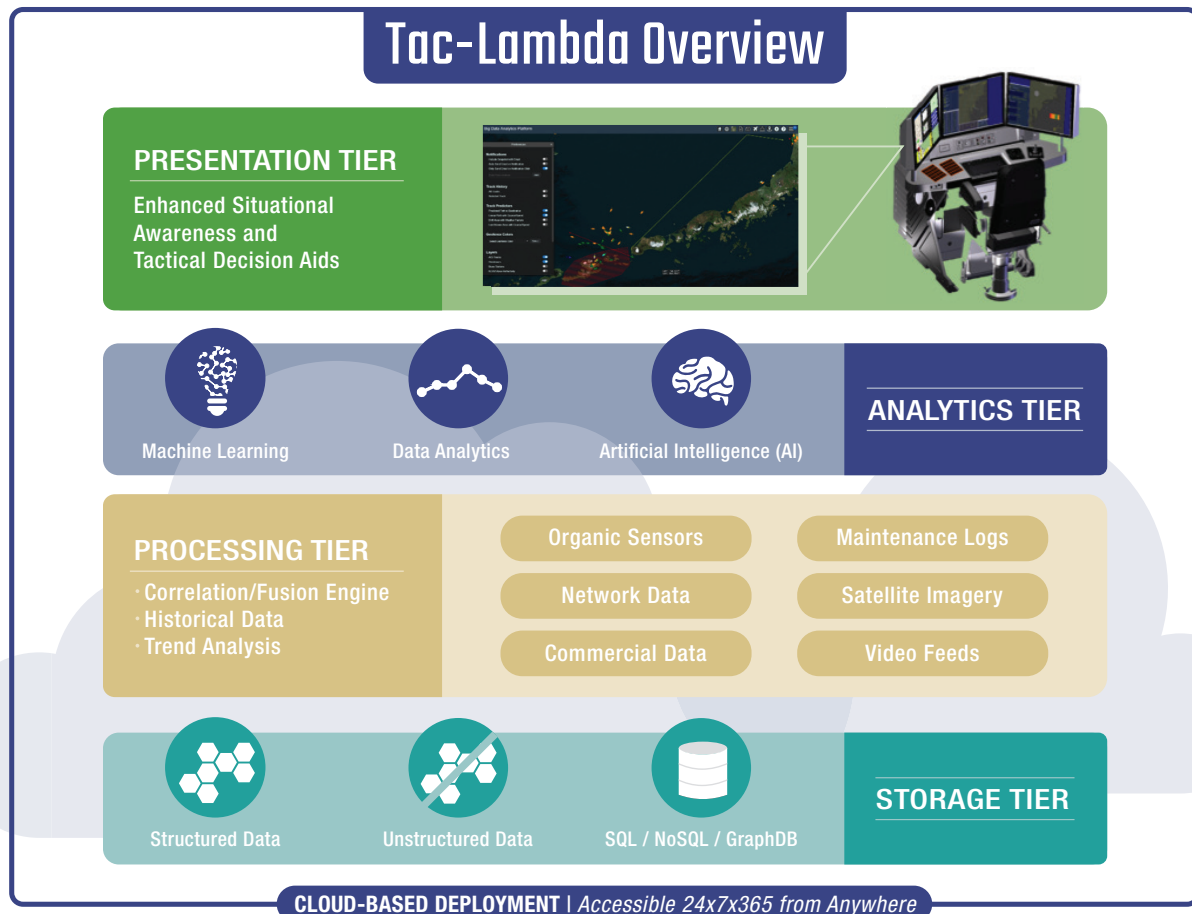# Tac λ Lambda

Real-Time Data Analytics at the Tactical Edge

OUR PURPOSE

Addressing information challenges by processing and fusing Big Data into actionable intelligence, and providing it to key decision makers to make timely decisions in a secure environment.

Tac-Lambda is a capability-framework that provides automated analysis and decision-making support to operators and action-based systems.

Tac-Lambda Overview

PRESENTATION TIER
Enhanced Situational Awareness and Tactical Decision Aids

ANALYTICS TIER
- Machine Learning
- Data Analytics
- Artificial Intelligence (AI)

PROCESSING TIER
· Correlation/Fusion Engine
· Historical Data
· Trend Analysis

- Organic Sensors
- Network Data
- Commercial Data
- Maintenance Logs
- Satellite Imagery
- Video Feeds

