



U.S. AIR FORCE



U.S. Air Force A2-6 Sensing Grid - Sensors & Sensing for Intelligence

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Executive Summary

Information for today's Warfighter is distributed in multiple systems across the Commands, Agencies, and even Allies; and exists in diverse formats from legacy to the state-of-the-art applications. Artificial Intelligence (AI) assisted decision making provides access to the right information wherever it resides to the right person at the right time to make informed decisions for the success of the mission. Decision Advantage is thus realized when AI enables decision makers to enhance situational awareness and to make informed decisions.

The Air Force Sensor Grid

Faced with the increased speed and scope of future war, the Air Force must move from platform-centric to information-centric operations. Building a Multi-Domain Operation (MDO) information centric system requires solutions and automations for each activity that makes up the whole. This is especially true when trying to harness vast amounts of source-agnostic information across all domains (sensors, platforms, people, devices, content, and services), utilizing advanced computation and processing technologies.

In order to capture and provide accurate, relevant, and timely information to gain and maintain decision advantage in support of Joint All-Domain Operations (JADO), the Air Force will need to access data from a wide range of sources, and develop an understanding of the context of data in real-time, and then prepare and present data for them to be used. Next, the Air Force will need the ability to combine that data with existing knowledge in the Joint All-Domain Command and Control (JADC2) systems and commands, and apply AI/ML models or collaboration to make the best decisions. Ultimately, we need to turn these decisions into actions when it matters in order to neutralize the threats or avert a crisis. While all this is happening, there will be a need to manage multi-level security requirements and keep data secure. Integrating these activities into one seamless and reliant system in a matter of minutes will provide the Joint Forces with critical information access, resiliency, speed, and accuracy necessary to gain and maintain decision advantage.

TIBCO has a long history of integrating data from diverse systems, as well as providing the ability to manage and analyze that data. All solutions proposed by TIBCO in this Sensing Challenge response exist and are mature with tried-and-tested robust referenceable implementations.

TIBCO's Connected Intelligence solution tightly maps to the components in the Air Forces Sensor Grid of orchestration, sensing, sense making, and information integration to provide joint warfighters and mission partners with Decision Advantage.

Executive Summary

As we discuss TIBCO's Solution Framework applied to the Air Force Sensor Grid, it is also important to understand the speed and scale in which this Sensor Grid becomes operational. TIBCO's Connected Intelligence solution provides the Air Force with a tightly integrated, loosely coupled innovative toolset, that can quickly be implemented. In today's world, the speed of data-to-decision and sensor-to-shooter is reliant on the continual ability to optimize and deconflict sensing capabilities.

The TIBCO Sensing Grid solution will provide the Air Force and its Joint Partners the advantage of quick development of the relevant components through our graphical user interface/low-code environment, out-of-the-box connectors, visualizations, interactive analytic environment for domain experts, and our data virtualization layer.

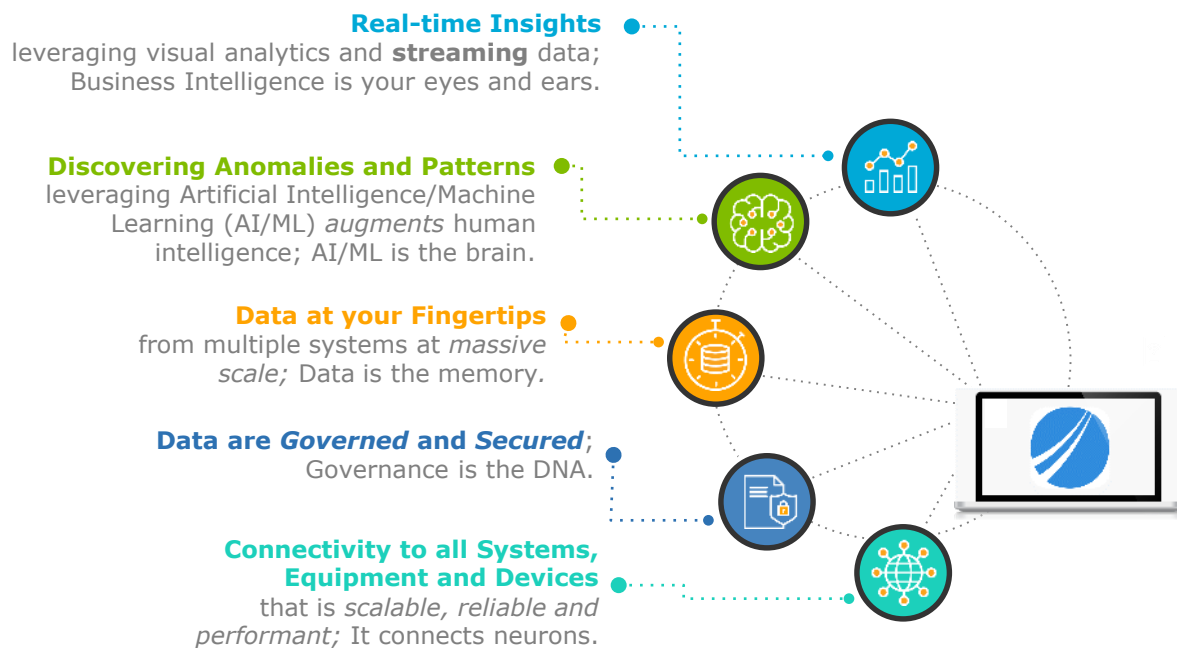
TIBCO Software Federal is pleased to provide our response to the Air Force A2-6 Sensing Grid Challenge.



