



APEX & AI: Building Intelligent Enterprise Apps Like a Pro!

Jonathan Coreil

We've Done this
for 17+ years

1200+

Consultants focused on Cloud
deployments and managed services

1000+

Implementation
Experience

10+

Years Cloud
Experience

500+

Customers with
average lifespan
of 7+ years

12+

Focused
Industries

\$25M

Invested \$25M in IP that improves
the service experience and drives
efficiency

datAvail

We are a consulting and managed services partner specializing in
transforming your IT technology assets into tangible business value.

Our Technology Partners

ORACLE | Partner

18
ORACLE SPECIALIZATIONS

Gold
Microsoft Partner
Microsoft

aws partner
network

Project Services



Health
Checks &
Assessments



Accelerated
Cloud
Migrations



Data
Migration and
Conversions



Cloud
Consulting



Systems
Integration



Cost-value
Analysis



Regression
Testing



Upgrades



Optimization

Operational Managed Services



Managed
Services



Migrations,
Optimization,
Support



Service
Requests



Monitoring &
Incident
Response w/ SLAs



24x7 In-Office
Coverage



Proactive Services
(Health, Tune)

Jonathan Coreil

Techno/Functional Strategist & Solution Architect for Enterprise Business Systems



- 25+ years of experience designing and implementing ERP, database, and APEX solutions across industries
- Specializes in blending business process improvement with modern technology, including AI integration in Oracle APEX
- Passionate about helping organizations evolve their systems for greater agility, security, and intelligence

Outside of Work

- When I'm not partnering with businesses to modernize their applications, my wife and I explore the power of natural language processing—designing and testing AI systems to support:
 - Corporate culture development
 - Extreme OCD and anxiety disorder interventions



<https://www.linkedin.com/in/jcoreil/>

Win a **LEGO** Oracle Red Bull Racing RB20 F1 Kit!

Start your engines! Fill out the form for a chance to take home the LEGO Technic Oracle Red Bull Racing RB20 F1 set.

Link:

<https://www.datavail.com/east-coast-conference-2025/>



Agenda

- Introduction & session goals
- Why AI + APEX?
- How to Integrate AI with APEX
- Use case #1: Vehicle Identification (LPR & MMR)
- Use case #2: Smart Inventory Management
- Use case #3: Predictive Maintenance
- Security & UX Considerations
- Lessons Learned & Best Practices
- Q&A + Resources

Why AI + APEX?

- **Low-Code Meets Intelligence**

Oracle APEX enables rapid development; AI brings adaptability and prediction

- **REST-Ready Ecosystem**

APEX seamlessly integrates with AI models via secure RESTful APIs

- **Enterprise-Grade Control**

Secure, scalable platform for delivering AI-driven insights inside business systems

- **Modern Business Demands**

AI-powered features like forecasting, automation, and natural language input are now expected in enterprise apps

- **Real-World Use Cases**

From asset tracking to demand forecasting, APEX + AI enables fast delivery of intelligent apps

AI & ML Services – RESTful & Ready for APEX



General AI / NLP / Prediction

- **OpenAI (ChatGPT, GPT-4)** – Text generation, summaries, recommendations
- **Google Vertex AI** – Forecasting, custom models, NLP, and classification
- **Microsoft Azure Cognitive Services** – Text analytics, translation, anomaly detection
- **AWS SageMaker** – Train and deploy custom ML models via API
- **IBM Watson** – AI for NLP, visual recognition, and enterprise chat
- **Hugging Face Inference API** – Thousands of pre-trained open-source models

AI & ML Services – RESTful & Ready for APEX



Vision / Image Recognition

- **Google Cloud Vision AI** – LPR, OCR, object detection, label recognition
- **AWS Recognition** – Vehicle recognition, face analysis, LPR support
- **Azure Computer Vision** – Read license plates, detect vehicle type/shape
- **Plate Recognizer (LPR)** – Specialized REST API for license plate detection
- **Sighthound / OpenALPR** – On-premise and cloud LPR/MMR APIs
- **Custom CV Models (YOLO, TensorFlow, PyTorch)** – Self-hosted, exposed via Flask or FastAPI

AI & ML Services – RESTful & Ready for APEX



Routing / Optimization / Geo-AI

- **HERE Maps Routing API** – AI-assisted delivery and service routing
- **Google Maps AI Extensions** – Traffic-aware routing, delivery prediction
- **Mapbox Optimization API** – Sales route planning, cluster mapping



If your AI service is accessible via REST and returns JSON or XML — APEX can integrate it.

