SURVEILLANCE DATA DRIVEN PAVEMENT MANAGEMENT

PAVEMENT MANAGEMENT!

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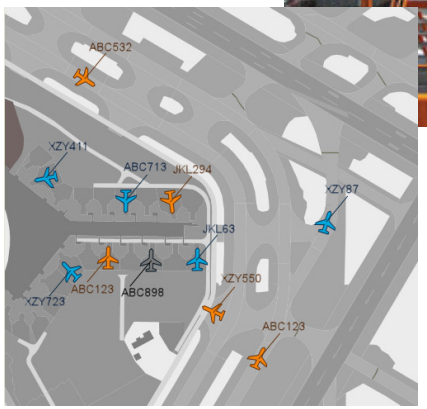
SURVEILLANCE DATA DRIVEN PAVEMENT MANAGEMENT

- Pavement Management
- Data Sources
- Information Creation
- Quality of Results
- Application
- Value



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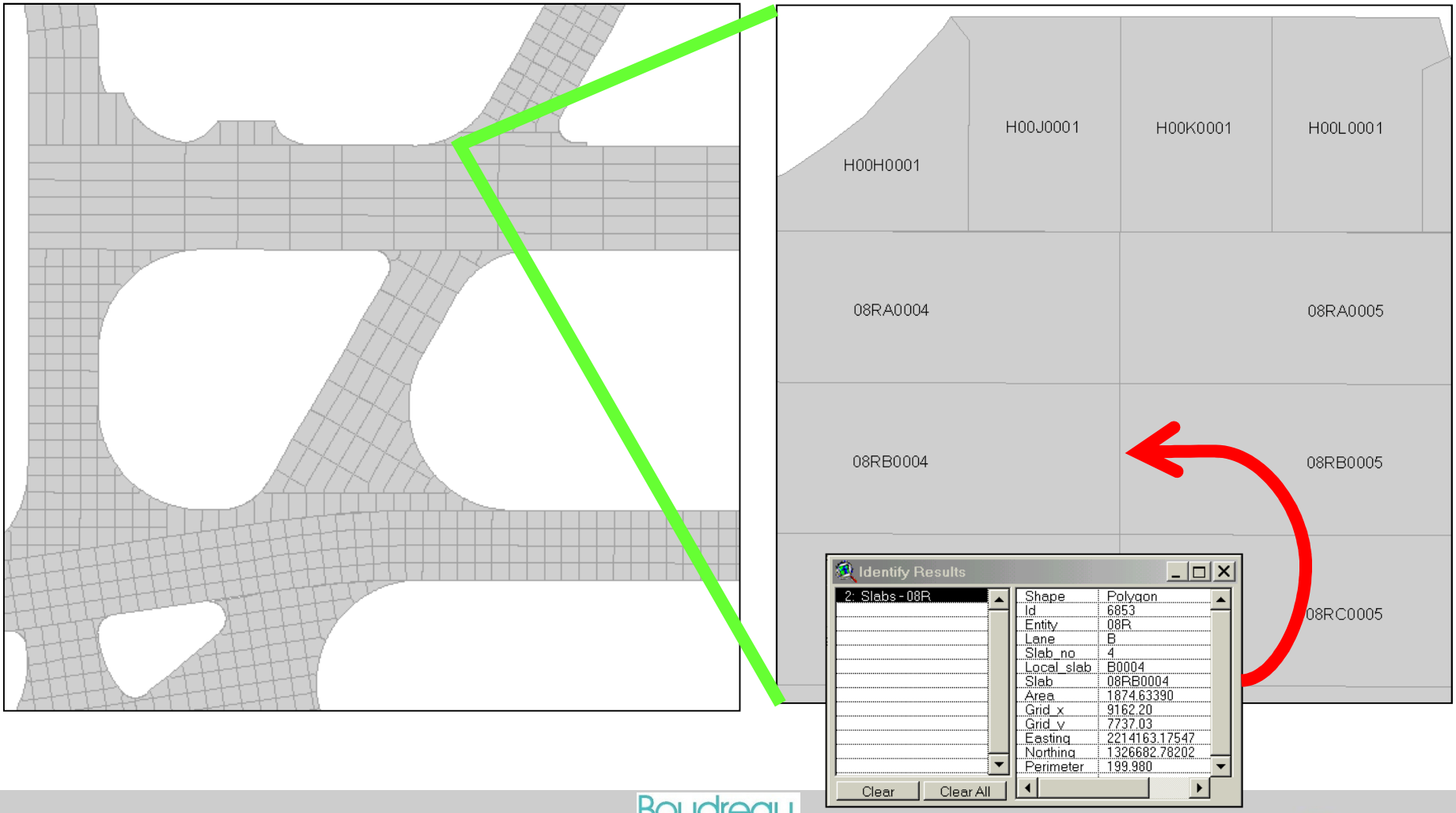
HYPER DETAILED MAP