The TIBCO Data to Decision Advantage

Real-time situational awareness and decision advantage is attainable today, with modern tools. Unfortunately, most have fallen short in the quest for this ideal state. TIBCO, as a technology provider, aims to deliver a real-time, situationally-aware and operationally-ready “nervous system” that we can be applied to the Air Forces Sensor Grid. Envision this like your body’s nervous system that takes billions of real-time data inputs from operations, environmental conditions, and connected assets, applies predictive intelligence to them in real-time, and can respond, in real-time.

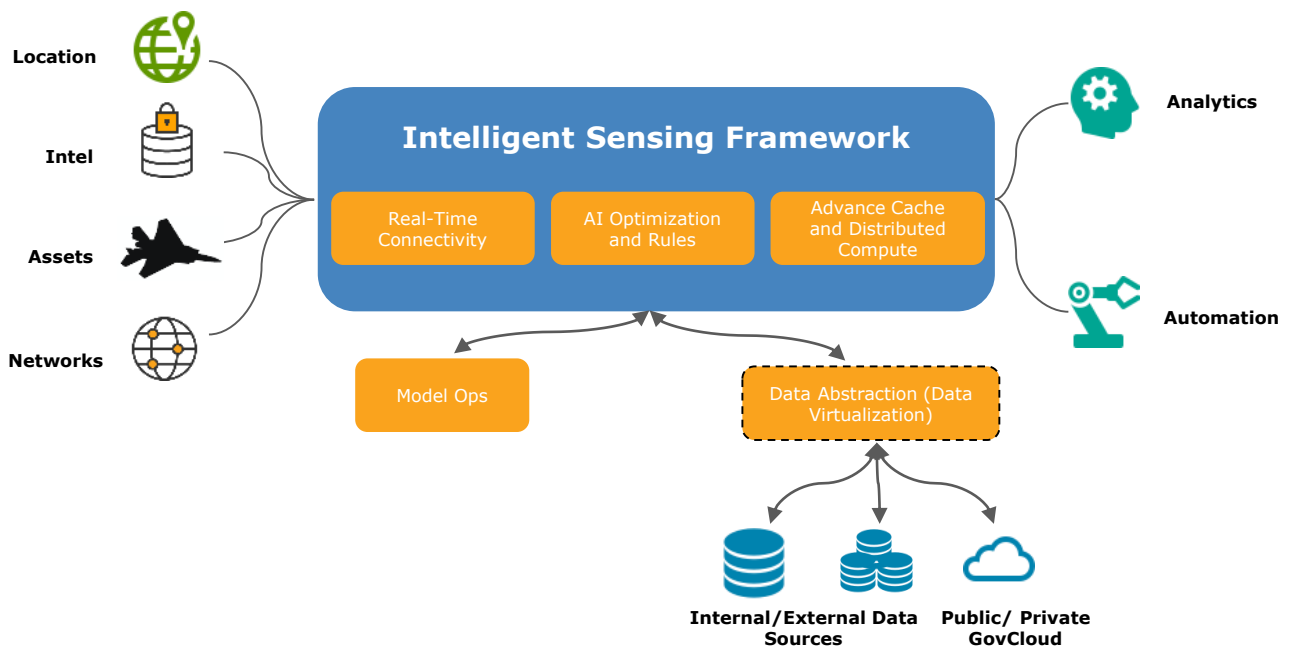
The TIBCO Sensing Grid approach adheres to five principles:



Although this is designed for automation, it’s also designed for human oversight and exception handling so the operations staff and decision-makers can “take the wheel” in response to achieving a cross-functional, holistic, accurate, predictive, and timely characterization of the operating environment. The principles of this human-machine balance were born on Wall Street where over 80% of the world’s trading is now automated, guided by human intellect.