End-to-End Integration Flow

- **Data Collection in APEX**
 - Capture text, image uploads, or structured records via UI or background jobs
 - Log user input, asset data, sales orders, or vehicle images
- **REST API Communication**
 - Use `APEX_WEB_SERVICE.make_rest_request` or Web Source Modules
 - Configure headers, tokens, and payloads
 - Send base64-encoded images or structured JSON
- **Parse & Process Response**
 - Use `JSON_TABLE`, `apex_json`, or PL/SQL logic
 - Store results in collections, temp tables, or production schema
 - Example: `{ "plate": "ABC123", "make": "Toyota", "confidence": 0.94 }`
- **Business Logic & Display**
 - Show AI outputs in dashboards or review interfaces
 - Auto-generate actions: POs, Work Orders, Alerts
 - Allow overrides and log user confirmation
- **Security & Governance**
 - Use APEX credentials (OAuth2 / Token auth)
 - Ensure HTTPS endpoints and data obfuscation
 - Maintain audit trail of AI input/output
 - Use role-based access to sensitive AI data

Result:

AI does the “thinking” — APEX manages the flow, validation, and user experience. Together, they enable **intelligent, trusted enterprise workflows.**



Use Case #1 - Vehicle Identification (LPR & MMR)

Problem Statement

A privately funded criminal monitoring organization needed a reliable and intelligent method to identify and log vehicle movement at sensitive locations. Their field agents and endpoint cameras had basic AI capabilities, but accuracy and analytics were limited.



Solution Overview


- Endpoint captures vehicle images
- APEX triggers REST API call to LPR/MMR AI service
- Returns license plate, make/model, and confidence score
- APEX parses response, stores metadata, and presents analytics
- Secondary validation layer and alerts for mismatches or unauthorized access

Capture Time	State	Best Photo	Vehicle Make Model	Vehicle Color	Vehicle Make	Vehicle Body Type	Full Image Show
2025-06-15 23:59:49	TX	VH60300	dema	silver	gmc	suv	
2025-06-15 23:59:49	TX	F781088	acra	white	hyundai	sedan	

Outcome

- Real-time vehicle log and alerting dashboard in APEX
- Confidence scoring and anomaly detection
- Easy access for operators to view logs, trigger reviews

Capture Time	State	Best Plate	Vehicle Make Model	Vehicle Color	Vehicle Make	Vehicle Body Type	Full Image Show
2025-06-15 23:59:57	TX	VXF0105	odyssey	white	honda	sedan	<p>Henderson Hwy (CP# 0103-22-0554)</p> 
2025-06-15 23:59:55	TX	WFW2919	txc	white	acura	sedan	 <p>05/01/2015 06:39:38 1-10 WS True MK 92 (CP# 0049-21-0032)</p>

Sound (On/Off) 

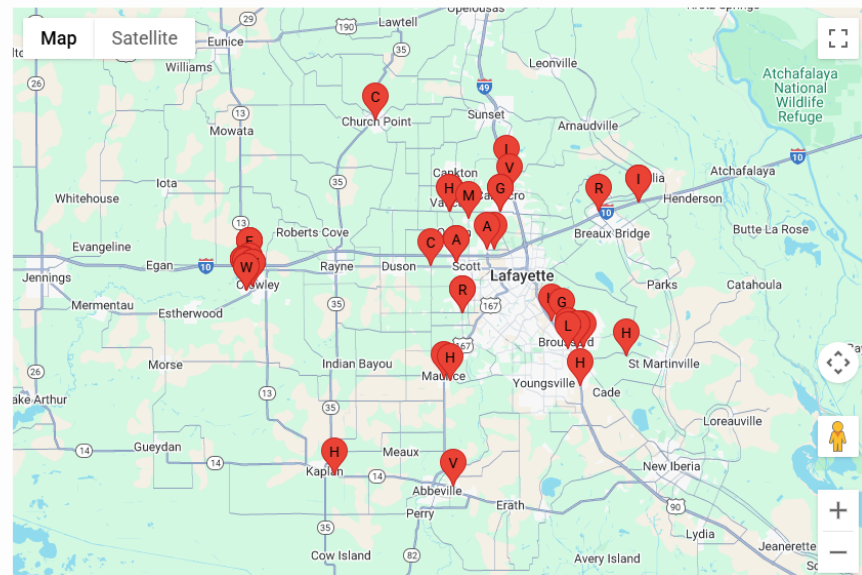
Go

[Actions](#)