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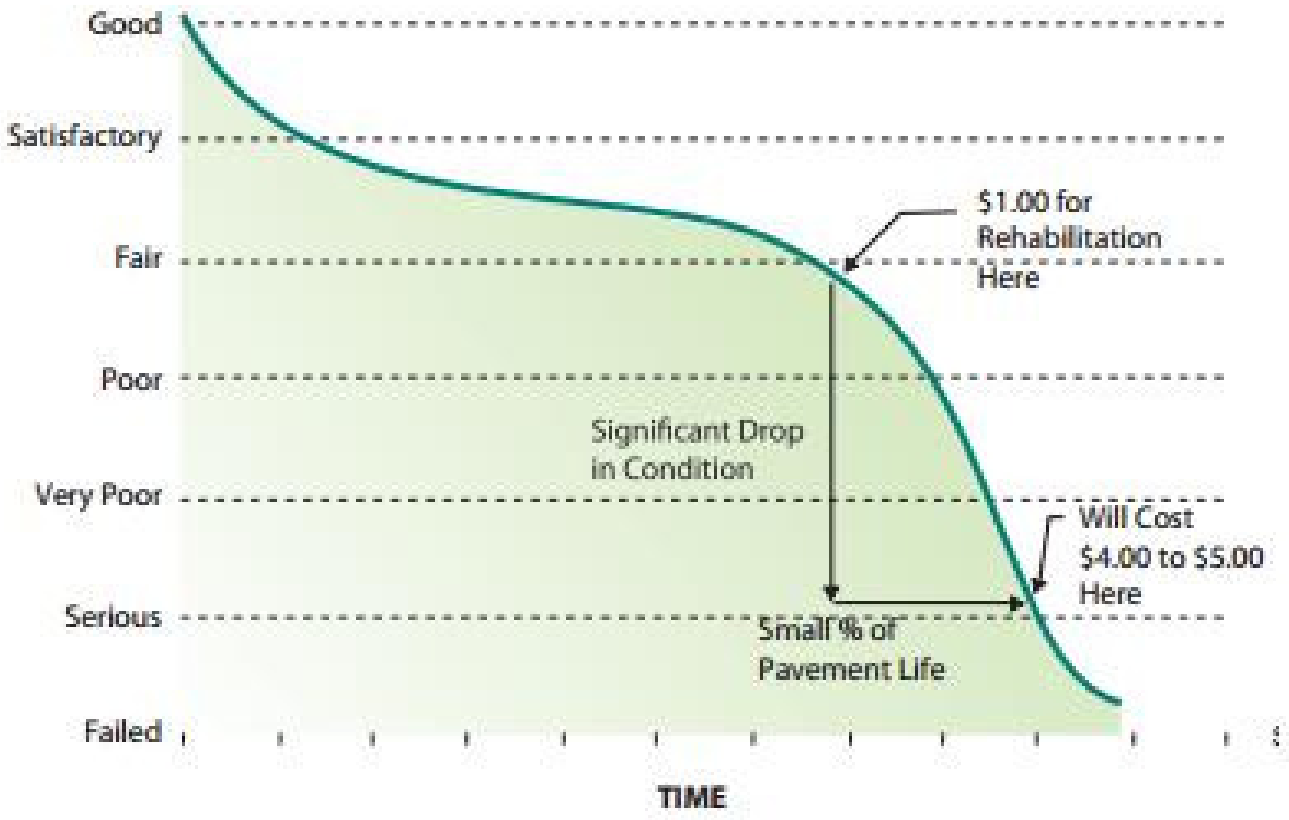
PCI (PAVEMENT CONDITION INDEX)

- Why it is important
  - Supplies data for deterioration curve
  - Inflection point on the curve…

FIGURE 2

Typical Pavement Lifecycle Curve



HJAIA PAVEMENT EVALUATION PROGRAM

Hartsfield-Jackson Atlanta International Airport

City of Atlanta • Department of Aviation

Michael Baker

INTERNATIONAL

PAVEMENT MANAGEMENT TOOLS

- Pavement Section
- Structural Data
- Pavement Condition Index
- GPS Pavement Surveys – Annually
- Missing Piece:

  Detailed Traffic Data

KNOWN UNKNOWNS

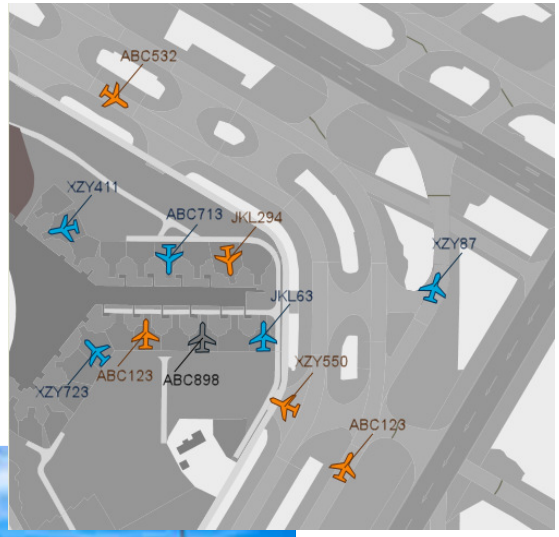
- Airplane Traffic is a WAG
- When is a section of pavement busy
- Ability to simulate alternatives

