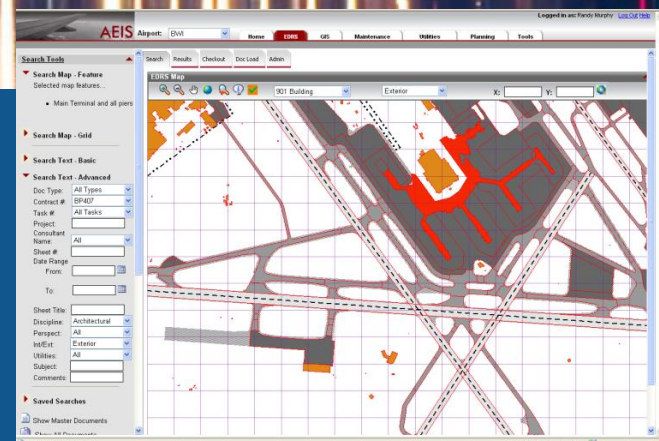


Aviation Technology Systems Engineering (SYS) Practice



David Tamir, Vice President
Global Practice Leader

November 2009



TAG

Transportation

Technologists

**Management
& Analysis
Systems**

**Communication
Infrastructure
Systems**

**Security
& Life Safety
Systems**

**Passenger
Processing
Systems**

**Baggage
& Cargo
Systems**

**Traffic
Management
Systems**

BPM

KM

**Web
Collaboration**

ePM

EDMS / ECMS

GIS / BIM

**3D / 4D / 5D
Modeling &
Visualization**

CMMS / EAM

OSP / ISP

**Fiber / Copper
& Wireless
Networks**

LANs

WANs

VPNs

NOCs

Data Centers

**Voice / Data
Video**

SSI

**Access
Control**

Biometrics

CCTV Cameras

PIDS

**Event
Detection**

**Screening
Check Points**

**Emergency
Ops Centers**

SCADA

EVIDS

**Electronic
Wayfinding**

**Audio-Visual
Paging (PA)**

Master Clock

**Electronic
Ticketing**

**Common-Use
Terminal
Equipment**

**Self-Service
Check-in**

**In-Line
Baggage
Systems**

EDS

Screening

Scanning

Barcode

RFID

Conveyor

Sortation

ITS

**Electronic Toll &
Congestion
Pricing**

Dynamic Signage

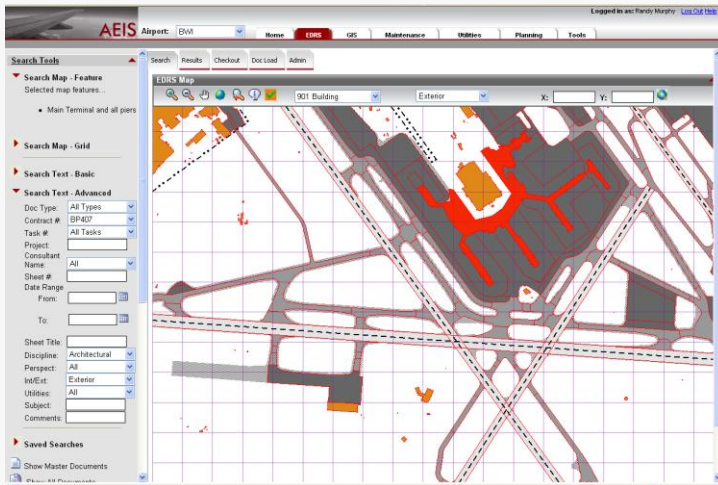
**Parking
Management**

**Transportation
Management
Centers**

Train Controls

**Air Traffic Control
Nav aids**

Technology Applications Group (TAG)



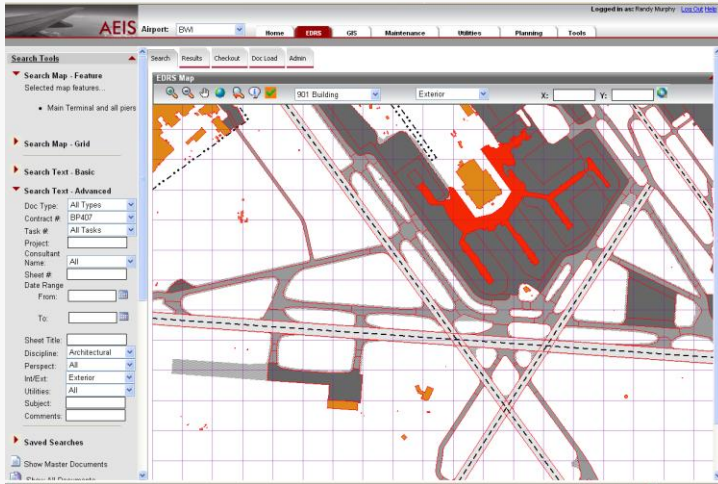
Management Systems

- **Web-enabled Dashboards**
- **Integrated Databases**
- **Asset Management/GIS**
- **Document Management**
- **PM/CM Information Systems**

Operations Systems

- **Communications**
- **Information Displays**
- **Passenger Processing**
- **Gate Management**
- **Life Safety & Security**