The TIBCO Intelligent Sensing Framework

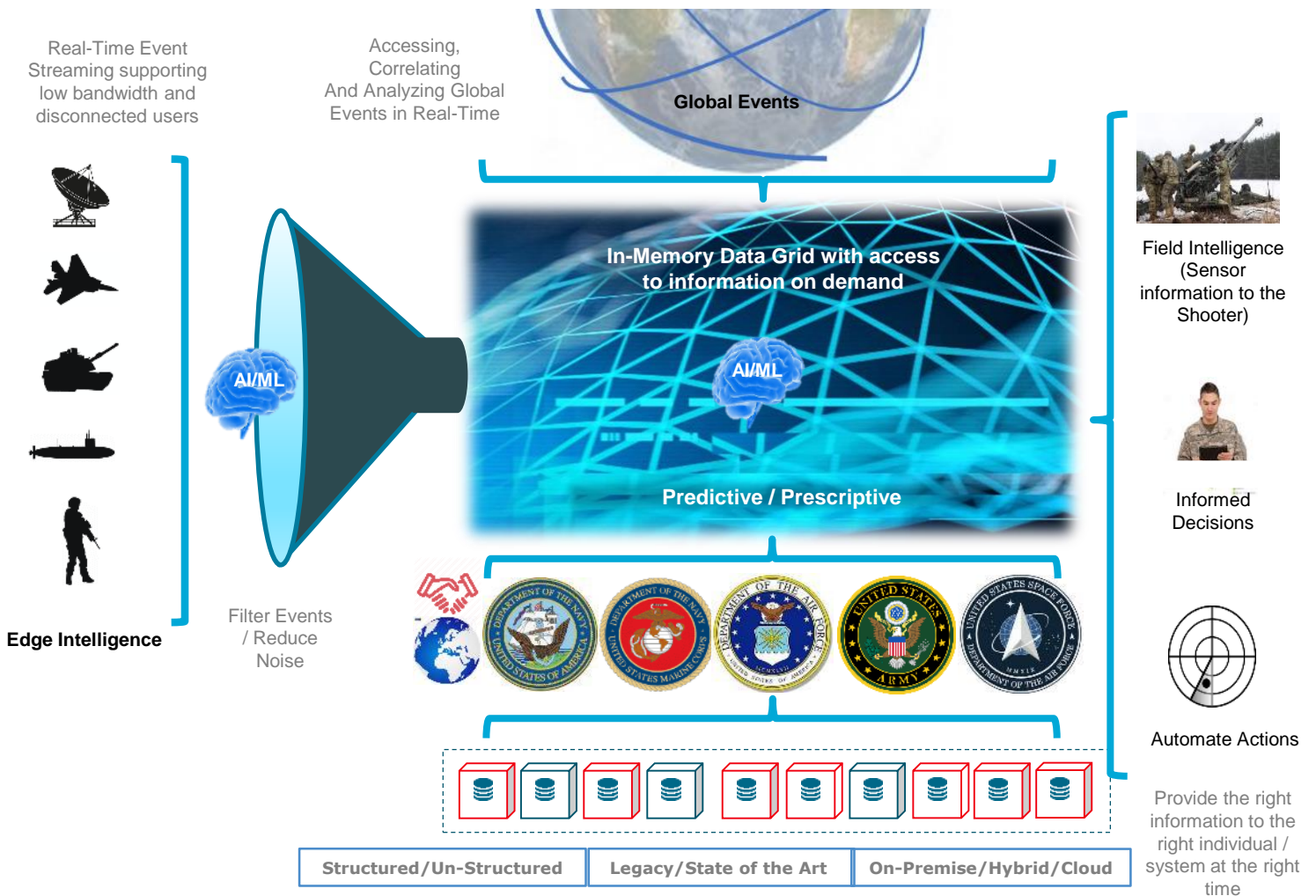
Making the Sensing Framework Agile: The Air Force Sensor Challenge. This adopts a new approach to the data fabric of the digital advanced battle management family of systems. Instead of re-architecting the existing entrenched data in place—from ERP to data lakes—we virtualize access to data silos across multiple domains. This approach not only leverages existing investment, but it helps provide access to institutional memory instantly.



The Advanced Battle Management System (ABMS) solution is powered by TIBCO. We are unabashedly proud to be known as the company you “bet your organization on” when it comes to real-time systems that connect every sensor to every shooter, move from a platform-centric approach to a network-centric approach by unifying your data, and help you predict the future during joint warfare. As our customers put it - **without TIBCO, planes don’t fly, trains don’t move, and packages are not delivered.** The solution is based on decades of experience digitizing massive inputs of information on Wall Street, real-time supply chain modernization using a distributed system at major logistics companies, and fleet/passenger operations and decision-points at most major airlines.