SOLUTION

- Data driven pavement management

SURVEILLANCE

- ASDE-X
- ASSC
- Aerobahn
- Position within 30 feet
- 1 Hertz update



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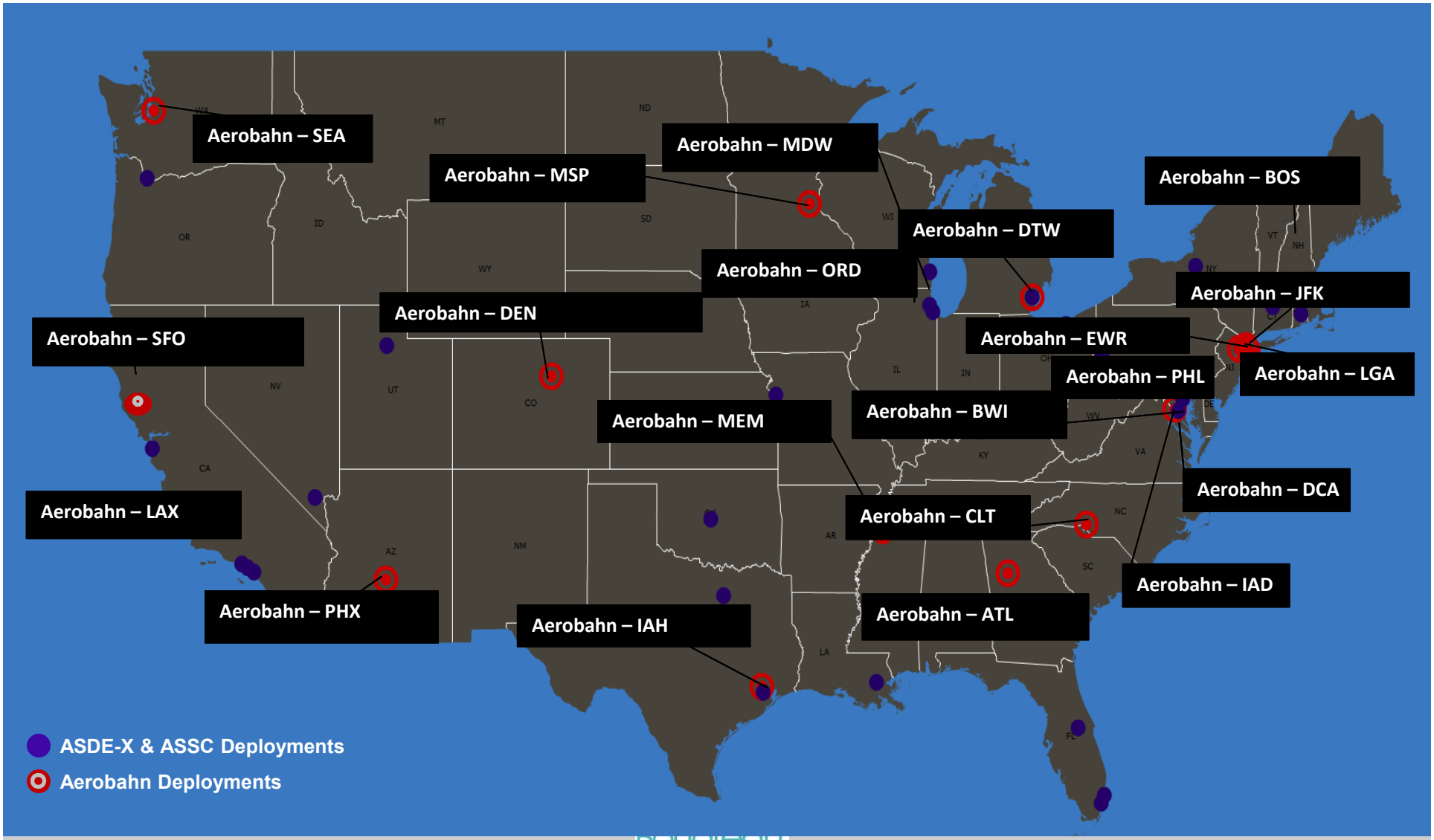
AEROBAHN U.S. DEPLOYMENTS



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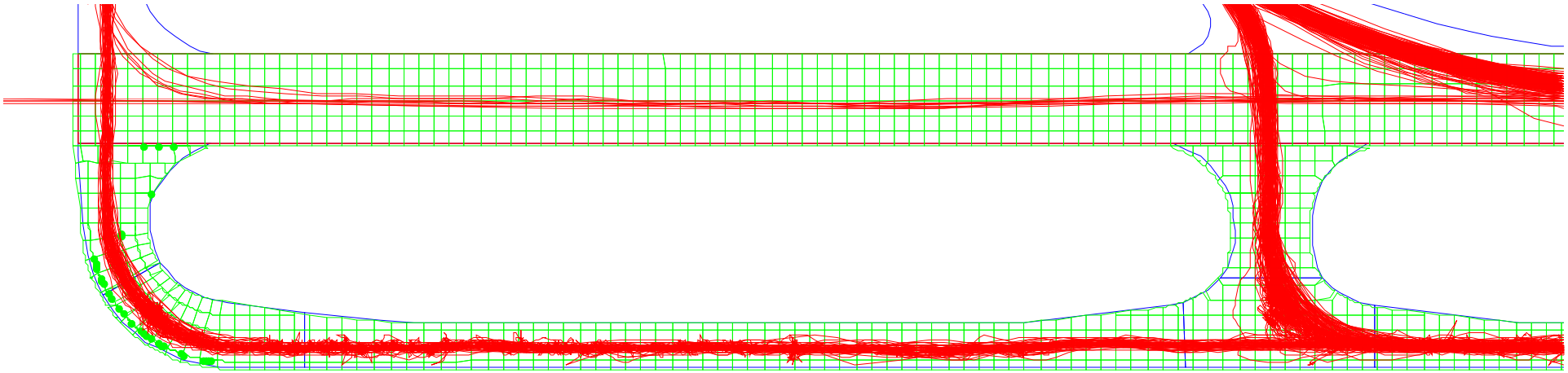
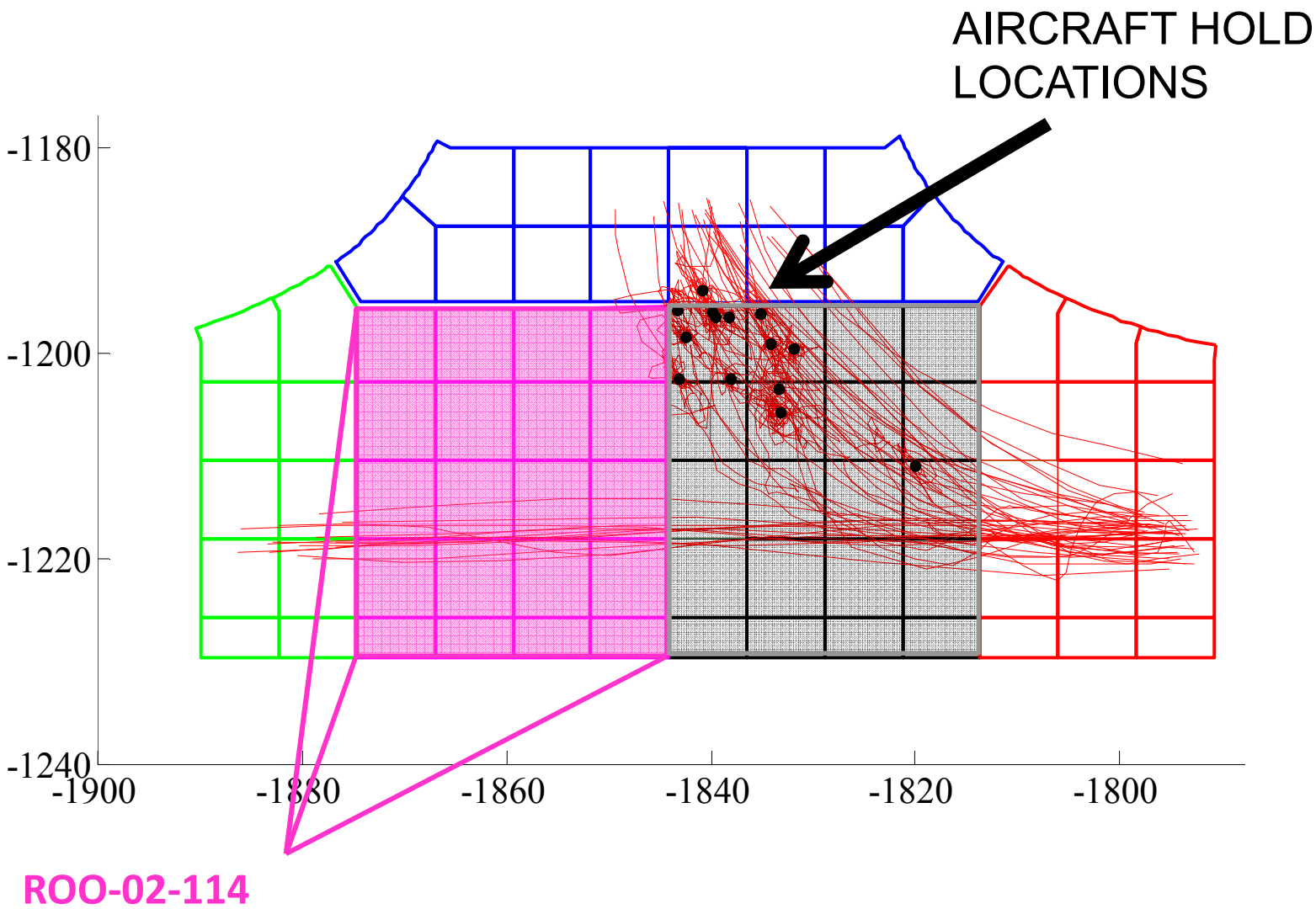