1 - 46

Plate	Site	Camera	Hit Time 📅	Alert List	Has Location?
732GON	Ridge & W. Broussard Lafayette, LA (CF# 0171)	W. Broussard SB from Ridge (CF# 0171-2-12-0061)	06/16/2025 09:40PM	LPSO Narcotics Michael McQuade	Yes
483GOH	St. Nazaire & Frontage Broussard, LA (CF# 0175)	St. Nazaire WB from Frontage (CF# 0175-23-0534)	06/16/2025 09:40PM	LPSO Narcotics Michael McQuade	Yes
334GTR	Apollo & Specialty Scott, LA (CF# 0180)	Apollo NB from Specialty (CF# 0180-21-0544)	06/16/2025 09:37PM	LPD TNT B/D TEAM	Yes
483GOH	La Flamme & St. Nazaire Broussard, LA (CF# 0010)	St. Nazaire WB from LaFlamme (CF# 0010-22-0179)	06/16/2025 09:37PM	LPSO Narcotics Michael McQuade	Yes
723BGA	Garber & N Bernard Broussard, LA (CF# 0029-30)	Garber EB from N. Bernard (CF# 0029-21-0194)	06/16/2025 09:35PM	LPSO Narcotics Michael McQuade	Yes
732GON	Ridge & Rue Du Belier Lafayette LA (CF# 0158)	Ridge WB towards Rue Du Belier (CF# 0158-122-0180)	06/16/2025 09:33PM	LPSO Narcotics Michael McQuade	Yes
274FPD	Hwy 92 & Rue Des Cannes Maurice, LA (CF# 0046)	Hwy 92 EB from Rue Des Cannes (CF# 0046-21-0143)	06/16/2025 09:31PM	LPD TNT B/D TEAM	Yes

1 - 46



Use Case #2 - Smart Inventory Management

Problem Statement

An agricultural business needed to optimize inventory planning across three areas: crop grading/counting, demand forecasting for key customers, and delivery route efficiency. Manual methods lacked precision and adaptability.

Solution Overview

- Vision AI counts and grades plants via drone/field images
- AI forecasts demand using purchase history and seasonality
- APEX integrates with routing APIs to optimize daily sales deliveries
- Results stored and visualized in APEX for operator oversight



Outcome

- Central APEX dashboard for live crop stats, restock forecasts, and optimized routes
- Improved field visibility and reduced delivery costs
- AI-generated PO suggestions and delivery dispatch

Logistics

FARM [↑] ±	CALC_TYPE	15-JUN-25 (SUN)	16-JUN-25 (MON)	17-JUN-25 (TUE)	18-JUN-25 (WED)	19-JUN-25 (THU)	20-JUN-25 (FRI)	TOTALS
/	Count of Trucks	-	12	10	3	-	-	25
	Total EUs	-	26,800	19,885	4,671	-	-	\$1,356
	Total Freight Recovery	-	\$14,668.48	\$6,016.46	\$1,963.78	-	-	\$22,648.72
	Total In-House Truck Cost	-	\$0.00	\$0.00	\$0.00	-	-	\$0.00
	Total Outside Carrier Cost	-	\$0.00	\$0.00	\$0.00	-	-	\$0.00
	Total Retail Freight Piece Rate	-	\$0.00	\$0.00	\$0.00	-	-	\$0.00
	Total Revenue	-	\$106,318.04	\$81,194.32	\$22,130.29	-	-	\$209,643.45
	Count of Trucks	1	7	9	9	-	-	26
	Total EUs	4,890	23,417	18,065	24,800	-	-	71,172
	Total Freight Recovery	\$4,479.96	\$11,211.41	\$1,121.00	\$1,719.55	-	-	\$18,532.82
	Total In-House Truck Cost	\$0.00	\$0.00	\$0.00	\$0.00	-	-	\$0.00
	Total Outside Carrier Cost	\$4,600.00	\$12,300.00	\$1,027.00	\$0.00	-	-	\$17,927.00
	Total Retail Freight Piece Rate	\$0.00	\$0.00	\$0.00	\$0.00	-	-	\$0.00
	Total Revenue	\$28,243.60	\$134,728.61	\$104,188.00	\$140,357.20	-	-	\$407,517.41