The TIBCO Solution Framework

TIBCO's Connected Intelligence platform unlocks the potential of real-time data in multi-domain operations for making faster, more informed decisions that lead to better battlefield outcomes; using API-led Integration with **massive inputs of information**, applying the Data Fabric and Master Data Management in a **distributed system**, using Analytics with Data Science and Streaming to analyze and generate **decision points**, and responding with Event-Driven Applications for the **execution of orders**.



The TIBCO Solution Framework

Massive Input of Information

Connect massive amounts of information from all sources within the Sensing Grid by integration and **orchestration** of data from all sensors, platforms, people, devices, content, and services with API-led microservices, serverless functions, integration flows, and network-driven architecture. Enable developers and users to build event-driven **sensing** applications faster using new architecture patterns and low-code visual design tools to enable a digital warfare transformation.

Bring real value with everything interconnected and combine the power of integration with DevSecOps to extend the application lifecycle; and deploy and scale time and cost-efficient microservices and hybrid architectures. By integrating these sources and exposing services on various channels, opportunities are multiplied for agile information access and sharing between operational assets and the Intelligence Community. Focus on decision-making, situational awareness, analytics, and battlefield management by rapidly innovating without inertia, then deploy anywhere and scale as needed with flexible on-premise, edge, cloud, or hybrid infrastructures.



Self-service

Use tools that empower more diverse users to self-serve connectivity, API management, and low-code application development needs so you achieve long-term business ability.



Anywhere deployment

Deploy applications on-premises, in the cloud, on IoT devices, or in a hybrid environment—without having to rewrite anything.



Universal connectivity

Easily connect to any application, API, device, or data source with an [extensive set of connectors](#). Should you find a technology for which TIBCO or its community does not provide a connector, creating one for use and reuse is designed to be easy.



Seamless integration

With TIBCO, ensure integrations are seamless, accurate, reliable, and secure to maximize the value of your data, services, APIs, and other assets.



Application neutrality

Trust a technology partner that is not biased towards a particular platform, product, or ecosystem, one focused on providing application-neutral integration technology that fits your business: TIBCO.



Complete solution

Provide complete connections between you and your customers powered by APIs, so you can build low-code or code-heavy enterprise or consumer apps that deliver unique, connected customer experiences.

The TIBCO Solution Framework

Distributed System

Successful alignment of global priorities and optimization of collection require every kind of data - metadata, reference data, master data, transactional sensor data, both at-rest and in-motion. Managing this diversity in a well-governed and consistent way in a multi-domain operations ABMS **distributed system** is the objective.

The goal is to create a single place for all domains in the JADC2/ABMS operational assets, locations, materials, sensors, entities, reference data, and more. **This can be achieved by leveraging all existing data sources and data lakes without creating yet another data warehouse/data lake.** All operational and decision-making staff work together to ensure master and reference data are accurate and consistent. Essential to operational, analytical, and governance processes, assets are integrated and distributed as needed.

To create one place for all metadata across all domains with one integrated solution. Discover, harvest, and manage all data dictionaries with comprehensive metadata management while applying document policies, rules, and glossaries with data governance. Decision-makers and Analysts are able to search, collaborate, and grant access to critical battlefield assets via an easy-to-use data catalog.



Multidomain MDM

Model, govern, and share all your master data domains across the enterprise.



Reference Data Management

Manage classifications and hierarchies across your systems and business lines.



Anything 360

Build 360° views of any entity by blending master and transactional data.



Virtual Data Layer

Integrate and provision all the enterprise data your business requires.



Logical Data Warehouse

Adopt an analytical data architecture that optimizes the use of diverse data management technologies.



Data-as-a-Service

Provide data services to different systems, applications, or users.

Be able to break down data silos and create one place to find, understand, and consume all data to enable sharing between operational assets and the Intelligence Community. Agile data engineering speeds time-to-solution and delivers the most up-to-date and complete information for the Sensing Grid to enable a real military force decision advantage. This virtual data layer of a distributed system provides semantic consistency combining all sensor and other data sources, on-premise or in the cloud. Generate a logical data warehouse by deploying a common analytic data management architecture across domains, diverse data types, technologies, users, and use cases. Providing this data-as-a-service model facilitates cross-silo data integration, allows ingestion from external data providers, hides complexity, and supports API security, manageability, and governance.

The TIBCO Solution Framework

Decision Point

A military force must use the power of analytics and data science to get a cross-functional, holistic, accurate, predictive, and timely characterization of the operating environment. By predicting and acting on the discovered opportunities in joint operations the military force will win in future conflicts. TIBCO makes it possible to explore data - structured, unstructured, and streaming - find insights at **decision points** in the fastest time possible, build and manage machine learning pipelines, and deliver this trusted intelligence in real-time at the edge and core to decision-makers in order to gain and maintain decision advantage during joint operations. TIBCO transform data into natural language, dynamically turning data into written or spoken narrative at machine speed and massive scale for fast and easier to understand data assisting with orders and analyzing decision points.