STORAGE TIER
- Structured Data
- Unstructured Data
- SQL / NoSQL / GraphDB

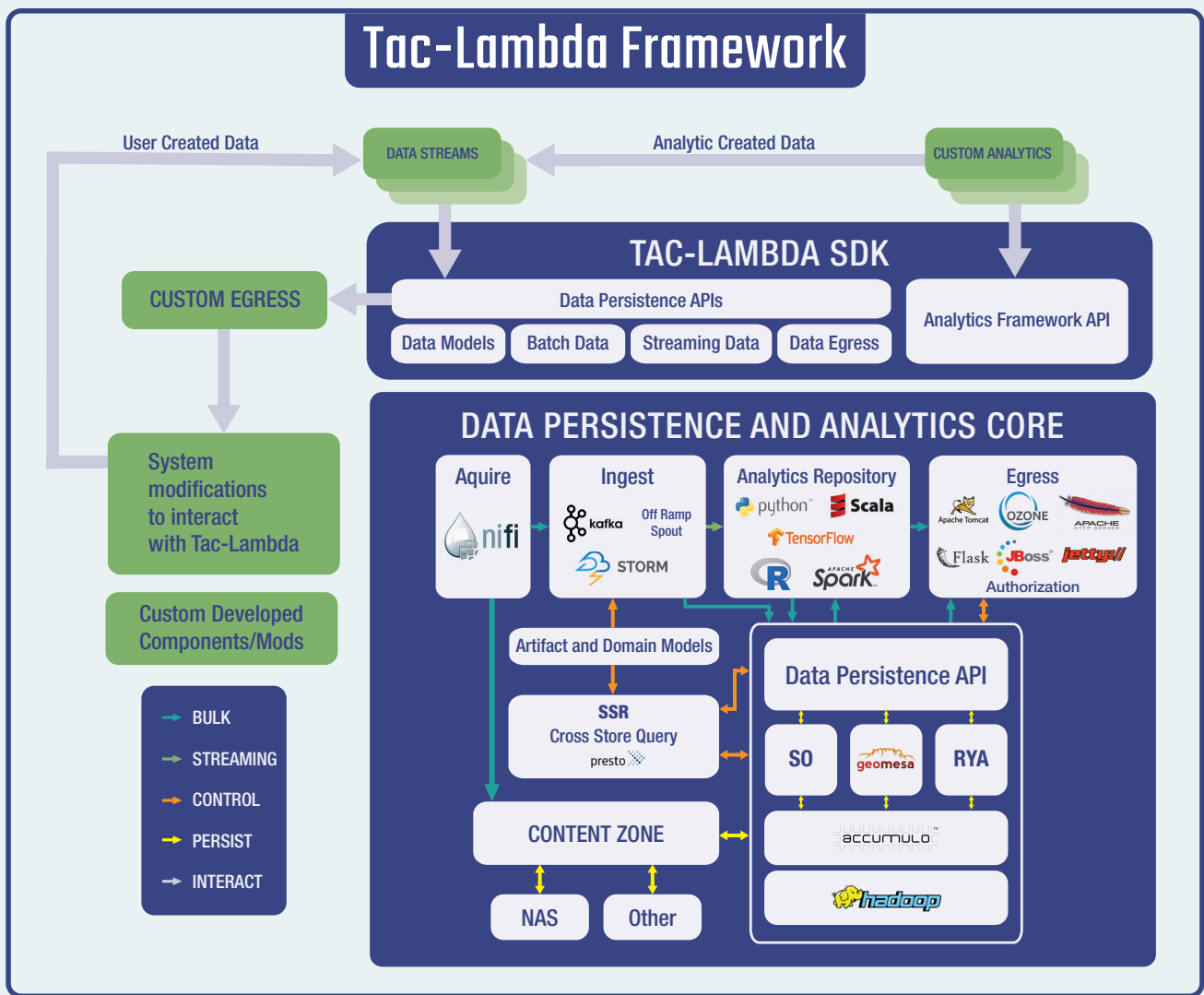**CLOUD-BASED DEPLOYMENT** | *Accessible 24x7x365 from Anywhere*

CAPABILITIES & FEATURES

- Big data ingestion and scalable analytics tailored to key customer domains
- Artificial intelligence and machine learning
- Advanced data analytics and analysis
- Natural Language Processing
- Predictive Models and Rules Engines
- Computer Vision
- Continuous ingestion of multiple data sources of various data types (unstructured, structured, bulk, streaming, etc.)

- Data cross correlation, information fusion, data analytics, etc. (driven by use cases required by operational need)
- Augment existing systems with Big Data platforms to enhance their ability to store historical data at the tactical edge, enabling autonomous analysis techniques at tactical speeds
- Threads include Systems and Sensor efficacy, Condition Based Maintenance (CBM/CBM+), anomaly detection

INDUSTRIES SERVED

Intel Community

Military C4ISR

Government

Law Enforcement

Warfighter

Tac-Lambda Framework

DATA STREAMS — User Created Data / Analytic Created Data — **CUSTOM ANALYTICS**

TAC-LAMBDA SDK

Data Persistence APIs
- Data Models
- Batch Data
- Streaming Data
- Data Egress

Analytics Framework API

CUSTOM EGRESS

System modifications to interact with Tac-Lambda

Custom Developed Components/Mods

Legend:
- → BULK
- → STREAMING
- → CONTROL
- → PERSIST
- → INTERACT

DATA PERSISTENCE AND ANALYTICS CORE

Aquire — nifi

Ingest — kafka, Off Ramp Spout, STORM

Analytics Repository — python, Scala, TensorFlow, R, Spark

Egress — Apache Tomcat, OZONE, APACHE, Flask, JBoss, Jetty — Authorization

Artifact and Domain Models

SSR Cross Store Query — presto

Data Persistence API
- SO
- geomesa
- RYA
- accumulo
- hadoop

CONTENT ZONE
- NAS
- Other

WHAT TAC-LAMBDA DOES

Tac-Lambda is a flexible, extensible core framework that enables data analytics on the tactical edge for the purposes of Integrated Decision Support.

- Operator efficiency and workload reduction – Anomalous behavior detected in seconds vs. minutes (or never)
- Tracks of interest are identified immediately based on predictive models
- Off-board analysis of track interceptability and engageability
- Stochastic anomaly detection for Condition Based Maintenance
- Predictive detection of Software Defects

HOW TAC-LAMBDA DOES IT

- Abstraction techniques (analytics) through the adoption of a generalized system created to aid in bringing big data analytics to the tactical edge
- Automation techniques to simplify operator workloads, and make sense of the vast volumes of data and information
- Higher order strategic evaluations made possible by trending, cross correlating and fusing disparate tactical mission data
- Secure Big Data Capabilities
  – Processing: data fusion, data processing, data analytics
- Dissemination: Cloud Architectures, On Premises, Edge Delivery, Cyber Security

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Eric Velte, Chief Technologist
ASRC Federal Mission Solutions Division
856.291.2339 | evelte@asrcfederal.com
121 Whittendale Drive, Moorestown, NJ 08057

Tac λ Lambda

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