Load Board View

Delivery Day	Load Date	Delivery Date	Load Type	Tracking#	Truck#	PO#	Trailer Size	Trailer Type	% of Load	# of Drags	Order#s	Ests	Customer	End Location	Freight Wing	Shipping Firm	Miles	Driver/Carrier	Sales Rep	Load Status
SUN	12-JUN-25	15-JUN-25	L	251206371	-	0	-	CPU	100	1	3809883	72	RMT LANDSCAPE CONTRACTORS, INC.	OAKLAND CA 94611	CALIFORNIA - SAN FRANCISCO	Bradshaw	0	CPU	CATEL CHARLES	loaded
SUN	15-JUN-25	15-JUN-25	R	10122386	93	176099	53	R	93	8	18 Sales Orders	4,890	3 Customers	PURCELLIP WA 98071	WASHINGTON	Winters	968	3rd party - IEL	TIDROCK, JIM	loaded
MON	09-JUN-25	16-JUN-25	R	10122270	-	0	-	-	75	6	6 Sales Orders	1,500	2 Customers	FREMONT CA 94533	CALIFORNIA - SAN FRANCISCO	Piru	337	Maria	3 Reps	Shipped
MON	10-JUN-25	16-JUN-25	R	10122280	CASA3	0	53	V	100	4	7 Sales Orders	4,101	2 Customers	JOSSCADERO CA 94023	CALIFORNIA - BAKERSFIELD	Fallbrook	317	JOSE ACOSTA	MCMANUS, JONATHAN	-
MON	11-JUN-25	16-JUN-25	R	10122285	-	0	-	PU	75	5	5 Sales Orders	1,123	2 Customers	Glenmore CA 91740	CALIFORNIA - LOS ANGELES	Piru	127	Maria	3 Reps	Shipped

Quality Grading

▼

☑

☆

CC Group = PRIORITY

×

1 - 50

➤

Item Number	Description	CC Group	CC Due Date	CC Status	Farm	Subinventory	Zone	Locator	Quantity On Hand	
ACAMOF0005	ACANTHUS MOLLIS	STANDARD	21-JAN-25	Uncounted	BRA	BRA	NONE	0501	2	
ACEAUS0115	ACER AUTUMN BLAZE	STANDARD	02-JUN-25	Uncounted	BRA	BRA	Marisol	D5	315	
ACEAUS0115	ACER AUTUMN BLAZE	STANDARD	-	-	BRA	BRA	Marisol	E4	154	
ACEBUE0130	ACER BUERGERIANUM	STANDARD	02-JUN-25	Uncounted	BRA	BRA	Marisol	I3	78	
ACEBUE0130	ACER BUERGERIANUM	STANDARD	02-JUN-25	Uncounted	BRA	BRA	Marisol	I4	57	
ACEBUS0115	ACER BUERGERIANUM	STANDARD	02-JUN-25	Uncounted	BRA	BRA	Marisol	D3	37	
ACEBUS0115	ACER BUERGERIANUM	STANDARD	02-JUN-25	Uncounted	BRA	BRA	Marisol	D4	280	
ACEFRS0330	ACER R. ARMSTRONG	PRIORITY	24-MAY-25	Uncounted	BRA	BRA	Marisol	I4	79	

Edit - QC Grading & Counting

×

QC Grading \ QC Grading & Counting \ Edit - QC Grading & Counting# ACEAUS0115

Grade

SS

Graded Quantity

165

Spec Comments

PRUNED

QC Note

Ready Date

08/01/2025

📅

Demand Window

2025 HALF 2

▼

Callout

-Select-

Retail Std Spec

8 ft H x 2 ft W x 1.5 in C

Planted Date

07/27/2023

📅

Plant Image Upload

Choose file

📎

Crop Image Upload

Choose file

📎

Caliper Image Upload

Choose file

📎

Plant Uri

Plant Image

Crop Uri

Crop Image

Caliper Uri

Caliper Image

Cancel

Delete

Update

Okay As-Is

Launch Camera 📷



ACER AUTUMN BLAZE
Item: ACEAUS0115 Farm: BRA Pad: D5 Grade: SS
Image Date: 2025-04-01