Democratize, collaborate, and operationalize Data Science and Artificial Intelligence (AI) across the Sensing Grid for **Sense Making**. The TIBCO Gartner-leading Data Science solution includes the fields of artificial intelligence, data mining, deep learning, forecasting, machine learning, optimization, predictive analytics, statistics, and text analytics. Data scientists, citizen data scientists, decision-makers, and developers need flexible and extensible tools that promote collaboration, automation, and reuse of analytic workflows. This Decision Point solution offers a collaborative platform that enables these teams to more quickly deploy actionable insights at the core or edge for timely decision-making and intelligent automation.



Predictive models

Easily create and deploy predictive models that combine data prep, business rules, and machine learning. Give data scientists templates that can be easily deployed with industry-leading model management, monitoring, and governance to deliver actionable insights.



Machine learning for big data

Automate analytical models with algorithms that iteratively learn from data and optimize performance. With available machine learning algorithms for big data, you can find new patterns and insights without explicitly programming them where to look.



Streaming analytics

Automate action with advanced analytics and predictive models on live data. Use a visual development environment to quickly build and deploy streaming applications to enable systems to score data, send alerts, and quickly take action that is timely and contextual.



Edge analytics

Build analytics as a service and deploy microservices to analyze and score data at the edge. Reduce data bottlenecks and bring analytics to the data.



Security, governance & auditability

Deploying analytic and data pipelines solutions against Kerberos, Ranger, and Sentry can be challenging; many open-source implementations aren't suited. Our advanced analytic solutions are underlying-technology agnostic and integrate with existing data security policies within a governable auditable framework.



Team collaboration

Deploying analytic pipelines against Kerberos, Ranger, and Sentry can be challenging; many open-source implementations aren't suited. Our advanced analytics is technology agnostic and integrates with your data security policies within a governable auditable framework.

The TIBCO Solution Framework

Quickly and easily generate and deliver high-value actionable insights with AI-driven visual analytics and dashboards. Enable everyone to use insights for rapid and effective decision-making with smart data discovery, in-line data wrangling, geospatial analytics, and one-click predictive analytics. This is the most complete analytics solution in the market and makes it fast and easy for everyone to visualize new discoveries in data. Using search and recommendations powered by a built-in AI engine, anyone can explore data for Advanced Battle Management. Whether creating simple dashboard metrics, predictive applications, or dynamic real-time analytics applications, TIBCO delivers numerous capabilities at-scale, including visual analytics, data wrangling, predictive analytics, location analytics, and streaming analytics.

Automating action in real-time by applying analytics and predictive models to IoT and other streaming data is the future of joint warfare. Use a visual development environment to quickly build and deploy streaming applications to enable operating systems to score data, issue orders, send alerts, and take action at high speed for decisions that are timely and contextual.



Visual Analytics

Quickly and easily deliver high-value insights with AI-driven insights and data visualizations. Enable everyone to use insights for better decision-making with smart data discovery, [data wrangling](#), geospatial analytics, and one-click predictive analytics.



Embedded Analytics

Deliver insights in the context of the business applications employees already use. Integrate interactive data visualizations seamlessly into your product or service with an award-winning JavaScript framework for embedding analytics into web applications.



Enterprise Reporting

Modernize enterprise reporting and cost-effectively deliver pixel-perfect reports. Deliver critical insights throughout the organization by generating reports against virtually any data source and distributing at scale for up to 80% less than traditional BI tools.

Execution

Building a multi-domain operations system requires solutions and automation for each activity. This includes accessing data, preparing and presenting data, providing AI-assisted human decision-making, communicating the decision to all stakeholders with instant **execution**, along with the required **actions** and resources. This must be supported by an event-driven architecture for agility and flexibility. Event-driven secure execution is the native architectural model of IoT and digital warfare so stakeholders can instantly communicate and issue orders to simultaneously act to neutralize the threat or divert the crisis.

The TIBCO Solution Framework

The Sensing Grid demands agile, flexible solutions that drive the adoption of event-driven applications, and that requires secure and reliably distributed data anywhere, identifying meaningful events within those data streams, and storing those data for instant access where it counts. The result: real-time intelligence and **actions**, extensibility of applications, on a global scale.

A loosely-coupled reactive application design allows building distributed applications that meets the needs for **orchestration** and provides agile and scalable data delivery. Allows for integration with all Air Force standard ticketing systems to enhance ticket data. Secure, reliable, real-time data distribution is a crucial part of the Sensing Grid digital infrastructure. TIBCO provides the most comprehensive messaging portfolio in a single, seamlessly integrated platform.

