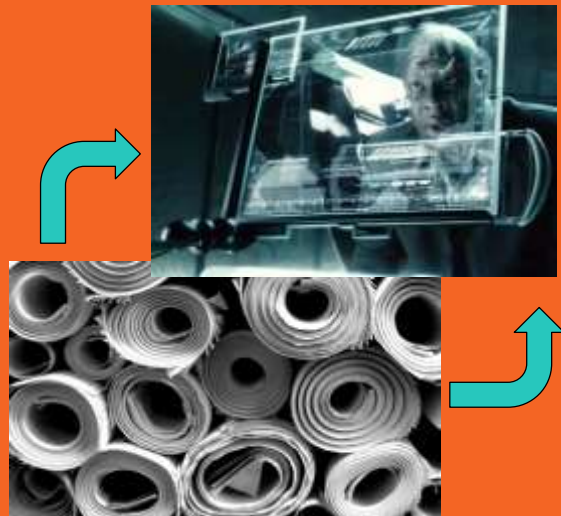
There are **Less than 50% of you using GIS in this way.**

Source: FAC GIS 2015 Survey



Most people in your position have heard this story.

HOW DO WE MAKE THIS STORY **A NEW REALITY** FOR YOUR AIRPORT?



Source: theAWL.com - How 'Minority Report' Trapped Us In A World Of Bad Interfaces





# What is AC 150 5300-18B and how does it help me?

Specifications for the collection of airport data through field and office methodologies in support of the Federal Aviation Administration (FAA)



When documenting navigational aids, record, as in Figure 1-3, two photographs oriented from different central directions. When documenting navigational aids, take the photographs with a strip over the horizontal and vertical of precision survey point or chronometrically still across showing the points



4.1.18. Marking Data			
<b>Definition:</b> Marking used on runways and taxiways to identify a specific runway, a runway, a taxiway, a construction, a hold line, etc. Identification marking whose geometry is given (distance AC, distance to centerline, etc.)			
Feature Group	4.1.18.18		
Feature Data Name	Marking		
Feature Type	2-D Line		
4.1.18.18.18.1. Marking Data Attributes			
Attribute	Requirement	Code	Description
1-APRNS-DE	Centerline	C-PARALLEL	Paint centerline
2-APRNS-DE	Runway position marking	C-BOUNDARY	Centerline markings
3-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
4-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
5-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
6-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
7-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
8-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
9-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
10-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
11-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
12-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
13-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
14-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
15-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
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17-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
18-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
19-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
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85-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
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87-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
88-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
89-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
90-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
91-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
92-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
93-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
94-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
95-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
96-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
97-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
98-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
99-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings
100-APRNS-DE	Runway markings	C-BOUNDARY	Runway markings

## Definition

## CADD Standard Requirements

# Chapter 5 Airport Data Features

Skip ahead, chapters 1-4 are very technical.

## Feature Attributes



## Extracting Attributes from the standard.

What are Enumerations?



Feature	5.4.20. Marking Line		
Feature Group	Airfield		
Feature Class	MarkingLine		
Feature Type	3D Line		
Feature Attributes			
Attribute	Description	Data Type	Max Length
name	Name of the feature	VARCHAR2	50
description	A description of the feature	VARCHAR2	255
status	A temporal description of the operational status of the feature. This attribute is used to describe real-time status.	Enumeration	
markingFeatureType	The type of the marking	Enumeration	
color	The color of the marking	Enumeration	
userFlag	An operator-defined work area. This attribute can be used by the operator for user-defined system processes. It does not affect the subject item's data integrity and should not be used to store the subject item's data.	String	254
Alternative	Discriminator used to tie features of a plan or proposal together into a version	Number	2
GEOMETRY			

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The FAA wants consistent data so they provide structure and pick lists.

Enumerations are **A List of Values** that are allowed.

### 5.15.9. CodeColor

Value	Description
AMBER	Amber [U.S. CADD]
BLACK	Black [U.S. CADD]
BLUE	Blue [U.S. CADD]
BROWN	Brown [U.S. CADD]
GREEN	Green [U.S. CADD]
GREEN-GREEN	Bidirectional (Source AC 150/5345-46C)
GREEN-RED	Bidirectional (Source AC 150/5345-46C)
GREEN-YELLOW	Bidirectional (Source AC 150/5345-46C)
GREY	Grey [U.S. CADD]
LIGHTGREY	LightGrey [U.S. CADD]
MAGENTA	Magenta [U.S. CADD]
ORANGE	Orange [U.S. CADD]
OTHER	Other [U.S. CADD]
PINK	Pink [U.S. CADD]
PURPLE	Purple [AIXM]
RED	Red [U.S. CADD]
RED-GREEN	Bidirectional (Source AC 150/5345-46C)
RED-RED	Bidirectional (Source AC 150/5345-46C)
TBD	To be determined
VIOLET	Violet [U.S. CADD]
WHITE	White [U.S. CADD]
WHITE-RED	Bidirectional (Source AC 150/5345-46C)
WHITE-WHITE	Bidirectional (Source AC 150/5345-46C)
WHITE-YELLOW	Bidirectional (Source AC 150/5345-46C)
YELLOW	Yellow [U.S. CADD]
YELLOW-GREEN	Bidirectional (Source AC 150/5345-46C)
YELLOW-RED	Bidirectional (Source AC 150/5345-46C)
YELLOW-YELLOW	Bidirectional (Source AC 150/5345-46C)