Figure 3. Track Locations on Taxiway Romeo and Runway 9R


AIRCRAFT HOLD LOCATIONS
-1180
-1200
-1220
-1240
-1900
-1880
-1860
-1840
-1820
-1800
ROO-02-114

FLIGHT PROPERTIES

- ID
- Flight
- Aircraft Type
- Arrival or Departure
- Call sign
- Tail Number
- Mode S
- Seats
- Max Takeoff Weight
- Max Landing Weight

DATABASE VIEW

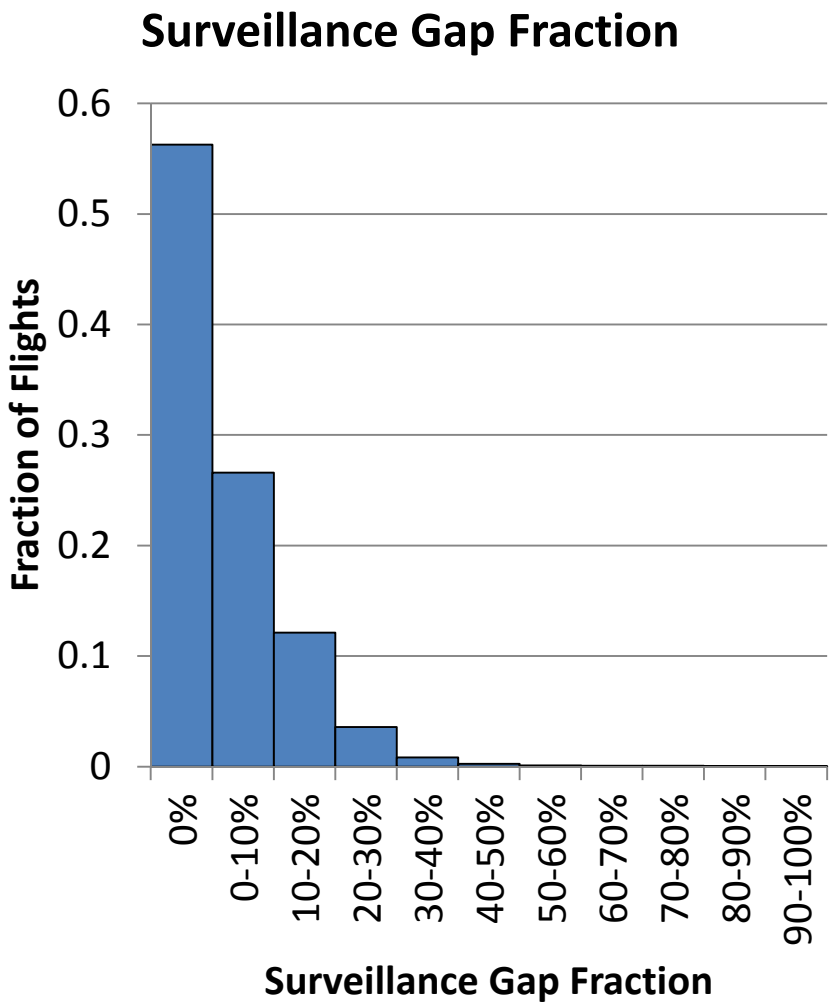
ID		Aircraft		Day	Call sign	Tail	Mode S	maximum		
ID	flight	type	dir.					Seats	take-off wgt (kg)	landing wgt (kg)
1	DAL233749080722 *20120809T000024*	DC-9	Arr	Thu	DAL 2337	N766 NC	11163 905	139	54,885	49,895
2	DAL56249081776 *20120809T000029*	MD-88	Arr	Thu	DAL 562	N926 DL	11326 666	172	67,812	63,276

QUALITY OF INFORMATION

- **Coverage: 96.9%**
- Number of flights in March 2013:
  - ATL airport web site: 79117
  - In database: 76661