Stakeholders decide and act instantly on highlighted important events from a deluge of data and respond in the moment to win on the battlefield. All this is possible with unique Sensing Grid event-processing applications that are much easier to build using the TIBCO framework to reduce project complexity and development time.



Secure, Reliable Message Delivery

Reliable and persistent communication maximizes performance while ensuring guaranteed message delivery, with support for a wide array of security standards.



Context Building Across Time

Add context to current events by comparing them to similar historical data. Correlate events across multiple heterogeneous event streams over time using a "stateful" rule service optimized for long running correlations.



Intuitive Process Rule Definition

Easily define the conditions (the occurrence or non-occurrence of events) under which rules should execute, and what needs to happen. With self-service rule authoring, business users can build, collaborate and deploy rules without requiring help from IT.



High-performance Messaging

Improve the performance, scalability, and reliability of distributed system communication with reliable delivery of over six million messages per second and sophisticated fault tolerance, load balancing, and flow control.



Distributed System of Record

Store platform and language independent key-value data structures in memory with the option to persist data in parallel on a local, elastic, horizontally scalable, commodity hardware cluster.



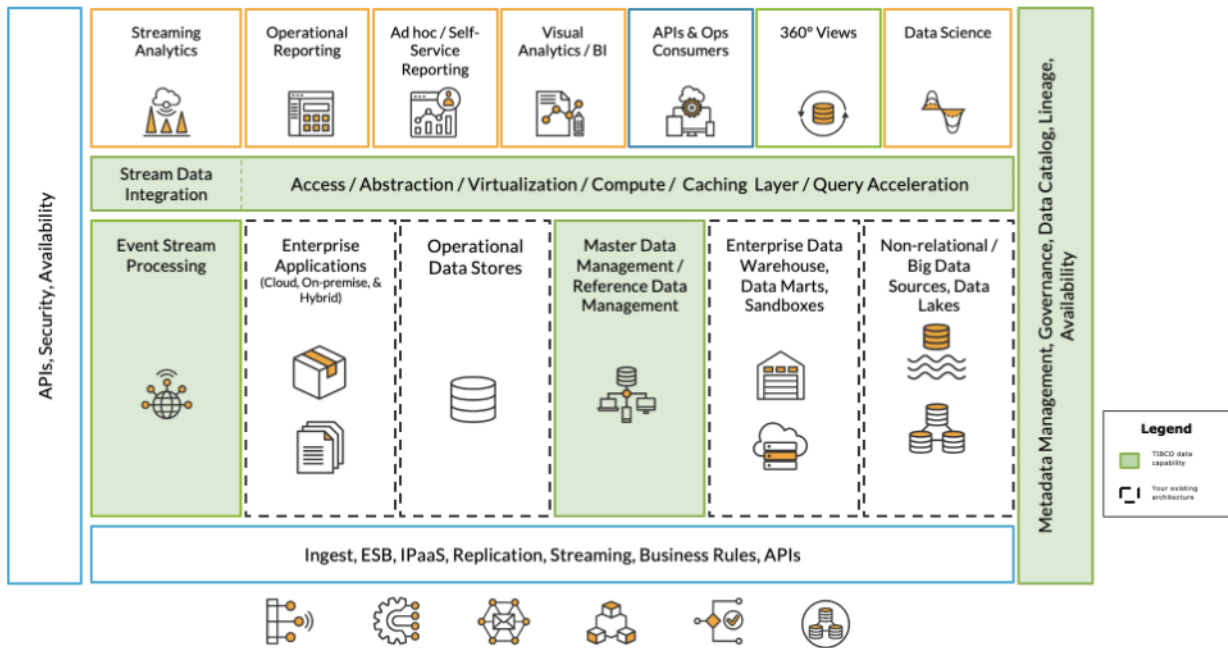
Deployment Flexibility

Provide best-of-breed components designed for specific use cases, that customers can run anywhere – on-premises, private and public clouds, web, mobile, and IoT devices, or fully managed services.

TIBCO Solution Areas Addressing Sensing Challenges

The TIBCO Architecture

TIBCO has a complete platform for all components of the Sensing Challenge as demonstrated in this architecture diagram.



The following are highlights of the TIBCO Solution Areas addressing these challenges.

Integration Backbone - TIBCO provides highly reliable, scalable, secure services, and integration critical to the mission. With TIBCO, agencies can implement integration strategies using traditional integration patterns, as well as modern cloud-based strategies that are API-led built with microservices and containers. A zero-code model-driven environment enables rapid application development and faster time to delivery. TIBCO offers a single integration platform that addresses all steps across the development process: design, archive build, unit testing and debugging, deployment on-premises, or to the cloud, and integration monitoring. It supports modern integration technologies, and both embeds and integrates with popular commercial and open-source DevSecOps applications, as well as agile Continuous Integration/Continuous Delivery tools.