## Marking Line - Sample Data Table

Make it your own. From a technical point of view, adding attributes is trivial. Be cautious of the effort required to maintain the information when choosing attributes.

name	description	status	marking FeatureType	color	User Flag	Alt	GEOMETRY	length (f)	width (f)	area (sqft)	painting date	lifespan (m)	eol forecast date
Gate Line	Gate 38...	ACTIVE	GATE_LINE	YELLOW			LINestring(1 3, 1 3)	50	0.25	12.5	1/1/2015	18	6/24/2016
Runway Centerline	segment 1	ACTIVE	RWY_CL	WHITE			LINestring(1 3, 1 3)	220	3	660	1/1/2015	12	12/27/2015
Runway Centerline	segment 2	ACTIVE	RWY_CL	WHITE			LINestring(1 3, 1 3)	220	3	660	1/1/2016	12	12/26/2016

### FAA Requirements

Attributes from 5300-18B

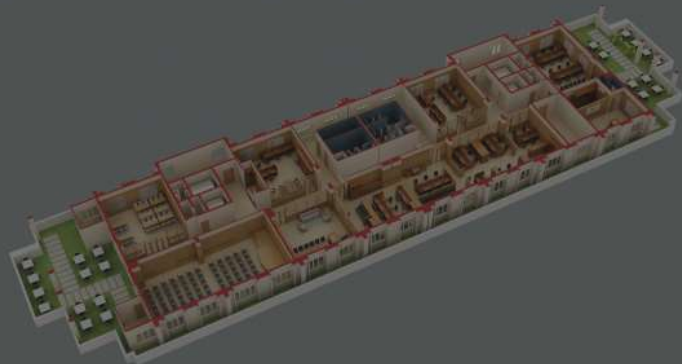
### Your Attributes

Add what help you manage the information



## What if the FAA doesn't track what I want to track?

Learn from the hard work put in by the FAA and create your own feature classes.



<b>Feature</b>	<b>Lease Space</b>		
<b>Feature Group</b>	Man Made Structures		
<b>Feature Class</b>	LeaseSpace		
<b>Feature Type</b>	Polygon		
<b>Purpose</b>	Location and estimated area of building space		
<b>Accuracy</b>	Minimal accuracy, not intended for construction		
<b>Feature Attributes</b>			
<b>Attribute</b>	<b>Description</b>	<b>Data Type</b>	<b>Max Length</b>
name	Name of the space	VARCHAR2	50
description	A description of the space	VARCHAR2	255
status	A temporal description of the operational status of the feature. This attribute is used to describe real-time status.	Enumeration	
use	Allowed use of space	Enumeration	
area	Square footage of space		
lease Start	Start Date of Lease	Date	254
lease Duration	Lease duration in months	Number	2
GEOMETRY			



# Make your own Feature Class.

Keep it simple, you can complicate it later.



## BASIC STEPS

### Decision Day

Make a commitment that GIS is the way forward

### Make a Spatial Database

Add your Attributes to improve on FAA feature classes to meet your needs

### Update Cycles

FAA required deliverables vs. Internal needs

PLAN

IMPLEMENT

MAINTAIN

### FAA Requirements

Learn what the FAA requires from you

### Source Data

Require electronic deliverables from your consultants and talk to your community



# What we have to work with.

## FAA Resources

- 150/5300-18B
- Airport Geographic Information System (AGIS)
- Geodatabase template
- Integrated Distance Learning Environment (AGIS-IDLE)

## GIS Tools

- Desktop Client
  - ESRI, QGIS
- Spatial Database
  - Oracle, SQL, PostGIS
- Web Mapping Services
  - ArcServer, GeoServer, Mapbox

## Data

- Ask Consultants
  - Get a "Shape File" (.shp) even if it has no attributes
- City, Assessor, Utilities
- Collect your own
  - Define accuracy in Metadata



GIS and AC 150 5300-18b, go ahead and experiment.

You have **the tools** to start on or update your GIS.



—  
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