Typical Contract Mechanisms

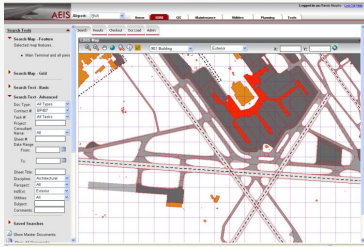


Technology

**Planning
Environmental
Design**

PM/CM

Sample Active Contracts



Technology

MKE, MCO, MSP, ATL, PANYNJ, Oman



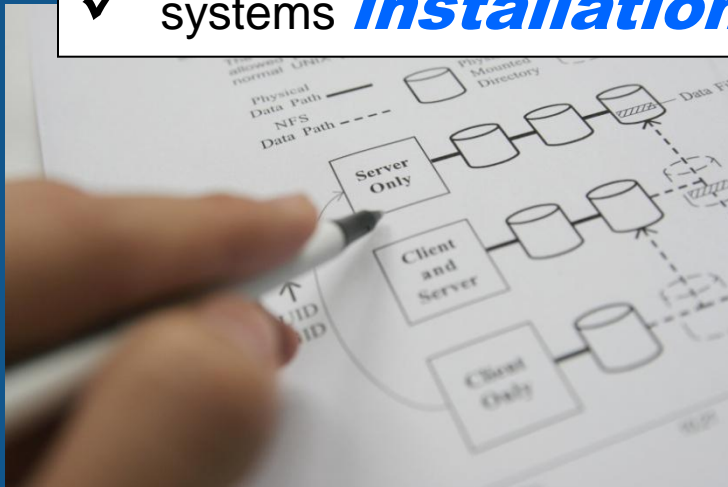
Planning Environmental Design

HRL, Spaceport, WTC, PHL, TPA, LAX

PM/CM

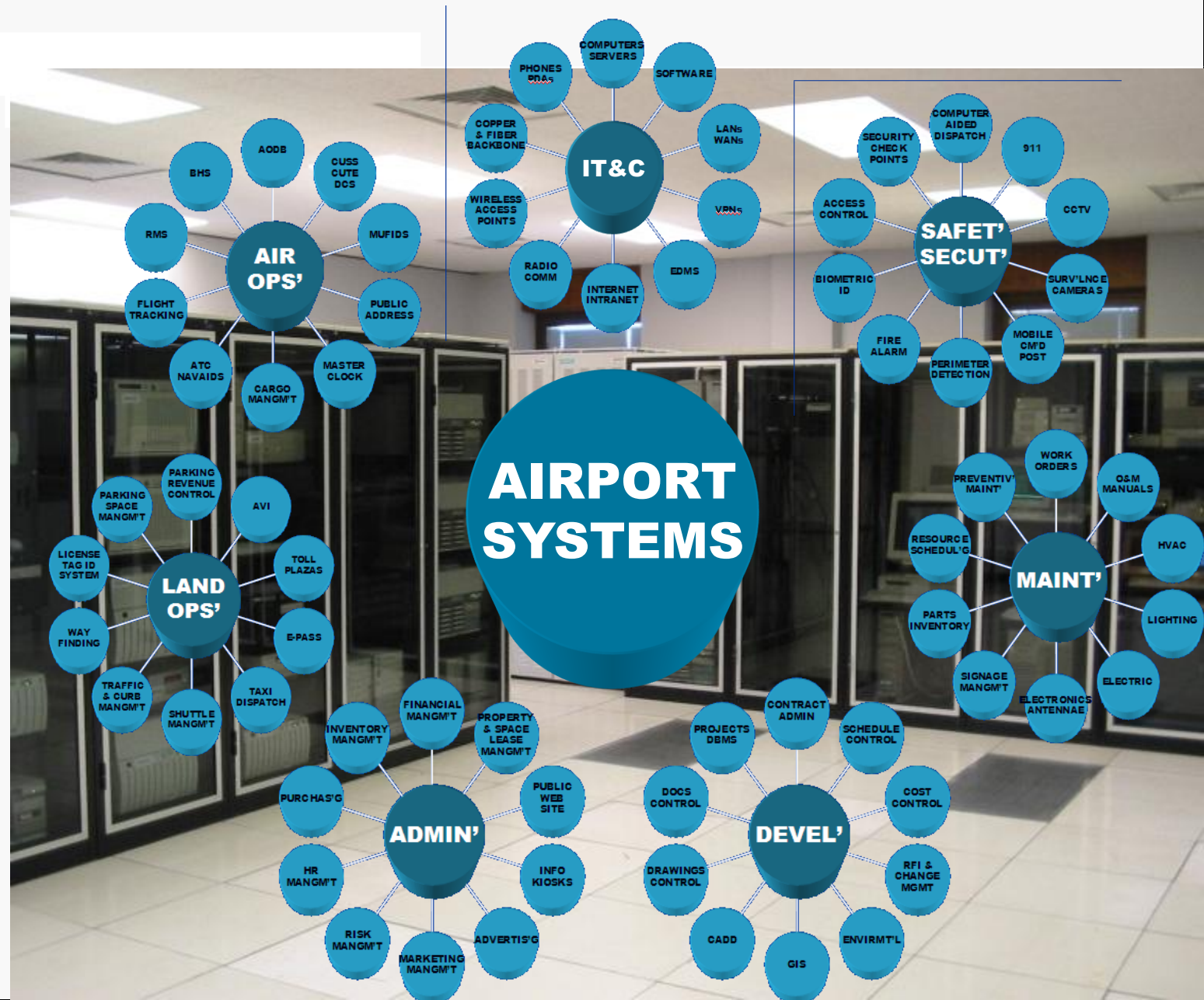
LAX, SMF, DEN, ICT, ORD, RSW, FLL, USAF, NASA

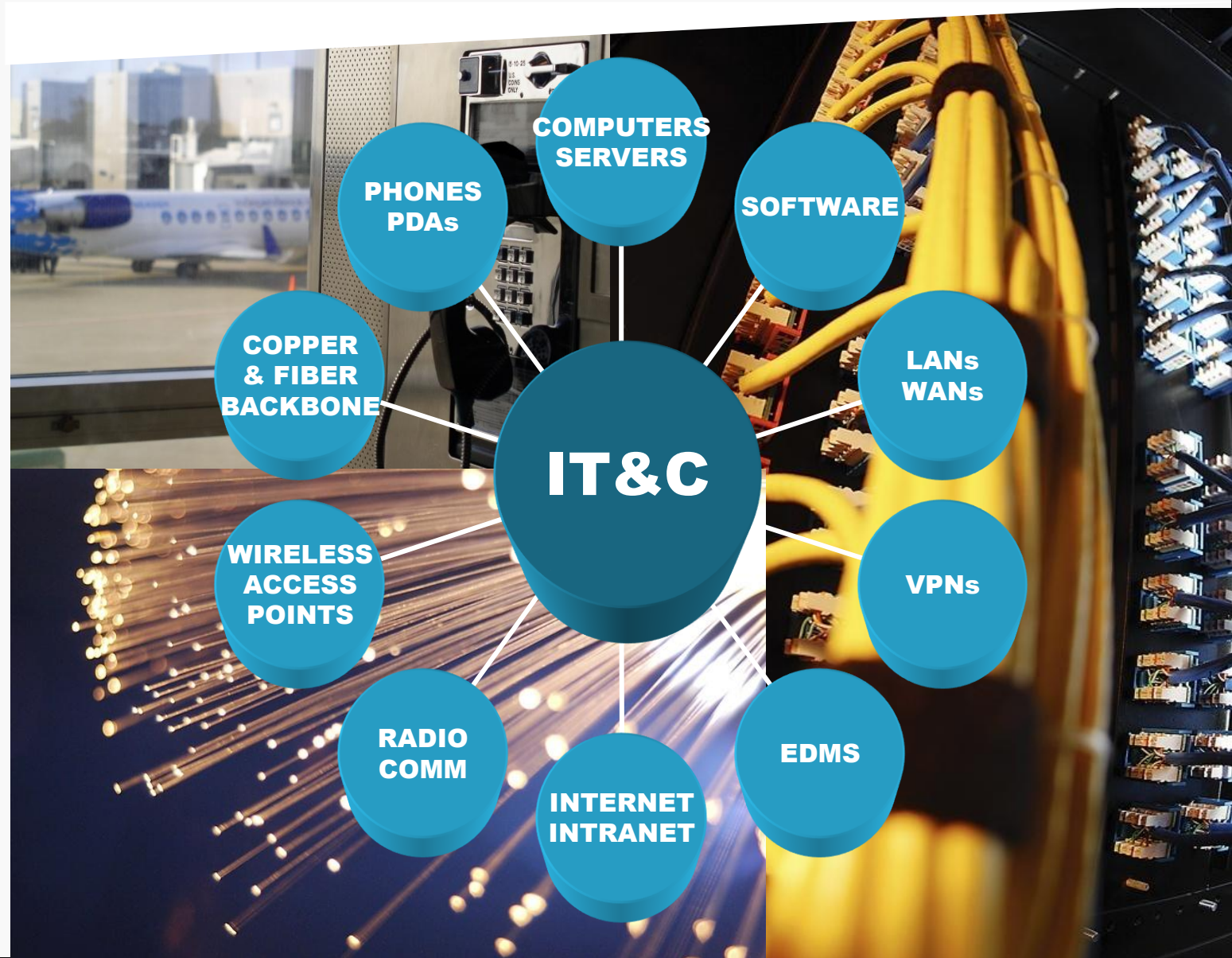
- ✓ systems **planning**
- ✓ systems **design**
- ✓ systems **specification**
- ✓ systems **selection**
- ✓ systems **procurement**
- ✓ systems **installation**



- ✓ systems **configuration**
- ✓ systems **customization**
- ✓ systems **integration**
- ✓ systems **testing**
- ✓ systems **documentation**
- ✓ systems **training**
- ✓ systems **activation**
- ✓ systems **O&M**