Traditional request-response interaction is client-driven and synchronous. Synchronous communication model fails to respond to evolving situations or “events.” The demand for agile, flexible solutions is driving adoption of event-driven applications, and that requires agencies to be able to securely and reliably distribute data anywhere, identify meaningful events within those data streams, and then store the data for instant access by other systems. The result: real-time intelligence and responsiveness, extensibility of applications, on a global scale. TIBCO Messaging, the most comprehensive messaging portfolio in a single, seamlessly integrated platform, serves as a backbone for event driven architecture.

TIBCO Solution Areas Addressing Sensing Challenges

In fact, TIBCO messaging is the foundation for TIBCO 's integration platform, thus providing synchronous as well as asynchronous communication with support for multiple qualities of services - such as reliable, guaranteed, durable, and transactional - along with support for multiple messaging models such as unicast, broadcast, and multicast. The messages can be delivered synchronously on request as well as asynchronously based on an event or a trigger. The qualities of service can be defined at message level as well as at destination level, thus ensuring that data are not lost during transmission and are delivered to the destination with high confidence.

Serverless Ecosystem - Build extremely lightweight Go-based edge applications to provide rapid synchronization and optimization of sensor activity with this open-source ecosystem. This provides synchronous, asynchronous event, or stream processing with a resource-efficient footprint to deploy onto edge/IoT sensors and all other Sensing Grid components with AI embedded to provide the information needed to understand the operating environment.

Metadata and Reference Data - TIBCO software helps organizations avoid silos with an all-in-one approach to managing sensor data assets across the Defense Forces, Joint, Interagency, Coalition, and Publicly Available Information (PAI). When you can manage, discover, and share all your data assets, you thrive. Data fuels mission-critical operations, **orchestration**, analytical processes, and superior decision advantage. With constantly evolving data from diverse channels and sources, teams can no longer rely on simple automation or outdated data management tools. This data management software, a recognized leader in Master Data Management (MDM), and a pioneer in data asset management, is an innovative, single multi-domain solution for managing, governing, discovering, and consuming all shared Sensing Grid data assets, including master data, reference data, data catalog, hierarchies, business glossaries, and metadata. It provides risk mitigation and an accurate, trusted view of aligned global priorities, insights, and decisions. When used for **information integration** and analytic Sensor Grid initiatives, it empowers better decisions and faster, smarter **actions** to shorten the decision/kill chain

Data Virtualization - integrates information access to multiple and varied data sources and delivers the datasets and IT-curated data services for nearly any battlespace scenario. It provides **orchestration** of data services that Unify disparate data without creating copies or siloes. Adapters connect to RDBMS, files, cloud sources, streaming sensor data, data lakes, and more. The "data ship" feature dynamically moves data at runtime to high-performance systems for added optimization. Caching options boost speed and flexibility. Access, query, federate, abstract, and deliver data on demand enabling **sense-making** by fusing thousands of fragmented, disaggregated data sources.

TIBCO Solution Areas Addressing Sensing Challenges

The “pushdown engine” combines vertically and horizontally partitioned data. Massively parallel processing scales big data workloads and automatically distributes the work across multiple cores. Built-in governance and security, including complete visibility, traceability, lineage, control, authentication, authorization, and encryption, safeguard the delivery of sanctioned data only, no more, no less. A single point of access for data provides additional controls.

Business Process Management/Automation - As part of the overall solution, there are decisions to be made by way of Human interfaces. These actions can then be taken and automated to systems or other human interactions for solution.

Big Data Processing - in-memory optimized analytics, delivering high throughput, low latency, and high concurrency for unified analytic workloads. Combine interactive and streaming analytics with artificial intelligence in a single, easy to manage distributed cluster.

Visual Analytics - is the most complete analytics solution in the market today, and makes it fast and easy for everyone to visualize new discoveries in data to aid in **decision making** and informing **action**. Using search and recommendations powered by a built-in artificial intelligence engine, anyone can explore data to bring insights to give **decision advantage**. Whether creating simple dashboard metrics, predictive applications, or dynamic real-time analytics applications, it delivers numerous capabilities at-scale, including visual analytics, data wrangling, predictive analytics, location analytics, and streaming analytics.

Real-Time Streaming - Analyze, continuously query, and act on IoT and other streaming data at lightning-fast speeds. Take real-time operations and analytics to the next level with intelligent applications that deploy quickly for taking action based on new decisions and models, all without extra overhead. The streaming software is enterprise-grade, cloud-ready, streaming analytics for **Sense-Making** to quickly build real-time applications at a fraction of the cost and risk of alternatives.