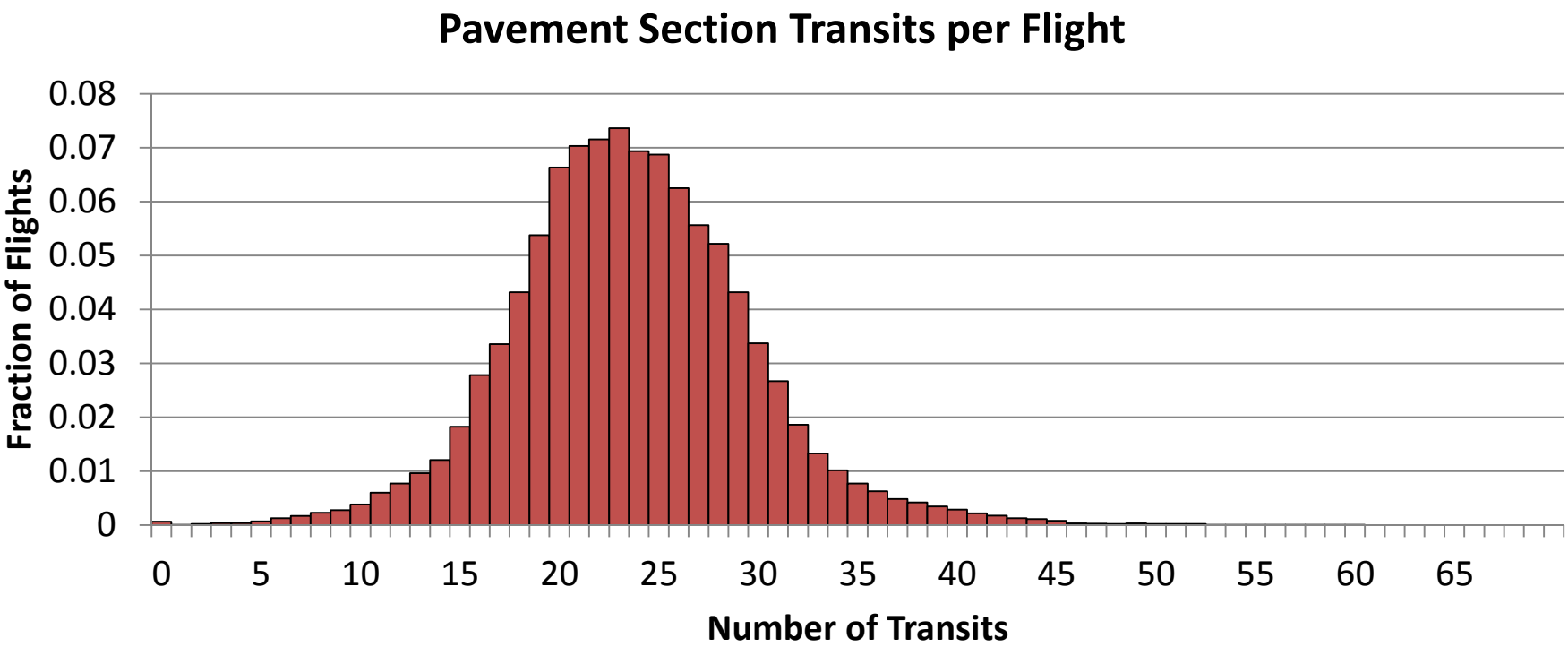
SURVEILLANCE COVERAGE

- 57% of flights no gaps
- 95% of flights > 80% coverage
- 4.3% missing coverage
- 99.7% of flights:
  Coverage to takeoff or landing
- 88.5% of flights:
- Coverage extending to the gate.



PAVEMENT SECTION TRANSITS PER FLIGHT

- The average flight has:
  - 23.6 pavement section transits, excluding repeated transits
  - 0.5 repeated transits