Holistic Systems Perspective





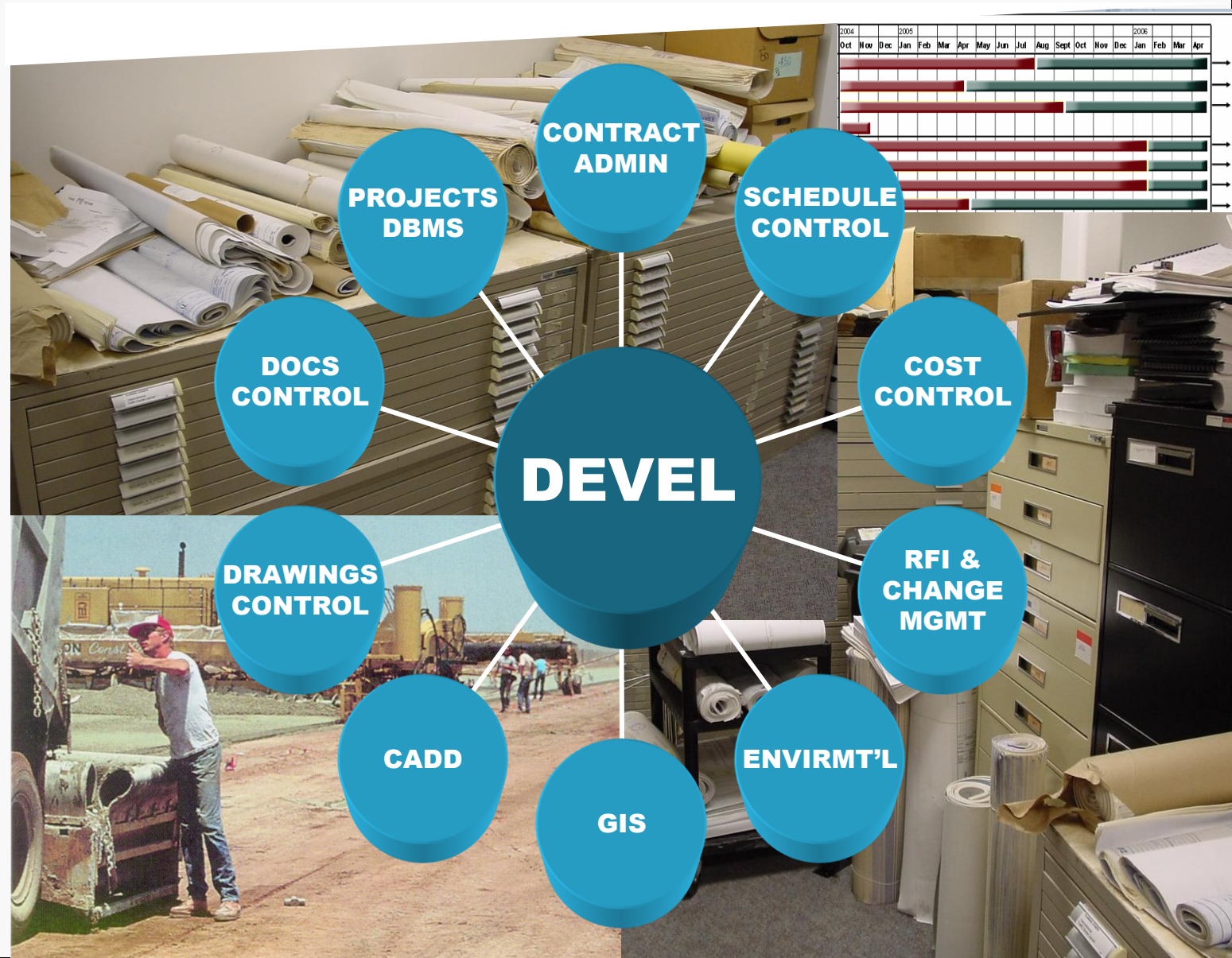
Airline & Airside Operations













Business “Process”
drives “Data” requirements

which drive application
of “Technology”

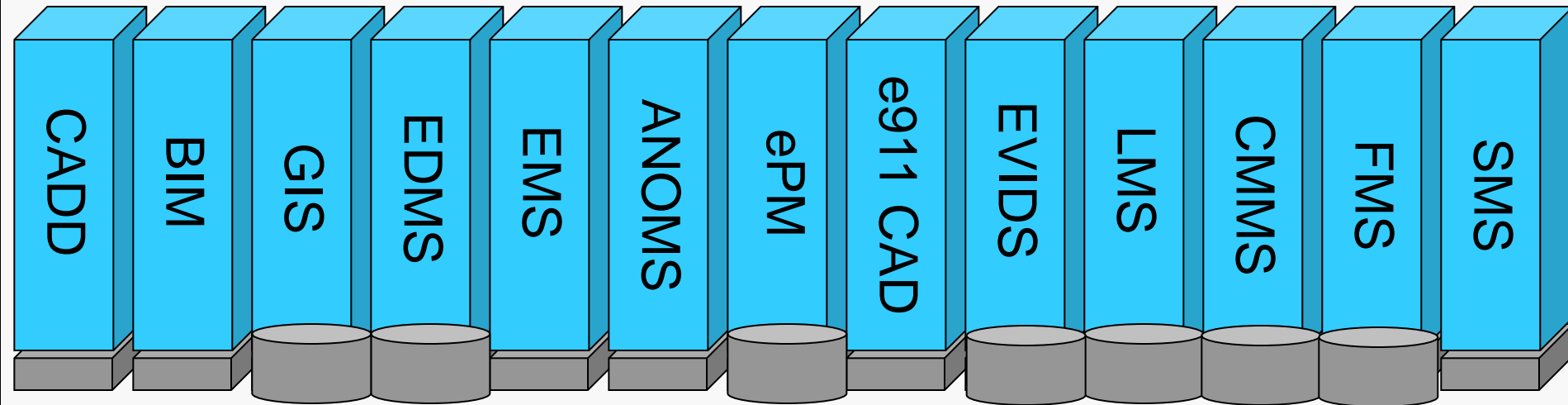
which enables more
efficient “Processing”



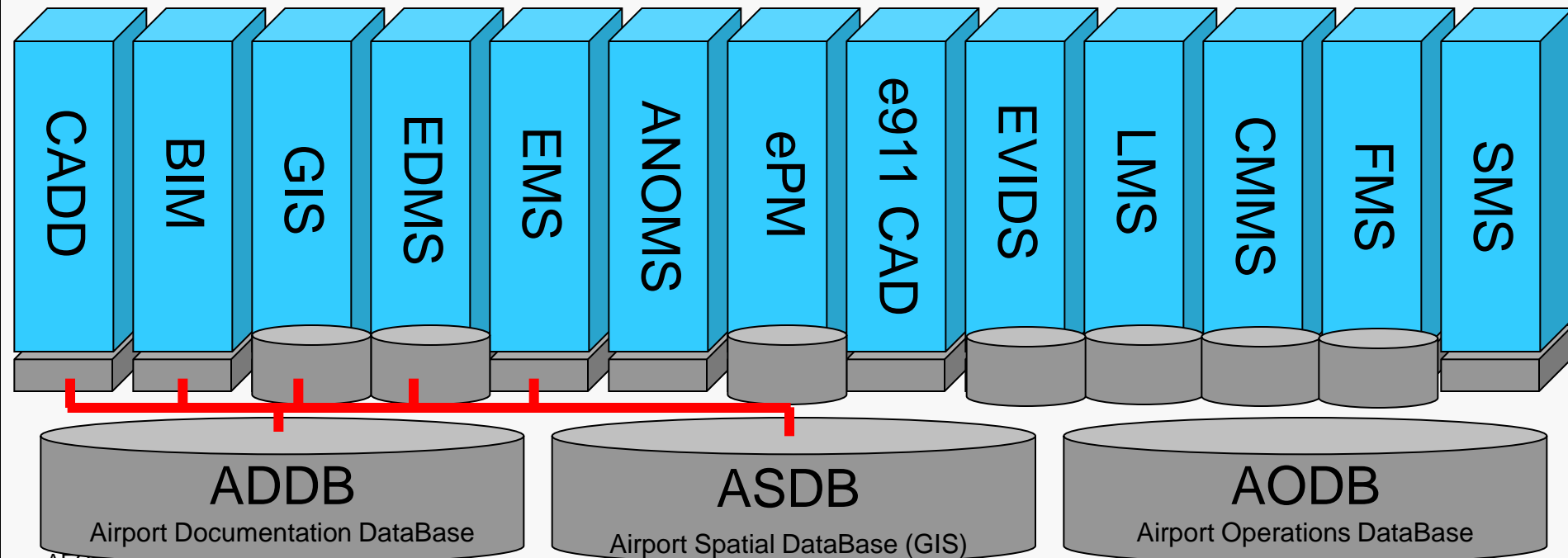
**Business needs
drive technology investments (not visa-versa)**

“Stove-Pipe” Systems

- Commercial-Off-The-Shelf (COTS) and Custom Tools
- Used for Data Processing and Analysis
- Generate Respective Data Files & Databases
- Involve Duplication and Overlap of Certain Data