ACER AUTUMN BLAZE
Item: ACEAUS0115 Farm: BRA Pad: D5 Grade: SS
Image Date: 2025-04-01

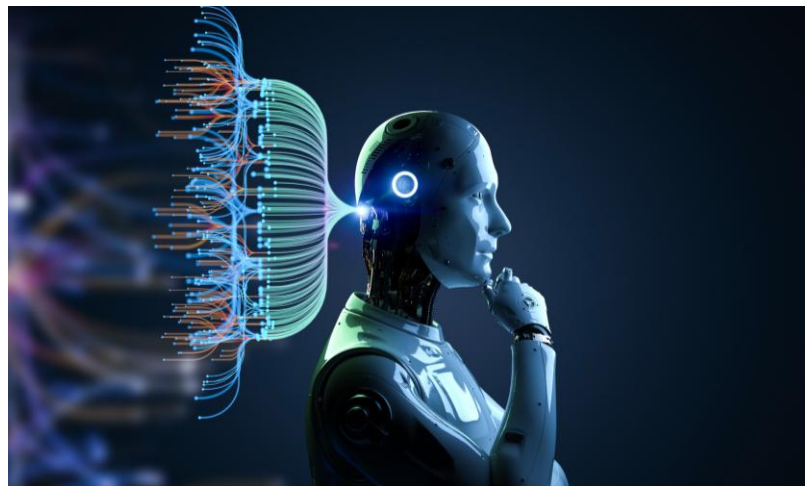
Use Case #3 - Predictive Maintenance

Problem Statement

An oil and gas company faced costly downtime and high maintenance costs on critical infrastructure due to reactive and static maintenance planning.

Solution Overview

- Historic routine and non-routine maintenance data loaded into the AI model
- Model predicts optimal maintenance intervals
- APEX pulls daily sensor logs and displays upcoming service needs
- Work orders are auto-generated based on AI input



Outcome

- Predictive maintenance dashboard in APEX with alerting and schedule views
- 30% reduction in downtime
- Smarter maintenance cycles and reduced operational costs

Security & UX Considerations

(Part 1 – Security)



- **Data Privacy:** Ensure sensitive data (e.g., license plates, financials) is encrypted at rest and in transit
- **Token Management:** Use short-lived, rotating tokens stored in APEX credentials or OCI vault
- **API Access Control:** Restrict API access based on APEX user roles and privileges
- **Logging & Auditing:** Maintain audit trails of AI inputs, responses, and user actions for traceability
- **Failover & Retry Logic:** Ensure graceful handling of AI service downtime or malformed responses

Security & UX Considerations

(Part 2 – User Experience)



- **Explainable AI:** Include confidence scores, AI justification, or override notes to build user trust
- **Feedback Loops:** Enable users to confirm, reject, or adjust AI recommendations for learning and transparency
- **Non-Intrusive Integration:** Embed AI features within familiar APEX UI patterns to avoid user disruption
- **Progressive Disclosure:** Reveal advanced AI insights or controls only when needed, keeping interfaces clean
- **Accessibility & Responsiveness:** Ensure AI-enhanced interfaces remain mobile-friendly and WCAG compliant

Lessons Learned & Best Practices



- **Start with Clear Use Cases:** Focus on specific business needs where AI adds value; avoid generic integrations
- **Design for Fallibility:** AI models can return errors or low-confidence results—build in human review and override steps
- **Format Matters:** Be explicit when prompting AI models—use brackets or specific JSON structures for predictable parsing
- **Centralize API Logic:** Wrap calls to AI in reusable PL/SQL packages or dynamic actions for maintainability

Lessons Learned & Best Practices



- **Monitor & Optimize Costs:** Track API usage and refine what data you send to control cost and latency
- **Educate Your Users:** Help users understand how AI works and when they can trust or challenge its output
- **Secure Early:** Don't bolt on security—embed it in your design from day one, especially when transmitting sensitive data
- **Continuously Improve:** Capture user feedback and integrate it back into model tuning or prompt refinement



Thank You



datavail.com

info@datavail.com

866-811-6764