Data Science (AI/ML) - Data science is a team sport. Data scientists, citizen data scientists, data engineers, battlefield decision-makers, and developers need flexible and extensible tools that promote collaboration, automation, and reuse of analytic workflows. But algorithms are only one piece of the advanced analytic puzzle. To deliver predictive insights, Joint All-Domain Operations need to increase focus on the deployment, management, and monitoring of analytic models. Smart operations rely on platforms that support the end-to-end analytics lifecycle while providing enterprise security and governance. The Data Science software helps innovate and solve complex problems faster for **Sense-Making** to ensure predictive findings quickly turn into battlefield wins.

TIBCO Solution Areas Addressing Sensing Challenges

Collaboration - Collaborate across all domains of the Sensing Grid with data science, data management, integration, streaming, visualizations, and data projects to increase efficiency and productivity for the entire organization. All TIBCO solutions enable collaboration. Adopting collaborative platforms even in pilot stages, will improve efficiency and effectiveness by utilizing services and agencies to enable decision makers.

Governance - TIBCO solutions provide data and analytics governance for creating uniformity, transparency, **secure access**, and secure knowledge for all. TIBCO Governance provides resiliency in the Sensing Grid and enforces regulations and policies. TIBCO **enforces the CIA Triad of Confidentiality** that limits access to information, **Integrity** to provide assurance that the information is trustworthy and accurate, and **Availability** guaranteeing the reliable access to the information by authorized people.

Utilizing TIBCO's Connected Intelligence platform, the architecture's various components can weave together a myriad of ways to answer the needs of the Air Force Advanced Battle Management System (ABMS) requirement for a robust and interconnected Analytics and Situational Awareness platform. The main goal of this initiative is to integrate multiple data sources and platforms to provide a full spectrum of capabilities in support of the ABMS System. Effective situational awareness and missions decisions require solutions that leverage business and IT to collect, analyze and take action on data across any part of the enterprise. TIBCO integrates point solutions with strategic and tactical applications into a single continuum. TIBCO brings mission policies, goals, and processes into the solution with critical content and context that creates rich intelligence and comprehensive situational awareness for the entire enterprise. Leveraging TIBCO's industry leading advanced analytics, the Air Force can uncover patterns and trends to make more informed missions decisions. Furthermore, TIBCO platform can orchestrate content, treatment, and restorative actions in the business and IT environments in real-time. Information gathered from real-time remediation can be used to further refine data models for closed-loop engagement activities for continuous improvement.



Why TIBCO

Originally founded in 1985 as Teknekron Software Systems, the company began developing software, known as “The Information Bus” (TIB) that supported the assembly and delivery of real-time market data to give traders and risk managers on Wall Street the power to make better decisions faster. In January of 1997, TIBCO Software Inc. was established as a separate entity to apply its innovative software to problems outside the financial sector, in particular, to industries like energy, communications and media, healthcare, retail, and government.

Headquartered in Palo Alto, CA, TIBCO Software Inc. is the leading independent business integration and process management software company that enables real-time business. TIBCO has delivered the value of real-time business, what TIBCO calls The Power of Now®, to over 10,000 customers around the world in a wide variety of industries and has annual revenues of over \$1 billion. TIBCO provides innovative software that enables interoperability between applications and information sources, coordinates processes that span systems and people, and enables companies to sense and respond to events and opportunities more quickly and with more certainty and control.

It is becoming increasingly obvious that data fuels today’s digital transformation. The value of applications and services, business models and innovations comes down to understanding the data that is embedded in or underpinning their creation. TIBCO is aware of a new type of data architecture emerging: a fabric-based architecture constructed from micro-services that pinpoint data movements and calculations to create lightning fast and accurate actions. This new architecture transforms its layers from the rigid, cost-laden landscape of today into a flexible, loosely woven tapestry of purpose-driven threads that connect and deliver data and analytics with the simplicity and speed needed to gain advantage in the digital age.

TIBCO offers a Connected Intelligence platform that is a tightly integrated, loosely connected toolset, that provides this fabric-based architecture. Connected Intelligence means being able to:

- Capture data from any sources
- Develop an understanding of the context in real-time
- Combine it with existing knowledge in the system or the organization and apply models or collaborations to take the best actions
- Turn this decision into action when it matters, which often requires connectivity to the ecosystem
- This action will also generate more data that can be captured for additional analysis and understanding.

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TIBCO Software Federal Inc.

TIBCO Software Federal enables government organizations to unlock the potential of real-time data to make faster, smarter decisions. For more than 20 years, TIBCO has helped agencies increase their effectiveness, support oversight, and promote transparency across programs and commands in the Department of Defense, the Intelligence Community, and civilian agencies.