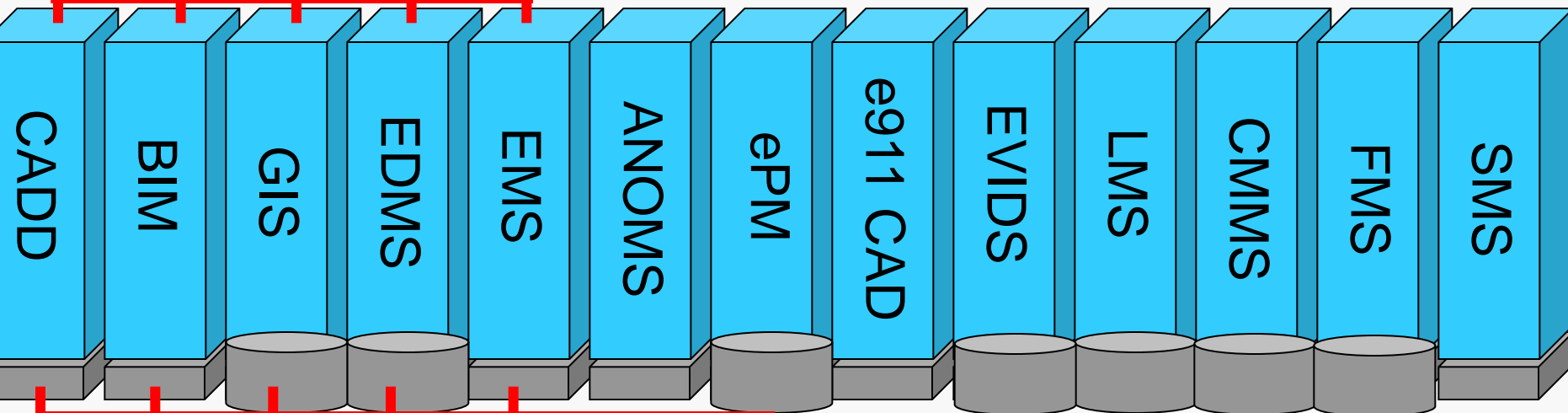
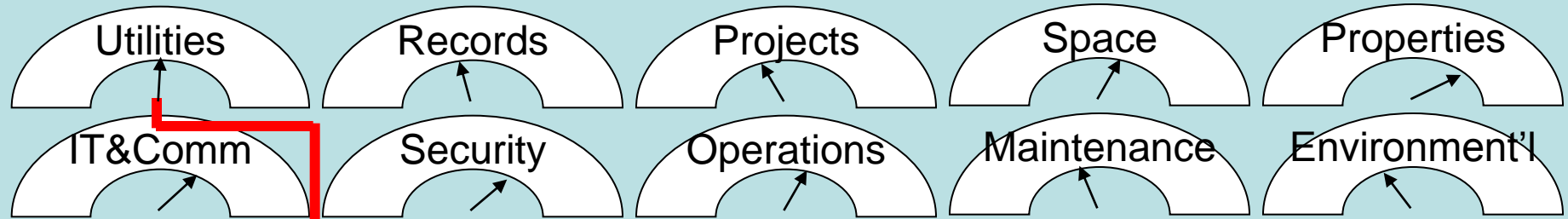
- Common Data is Moved into Shared Databases
- Minimizes Data Duplication and Integrity Problems



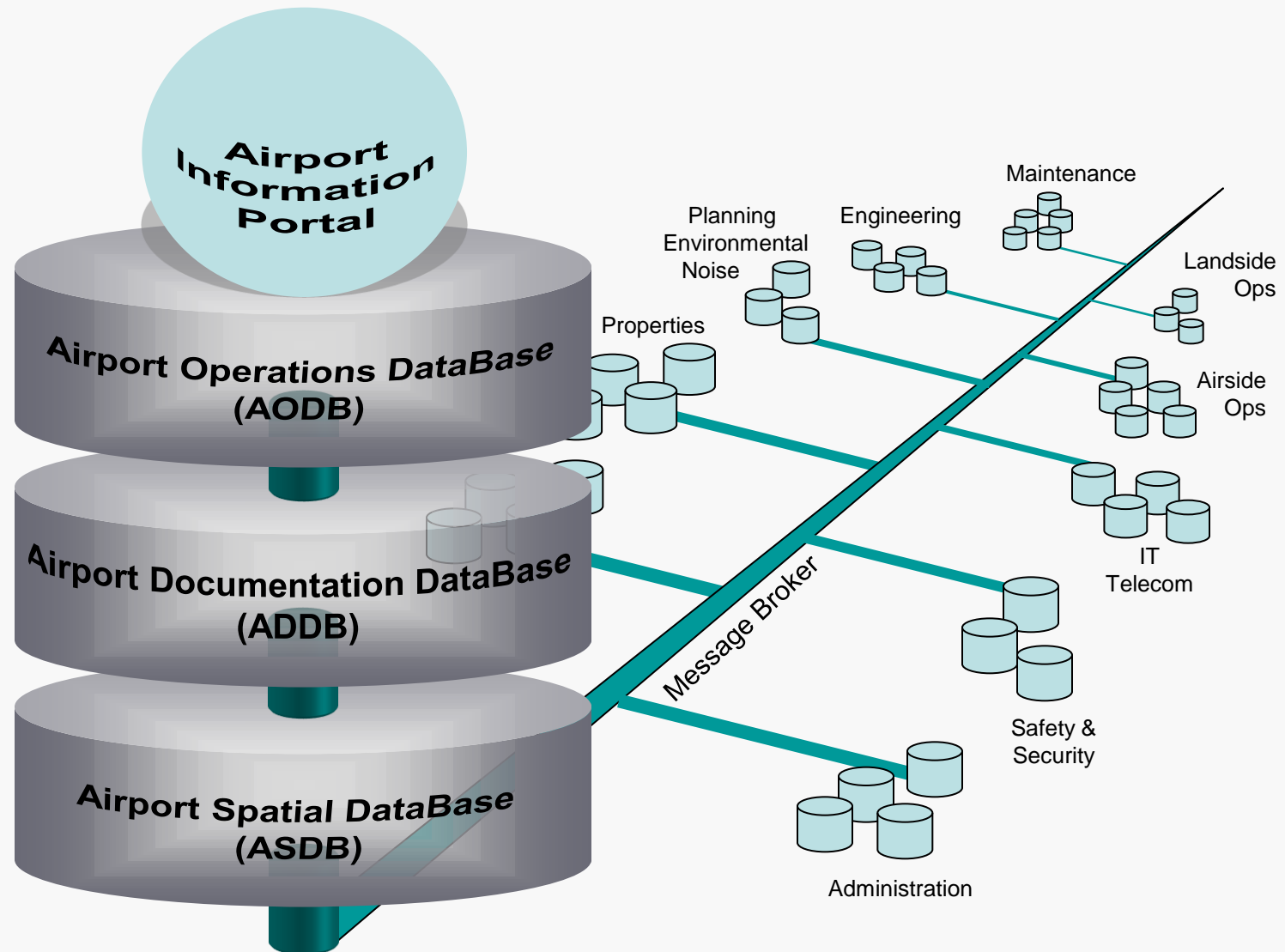
Integrated Framework Approach

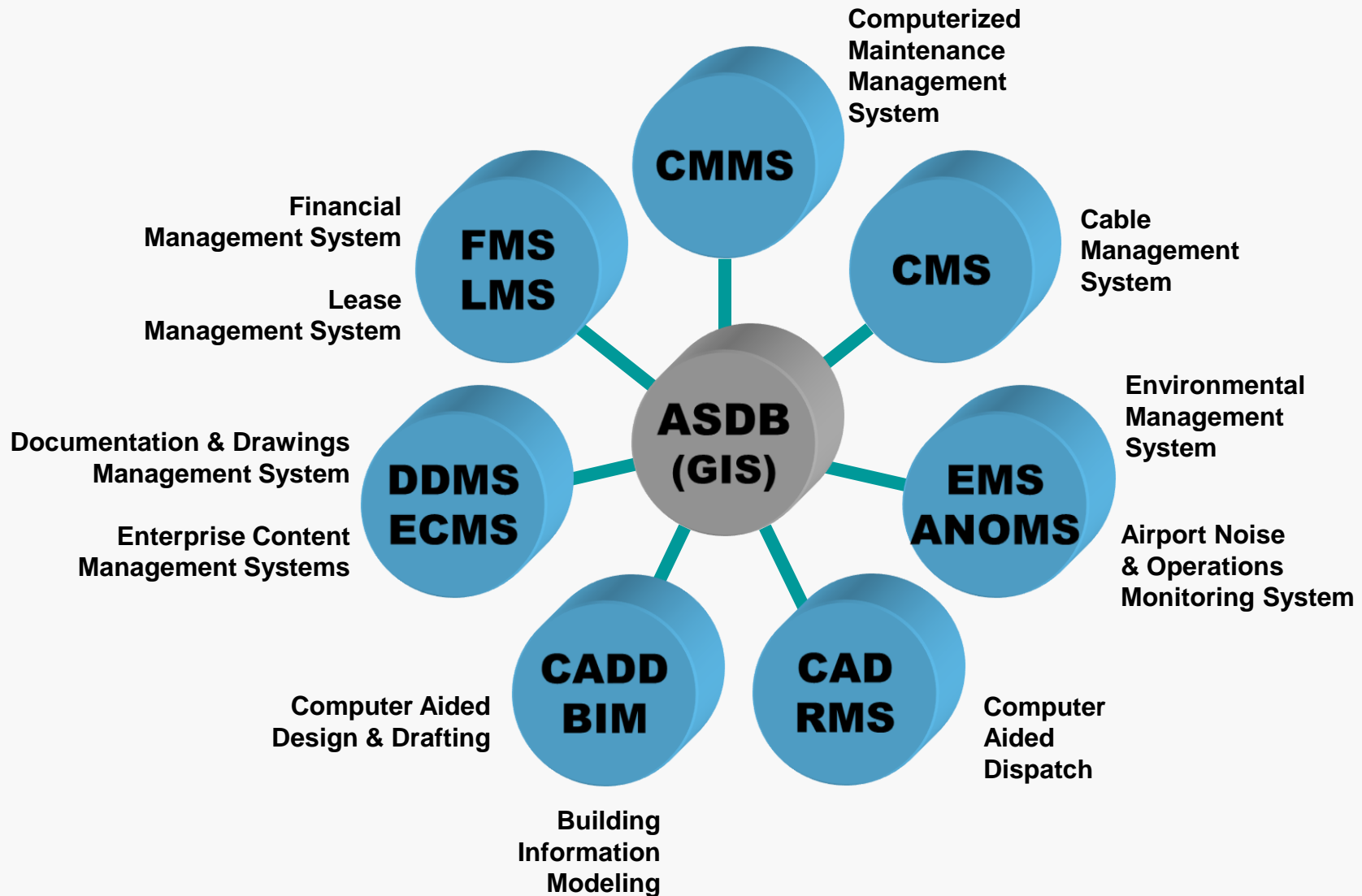
- Efficiently Delivering Decision Support Data