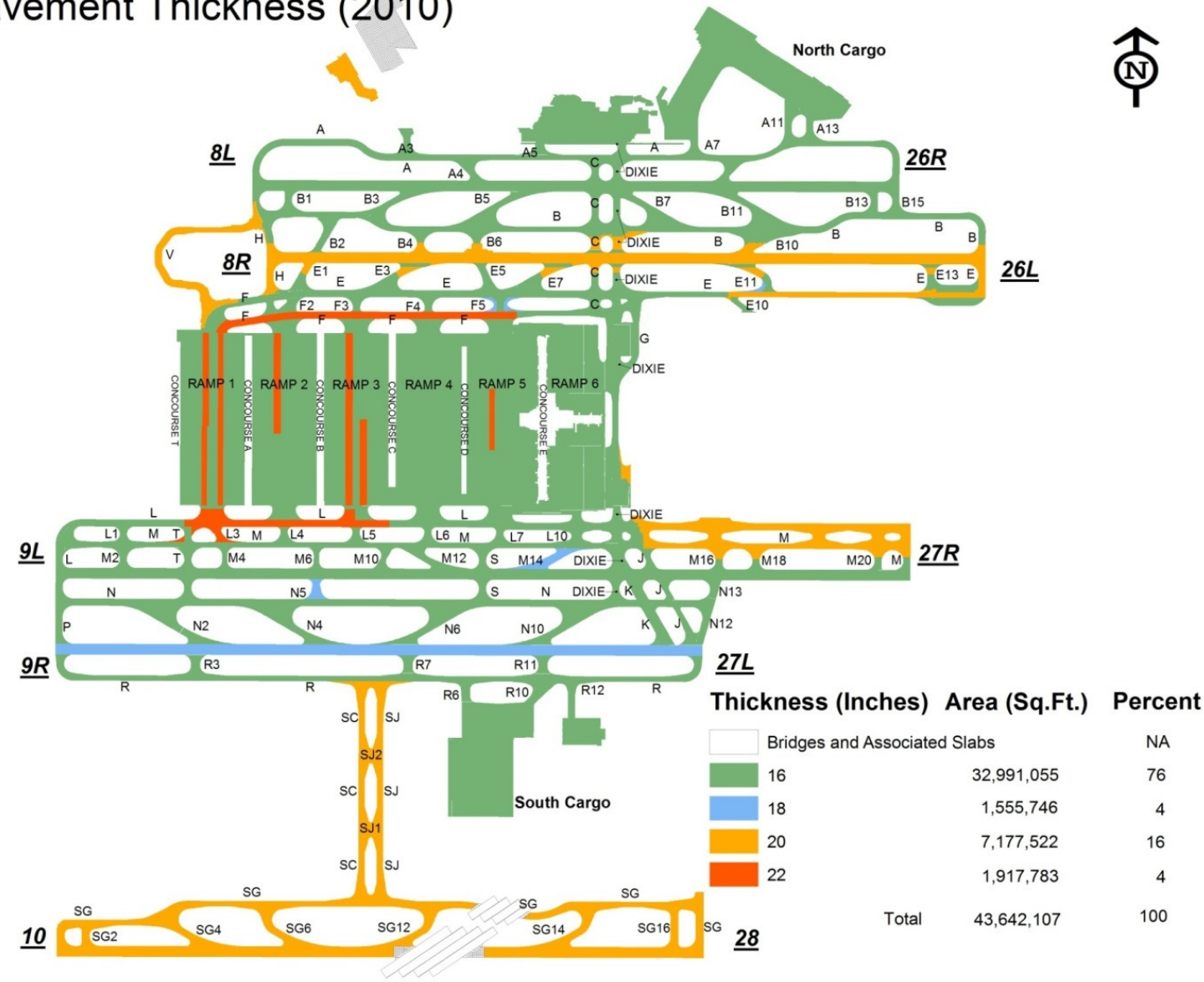


BASIC QUALITY CHECKS

- No duplicate flights
- No flights in multiple segments simultaneously

- No time gap between segments

H-JAIA Pavement Thickness (2010)



Thickness (Inches)	Area (Sq.Ft.)	Percent
Bridges and Associated Slabs		NA
16	32,991,055	76
18	1,555,746	4
20	7,177,522	16
22	1,917,783	4
Total	43,642,107	100

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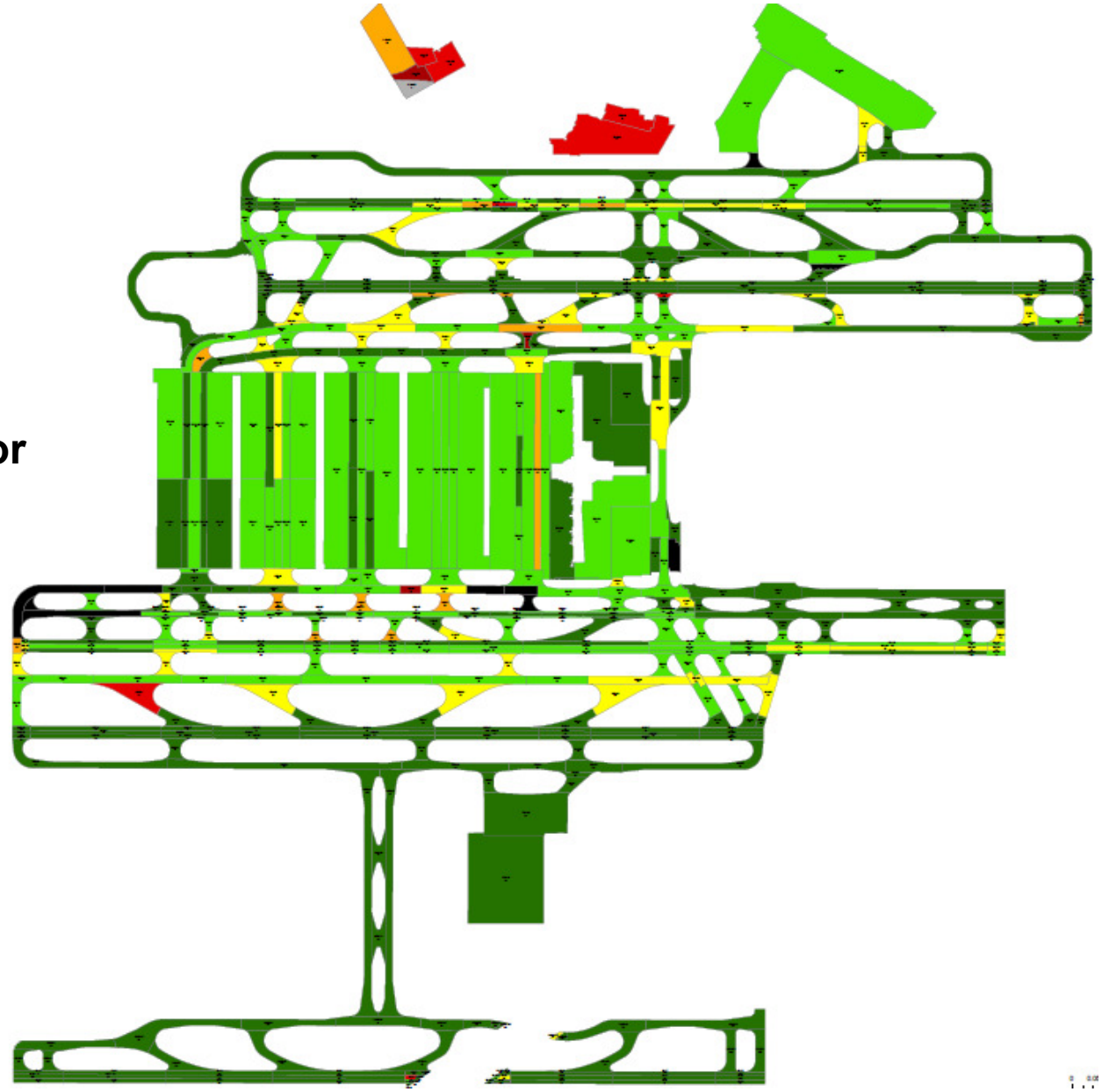
PCI