Airport Management Dashboard



Data Shared by Many Systems





Airport Management Dashboards

MSP Dashboard

FlightStats Data

Flight	Arrival		Gate	Status
	Sched	Actual		
NW 1532	3:38 PM	3:44 PM ~	T-L G22	En Route ● On-time
X1 2708	3:39 PM	3:31 PM	B2	Landed ● On-time
NW 647	3:39 PM	3:13 PM	T-L F14	Landed ● On-time
9E 2867	3:40 PM	3:23 PM	C21	Landed ● On-time
SY 564	3:40 PM	3:59 PM ~	T-H	En Route ▲ 19 min

Current Airport Delays

Delay Index: Very Low
Trend: Decreasing
Change: -25.0%
Updated: 20:30 UTC
Date: 14-Mar-2009

[Learn More](#)



Aviation Digital Data Service Weather - METAR / TAF

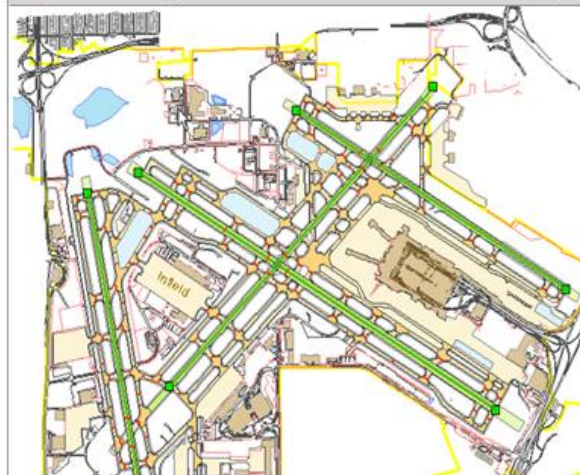
Aviation Digital Data Service (ADDS)

Output produced by TAFs form (2044 UTC 14 March 2009)
found at <http://adds.aviationweather.noaa.gov/tafs/index.php>

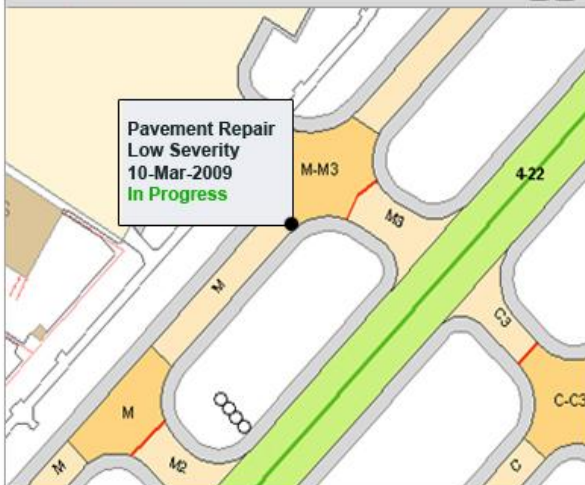
KMSP 141953Z 20014G21KT 10SM FEW250 09/M03 A2996

KMSP 141720Z 1418/1524 20012G18KT P6SM FEW250
FM150100 18007KT P6SM SKC
FM151100 16005KT 6SM BR FEW250
FM151500 17011KT P6SM SCT250
FM151800 17013G22KT P6SM FEW250

Current MSP Projects



Recent MSP Work Orders



Latest MSP News

- 08/31/07 [Flights Arriving at Your Airport](#)
- 08/31/07 [Flights Departing from Your Airport](#)
- 08/31/07 [Flight Changes](#)
- 08/30/07 [Our Airport Newsletter](#)
- 08/30/07 [Recent Noise Complaints](#)
- 08/30/07 [New Cafeteria Hours](#)
- 08/29/07 [Planned Airport Road Closures](#)

Latest Radar



Airport Utilities Systems

AECOM

Welcome to the MAC Geographic Information System - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://macgis/>

MSP International Airport | ESRI Support Center | AECOM
Logged in as MAC\patrick.adesso Logout GIS-Public-Safety

Overview Map Table of Contents Identify Tools Environmental

Table of Contents

- Environmental
 - Utilities
 - Runway
 - Taxiway
 - Airfield
 - AC150.AIRPORTBOUNDE
 - MSP.RECORD_DRAWIN
 - MSP.RECORD_DRAWIN
 - MSP.ROADS
 - Relievers
 - AC150.COUNTY
 - AC150.WETLAND

Toolbox

Measure Tools
Redline Tools
Buffer Tools
Query

Keyword:

Currently selected layer:
Utilities

☐ Zoom to results

LaserFiche
Print
Relievers

500 ft

Northings: 1016391.5 Eastings: 2827186.9 Lat: 45.7852 Lon: -93.2063

Airport Life Safety & Security Systems

AECOM



Address <http://hickory/swfia/ARFF/ARFF.aspx?WIDTH=1293&HEIGHT=831>

Go



Kevin Carlson

Monday, November 12, 2007



Select a zoom area...



ARFF

Layers

New Midfield Terminal

- ☒ Term FL1
- ☐ Term FL2
- ☐ Term FL3

Security

- ☒ Gates
- ☒ FL1 Sec Doors
- ☐ FL2 Sec Doors
- ☐ FL3 Sec Doors

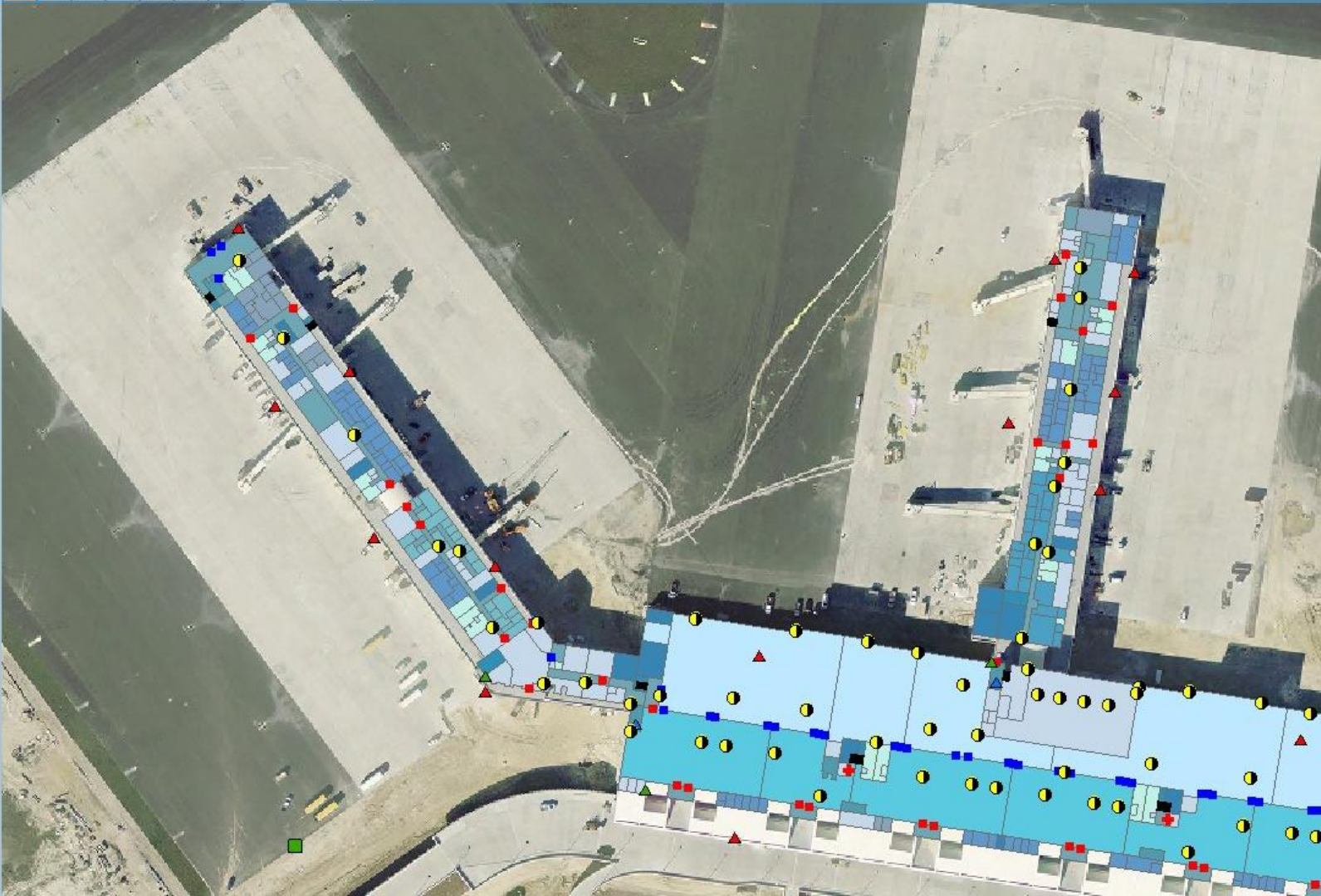
Fire and Rescue

- ☒ FL1 Emerg Doors
- ☐ FL2 Emerg Doors
- ☐ FL3 Emerg Doors
- ☒ FL1 Extinguishers
- ☐ FL2 Extinguishers
- ☐ FL3 Extinguishers
- ☒ FL1 Defibrillators
- ☒ FL2 Defibrillators
- ☐ FL3 Defibrillators
- ☒ Fire Hydrants
- ☒ Water Connections
- ☒ Stand_Pipe
- ☒ FL1 Elevators
- ☐ FL2 Elevators
- ☐ FL3 Elevators

Facility Numbering

- ☐ T1 - Campus
- ☐ T2 - Zone
- ☐ T3 - Site
- ☐ T4 - Improvement

Map Tools



Airport Properties & Lease Systems

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites

Address http://localhost/sis/ Go Links

GREATER ORLANDO AVIATION AUTHORITY Spatial Information System

Planning Engineering Finance Maintenance Operations Properties

Quick View: STC ALP Sheets: Select Any

Overview

Redline

- Create RedLine
- Open RedLine
- Close RedLine
- Save RedLine
- Delete RedLine

Add Text

Add Point

Add Polyline

Add Polygon

Attachments

Buffer

Distance (map unit):

PROPworks

- Query PROPworks
- Search PROPworks
- Symbolize Map: Signatory Place Holder

Admin

Edit Modules

Results

Add/Edit: Levels-Function (557367.0925, 1489707.3426)

Add/Edit: Level 2

Add/Edit: Airline - JBU

Edit Dom:

IDENTIFIER	25909
FQID	OIA.0800.NTLS.ZNC.02.2884
GM_POLYGON	Polygon
ROOM_NUM	2884
CLEANING	1
CONTRACT	SECONDARY
CYCLE	4

Map Layers

- Architectural
- Utilities
- Levels-Function
 - Level 11
 - Level 10
 - Level 9
 - Level 8
 - Level 7
 - Level 6
 - Level 5
 - Level 4
 - Level 3
 - ☒ Level 2
- Airline - AAL
- Airline - ACA
- Airline - BAW
- Airline - CAW
- Airline - COA
- Airline - DAL
- Airline - GWY
- Airline - JBU
- Airline - MEP
- Airline - NKS
- Airline - NWA
- Airline - SWA
- Airline - TRS
- Airline - UAL
- Airline - USA
- Airline - VIR
- Airline - WJA
- Level 1
- Airfield
- Aerials
- ☒ 2004 Aerial

State Plane (X: 556413.33 Y: 1489933.11) Geographic (Lon:81°18' 12.636" W Lat:28°18' 55.368" N)

Local intranet

Airport Operations Systems

AECOM

Kevin Carlson



Thursday, April 14, 2005



Tenant Complaint - Microsoft Internet Explorer

Select a zoom area 30:1



Tenant Complaint

Submitted By: Kevin Carlson
Submitted On: 4/14/2005
Location: 802968N, 736441E
Airport: SWFL

Tenant Information

Name:

John Smith

Title or Position:

Manager

Contract Service:

Concessions

Complaint Information

Nature of Complaint:

Issue with my retail facility

Airport Representative:

Furiosi

Maintenance Notified:

N/A

Terminal Maint. Notified:

N/A

Date Contractor Notified:


Follow Up:


None to date.








Airport Maintenance Systems



AECOM

Address <http://localhost:3243/swfia/maint/maint.aspx?WIDTH=1266&HEIGHT=768> 





 Sign in


Google  Search 37 blocked  Check  AutoLink  AutoFill  Options


Kevin Carlson Tuesday, May 02, 2006


Select a zoom area...  

Maintenance Forms


-  Request Work Order
-  Log Event
-  View Table
-  Search Table

Layers 

Map Tools 

Redline 

maint_wo_request_2 - Microsoft Internet Explorer provided by A...




Work Order Request:

Requested By: Kevin Carlson



Requested Date: 5/2/2006


Approximate Location: 798343N, 736257E

Airport: SWFIA 

Work Order Information

Work Order Information

Requestor's Division: Administration  Requestor's Department: Maintenance  Requestor's Phone Number: 555-555-5555

Trade Area: 40 - Airfield 


Description of Request Work:

Status: 1 - REQUESTED Closed? ☐ Closed Date

Vehicle Information

Equipment Information

Assignment Information

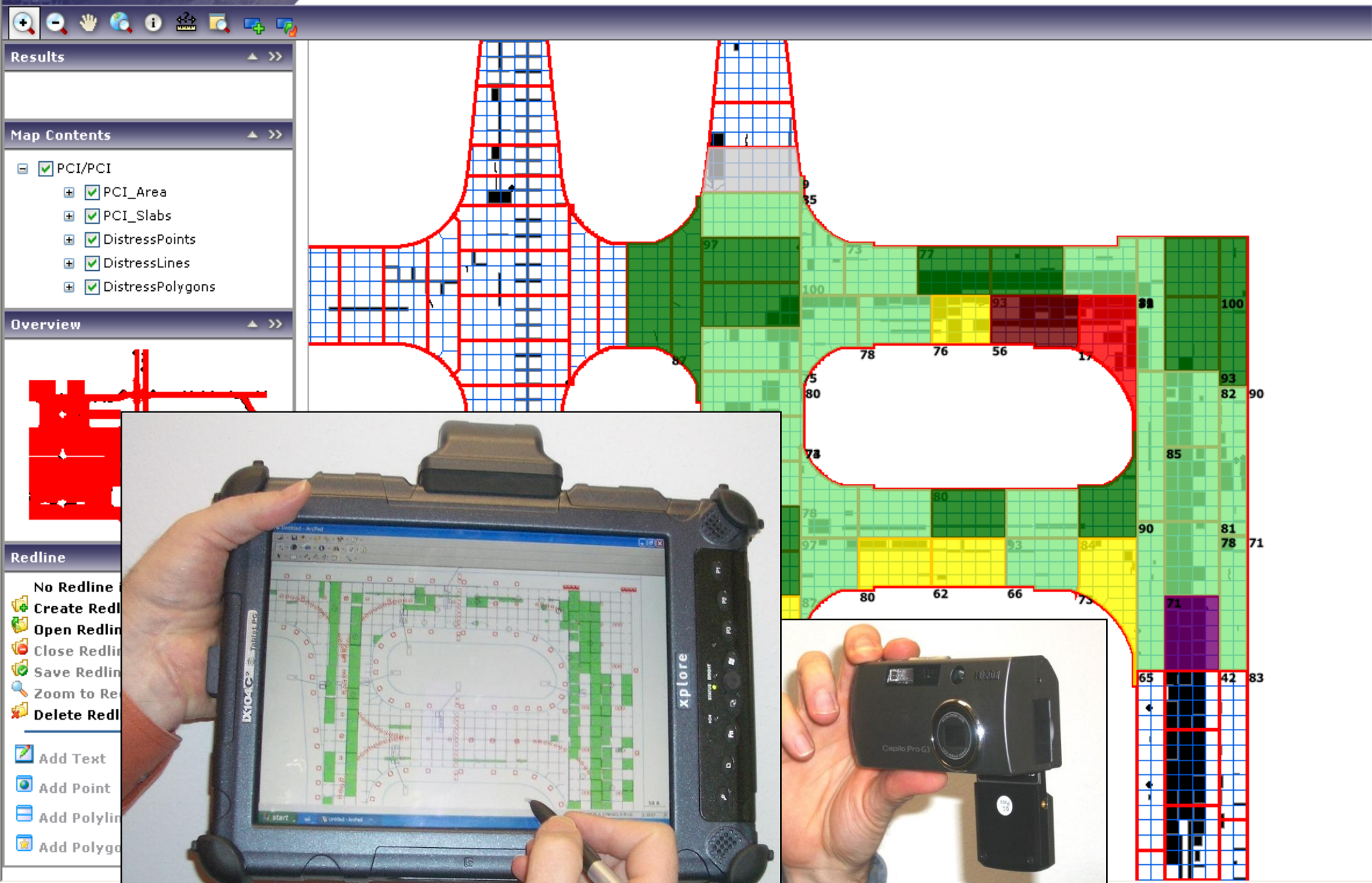
Assigned Technicians (select up to five):  << Add Technician

Unassigned Technicians: Maintenance1 Worker1

Airport Pavement Systems

GAPEMS
Geospatial Airfield Pavement Management

DENVER INTERNATIONAL AIRPORT



Airport Documents/Drawings Systems

AECOM

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites

Address <http://localhost:2388/EDRS/aeis.html> Go Links

Logged in as: Randy Murphy [Log Out Help](#)

AEIS Airport: BWI Home **EDRS** GIS Maintenance Utilities Planning Tools

Search Tools

- Search Map - Feature
Select map features...
- Search Map - Grid
- Search Text - Basic
- Search Text - Advanced
- Saved Searches
- Show Master Documents
- Show All Documents

Search

GIS Layers

Visible Layers

- ☐ Redlines
- ☒ Redline Text
- ☒ Redline Points
- ☒ Redline Lines
- ☒ Redline Polygons
- ☐ Grid System
- ☒ BWI Grid
- ☐ Boundaries
- ☒ Buildings
- ☐ Landuse

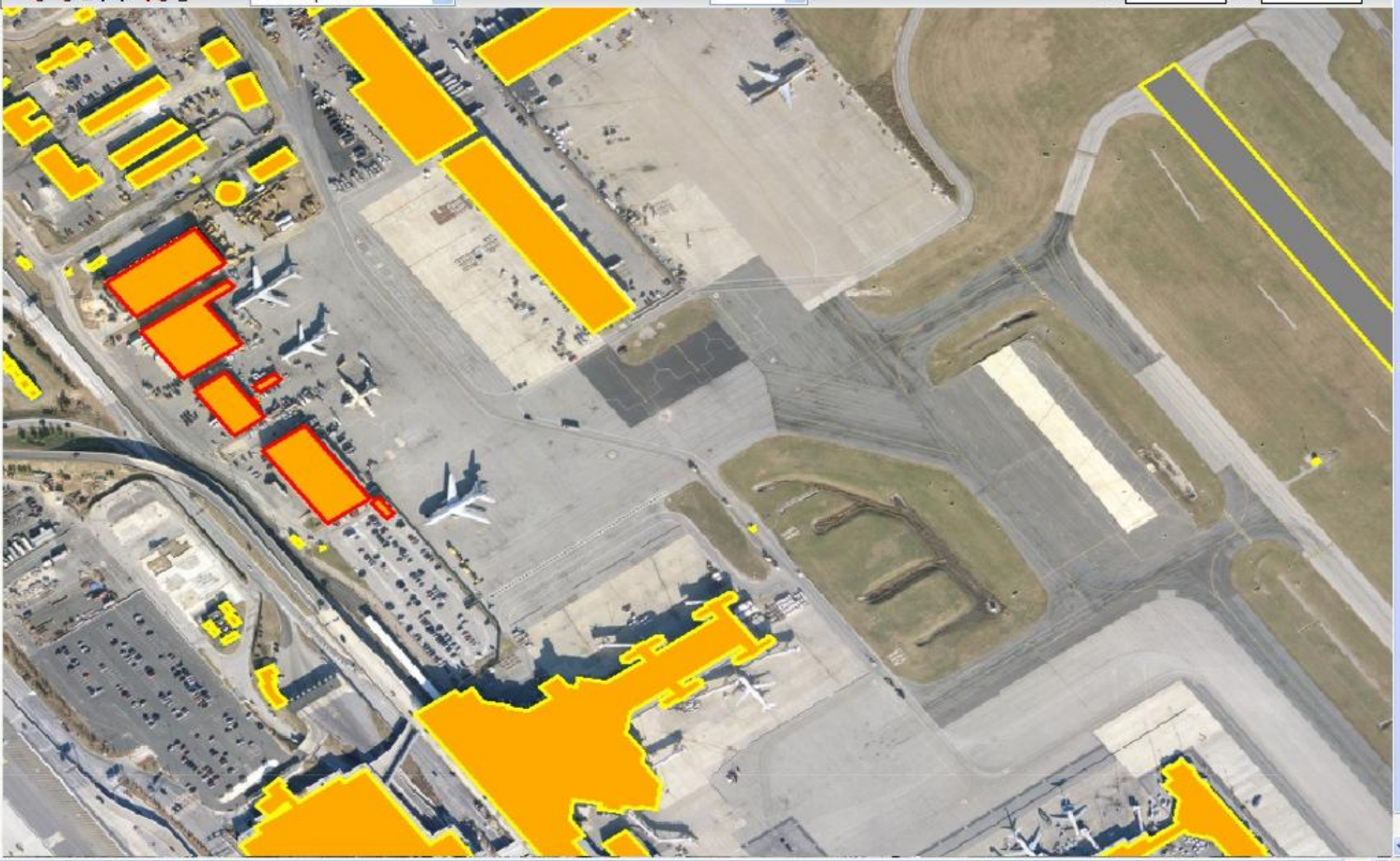
Results Tools

Checkout Tools

Document Load

EDRS Map

Set Map View Exterior X: Y:



The main map area displays an aerial photograph of an airport. Several large, irregular areas are highlighted in yellow, while a few smaller, more specific areas are highlighted in orange. These overlays likely represent the results of a search or specific GIS layers. The map includes various airport features such as runways, taxiways, parking lots, and terminal buildings. The interface is designed for users to interact with the map, possibly by clicking on the highlighted areas to view more details or documents related to those specific locations.