Legend

	86 – 100	Good
	56 – 70	Fair
	26 – 40	Very Poor



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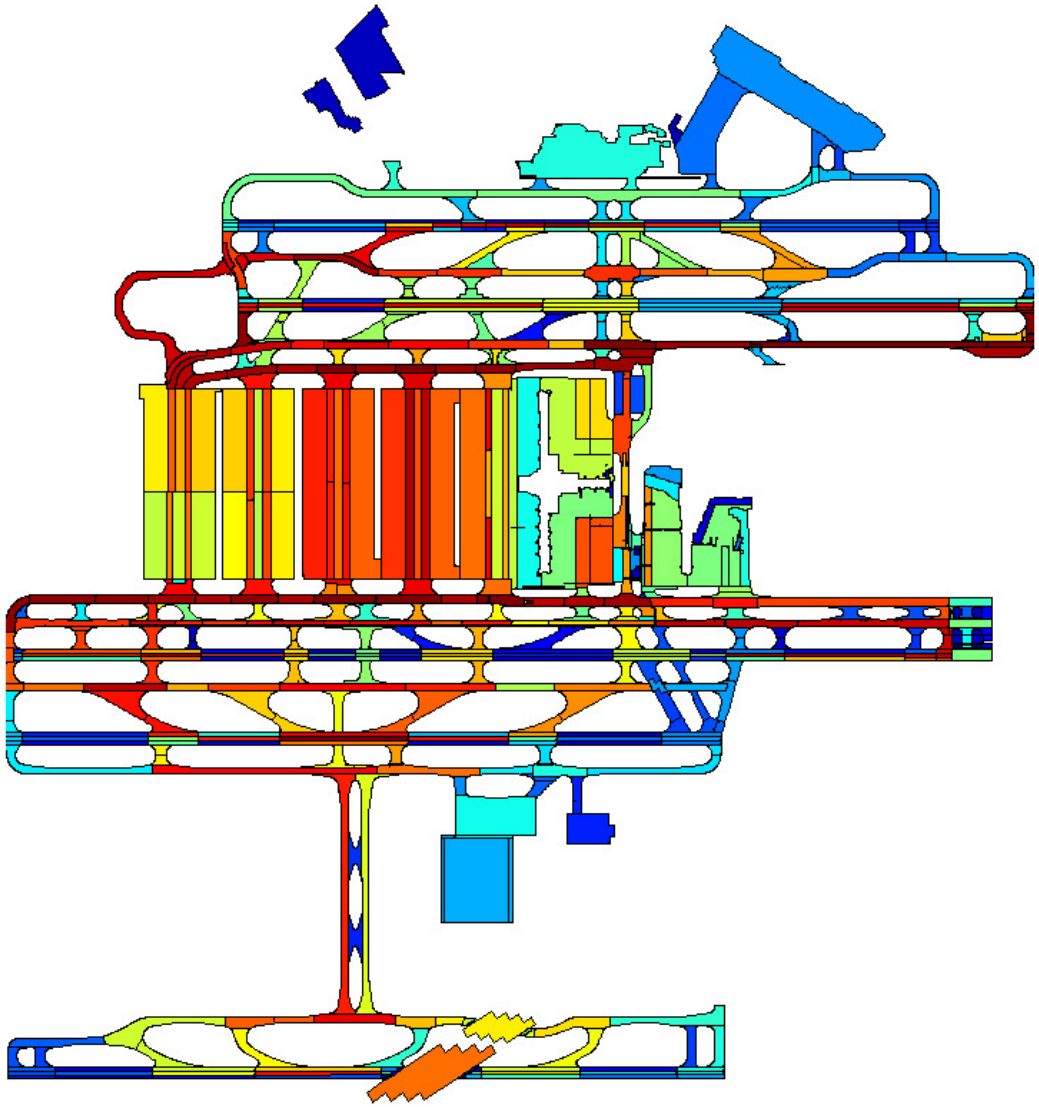
PAVEMENT USAGE

LEGEND:

- Light
- Moderate
- Heavy



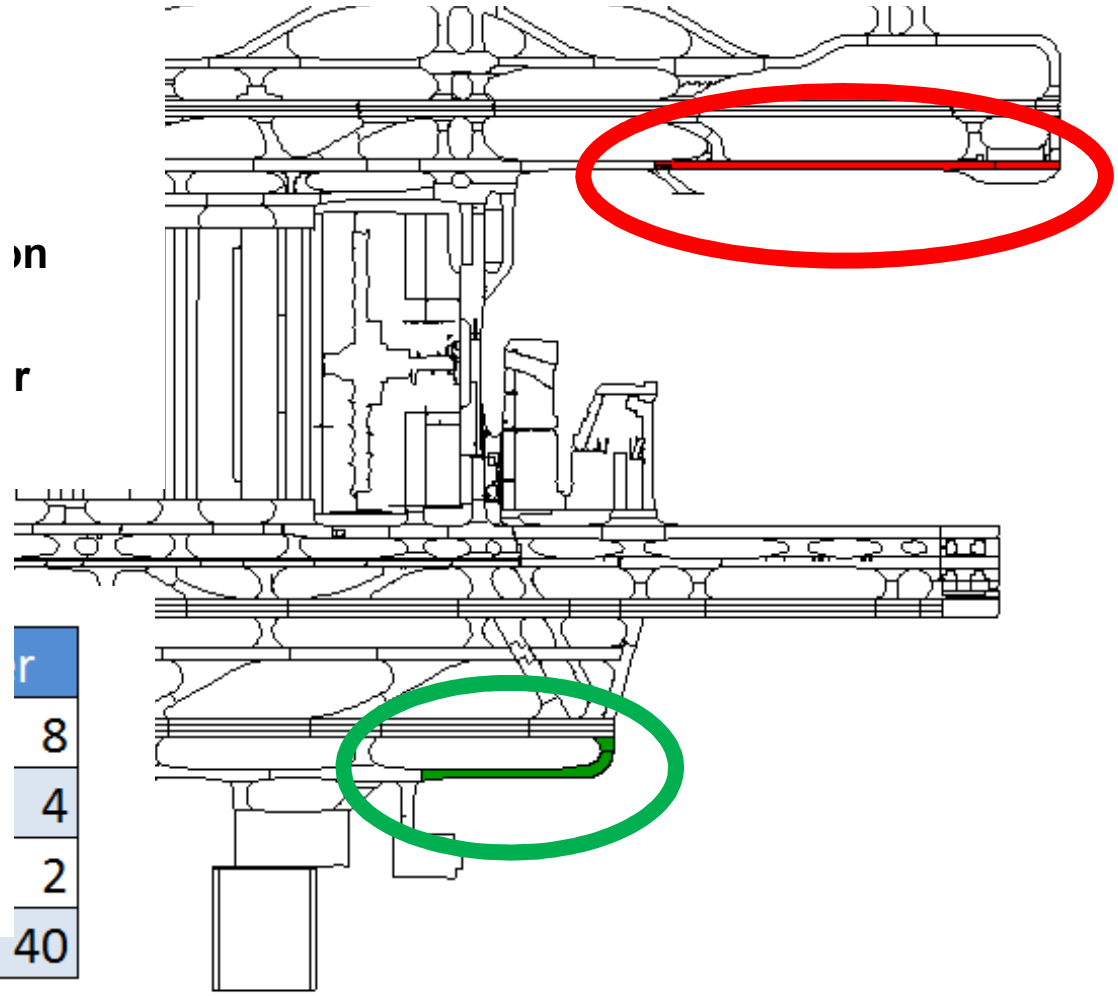
SECRET SAUCE

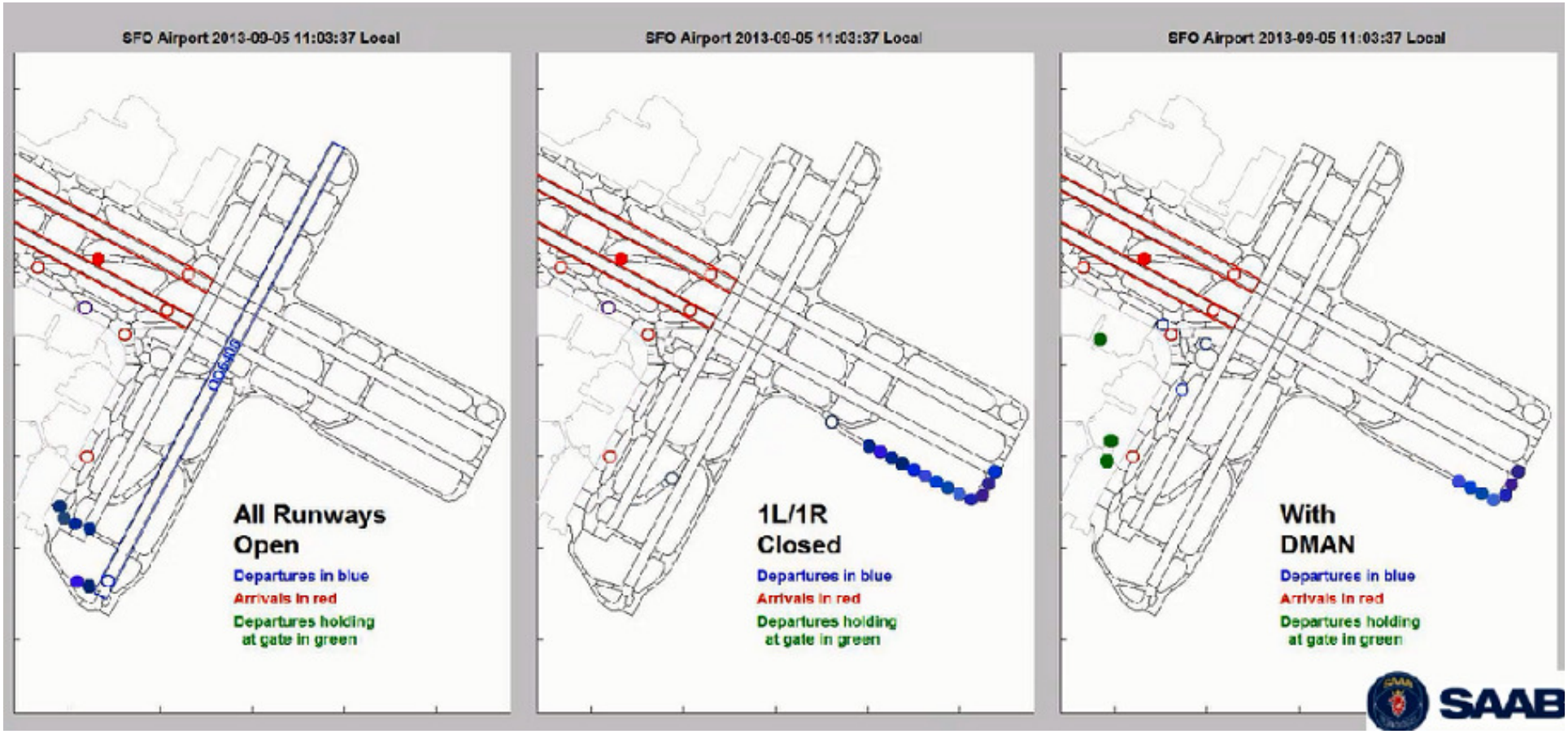
- Data access
- Processing
  - Historical truth
  - Useable
- presentation

TIMING

- March 9 – 15, 2013
  - Most transited segment
  - Least transited segment
- Construction timing

Type	Number
CL60	1917
DC88	1101
B752	659
...	
B722	4
B764	4
E190	3
Total	6315



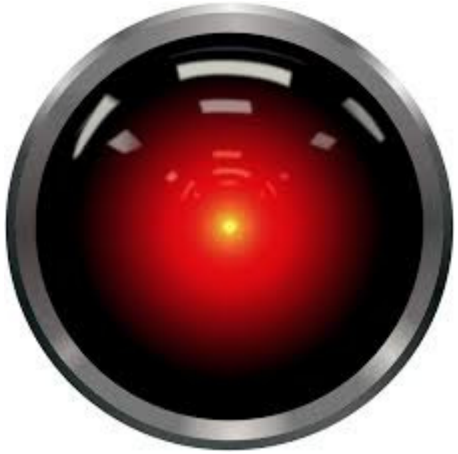


SIMULATION

- SFO Runway Closure
- Simulation
  - Best Course of Action
  - Save: Congestion, Time, $$$, CO_2

FUTURE

- Missing piece of puzzle
- Attention
- Minimize construction impact - $$$
- Simulation



QUESTIONS?

Marmot photo: Peak One, 10 Mile Range, Summit County, CO

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