Done Local intranet

Airport Documents/Drawings Systems

AECOM

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites

Address http://localhost:2388/EDRS/aeis.html

Go

Links

Logged in as: Randy Murphy [Log Out Help](#)**AEIS**

Airport: BWI

Home

EDRS

GIS

Maintenance

Utilities

Planning

Tools

Search Tools

GIS Layers

Results Tools

Checkout Tools

Save to Disk

Save Selection Set

Print Selection

Email Selected Documents

Remove Secondary Search Results

Remove Selected from Checkout List

Add New Result Set

Document Load

Search

Results

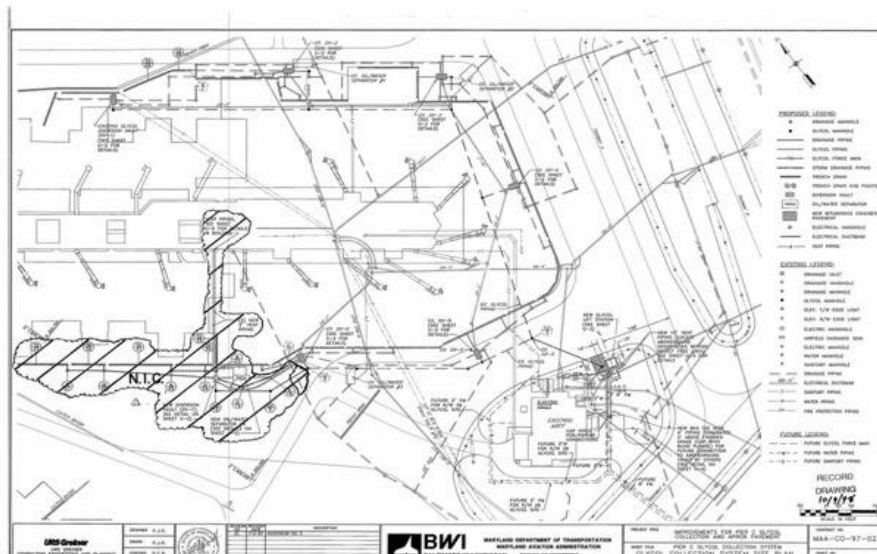
Checkout

Doc Load

Checkout

Select	Preview	Contract Number	Contract Title	Sheet #	Sheet Title	Thumbnail
Document Type: Design Drawings						
<input checked="" type="checkbox"/>		MAA-CO-97-022	Gold Lot & Pier 'C' Improvements Pier 'C' Glycol BWI	U001	Pier C Glycol Collection System Glycol Collection System Site P	
<input checked="" type="checkbox"/>		98	Apron Expansion-Ramps "B" and "C" Faap 23	007	Drainage Details	
Document Type: Reference Drawings						
<input checked="" type="checkbox"/>		101	Apron Expansion Ramp 'C'	007	Drainage Details	

Preview



Attributes for U001 / MAA-CO-97-022

Consultant Name: Company XYZ
Sheet Number: 1 of 8
Sheet Title: Sheet XYZ
Utilities: Electric, Water
Discipline: Electrical
Subject: Building Improvement
Comments: None

Local intranet

Airport PM/CM Systems

AECOM

ICT ePM Application - Microsoft Internet Explorer provided by AECOM

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Mail Print W Address http://localhost:2125/ICT_epm/ProgAdmin/pa_AllocateFunds.aspx?ExpenditureId=11&ProjectId=15 Go Links

Google Search Popups okay Check AutoLink AutoFill Options

WICHITA
MID-CONTINENT
AIRPORT

ePM

Kevin Carlson

Dashboard

Projects

Tasks

CIP Planning

Manage Vendors

Project Funding

Reports

Fund Detail:

Description: AIP 49 Value: \$1,000,000.00

Fund Type: AIP Expended: \$148,325.16

Fund Amount: \$ 1,000,000.00 Drawn Down: \$45,085.00

[Back to Funds](#)

Fund Tasks:

- Add Drawdowns
- Edit Fund Information
- Select Authorized Projects

Drawdowns:

Date	Amount
1/29/2007	\$45,085.00

Newly Allocated Expenditures (not yet drawn down):

Date	Document #	Transaction Amt	Allocated Amt
8/12/2005	JV511567	\$85.00	\$64.00
11/1/2005	VC520172	\$69,991.05	\$45,000.00
5/4/2006	VC608067	\$129,280.36	\$58,176.16

Unallocated \$851,674.84

\$45,085.00 Drawdown

\$103,240.16 New Alloc

Expenditures \$148,325.16

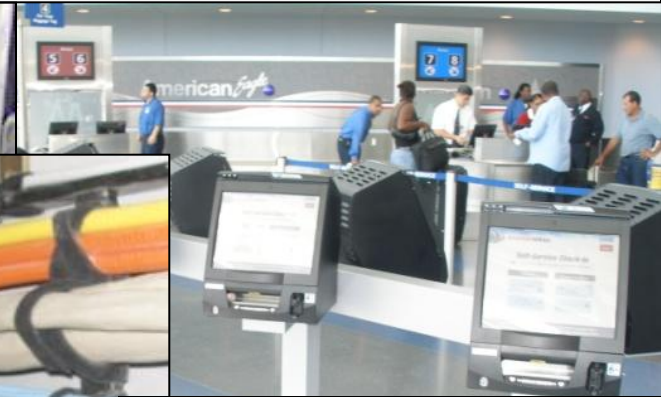
\$103,240.16 New Alloc

Home :: Program Administration :: Fund Detail

Monday, January 29, 2007

Airport Systems Design & Activation

AECOM



- Dedicated Airport Technology Systems Professionals
- Mesh Traditional Brick & Mortar with Technology Systems
- Experience from over 100 Airports
- Full Services Spectrum
- Depth of Resources
- Vendor Neutral and Open Architecture
- Leaders in Industry Committees
 - ACI Business IT Committee (BITCOM)
 - ACC IT & Systems Committee
 - AAAE IT Committee
 - IATA CUPPS / CUSS

Document No: ACC - ITS - 0010	Revision Letter A PRELIMINARY DRAFT	Last Revision Date: July 19, 2006
Point of Contact: David Tink: 321-795-5775	 ACC AIRPORT CONSULTANTS COUNCIL Information Technology & Systems Committee	Total Pages: 73
Approved By:		Parent Document(s): N/A
ACC IT&S Committee Chair		
ACC Board of Governors Chair		
ACC President		
Document Title: AIRPORT INFORMATION TECHNOLOGY & SYSTEMS IMPLEMENTATION GUIDELINES Planning, Design, Construction and Commissioning		
		
Document Purpose:		

- **Major Projects**
 - MSP & MKE Enterprise GIS Implementations and Integrations
 - HRL A-GIS/eALP FAA Pilot
 - LAX GIS Noise System Upgrade
 - DEN EGIS/BIM
 - RSW Electronic Document Management System (Documentum)
 - World Trade Center Site Development Systems Design
 - PM/CM Systems Support (SAN, LAX, SMF, DEN, ICT, ORD, FLL ...)
 - USAF & NASA Sharepoint services for Construction Management
- **Ongoing Significant Pursuits**
 - MCO Integrated Database and Electronic Document Management System
 - Malaysia Airports Knowledge Integrated Management System (KIMS)
- **Initiatives**
 - Subscription-Based Web Hosted Applications (GIS and Sharepoint)
 - FAA Airport GIS/electronic Airport Layout Plans (eALPs)
 - BIM setup for Facilities Lifecycle Management (integrate with GIS/Maximo)
 - Systems Monthly Aviation Resource Training (SMART) Telecons
 - Technology Applications Group (TAG) Strategic Initiative
- **Strategic Hires**
 - Brian Reeve and Steven Zellers

- **SYS is Not a Mega Projects Generator nor a Big Growth Area, but it's Profitable and a Catalyst for Bigger non-SYS Business**
- **SYS Can Provide Differentiators to PM/CM & PEZ Pursuits**
- **Approximately Two-Thirds of SYS Work is Funded via CIP Projects (Planning, Design, and PM/CM Contracts)**
- **Airport IT Contracts are Not Well Funded
Airport IT Departments are Prone to be Dysfunctional
Most Airport IT Work Gets Done via Airport Development Side**
- **Airport IT Systems are Chronically an Afterthought on CIP Projects, Under Budgeted, Complicating Project Delivery**
- **Subscription Based Web Hosted Solutions/Data to Clients is a New Service and Billing Model SYS can Setup and Maintain**

- **Keep Pressing Forward Offering SYS Services**
 - **Airport Management Systems**
 - **Airport Operations Systems**
- **“Plant” Additional SYS Tasks Into PM/CM & PEZ Contracts**
 - **LAX, SAN, SMF, DEN, RSW, ICT, FLL ...**
 - **DFW, IAH, TPA ...**
- **Export SYS Services by Leveraging Overseas Staff**
- **Continue to Develop & Hire SYS Superstars Who Are Both Doers and Sellers**
- **Leverage & Support SYS Resources Elsewhere in AECOM via TAG Initiative and other Collaboration (including lower cost IT/GIS developers in mainland China under AECOM’s Eric Yau)**