Intelleges

CASE STUDY

Company Data

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Case Study 2: Buy America Act - Aerospace

The Industry Problem

Aerospace manufacturers face strict domestic sourcing rules under the **Buy America Act (BAA)** (and related *Buy American* provisions). These rules require that a substantial portion of an aerospace product's components and materials originate from the United States (or designated countries) for use in federal projects.

The challenge is that modern aircraft and spacecraft contain thousands of parts sourced globally. Aerospace firms must determine the country of origin for each nut, bolt, circuit, and subsystem to ensure compliance.

This is a daunting task: supply chains are multi-tiered, and parts may be assembled from raw materials of various origins. Companies historically have relied on supplier certificates of origin and spreadsheets to track compliance. The problem is amplified when designs change or new suppliers are onboarded -- origin data may be missing or outdated. For aerospace contractors working with the Department of Defense or NASA, even one non-compliant foreign part in a system could jeopardize contract payments or trigger penalties. In practice, many firms found themselves **guessing or hoping** that they met BAA content thresholds, due to the difficulty of precise tracking.

The inefficiency and risk were highlighted when new "Buy American" rules increased required domestic content percentages, catching some manufacturers flat-footed in not knowing their exact supply chain makeup.

Regulatory or Operational Risk

Non-compliance with Buy America regulations poses both legal and financial risks. If an aerospace contractor delivers an aircraft or satellite component that fails BAA requirements, the government can refuse acceptance or demand costly rework/substitution.

For example, an aerospace A&D firm working on federal contracts must certify its end products meet the required percentage of U.S.-made content. Failure to do so can result in contract termination or even False Claims Act liability if domestic content was misrepresented.

The regulatory trend has been toward *tougher* Buy American rules -- recent updates have raised the mandated U.S. content threshold (e.g., from 55% to 60% and slated higher) for federal procurements. This amplifies the risk: companies that barely met the old threshold

might suddenly be out of compliance. Operationally, the lack of visibility into part origins can lead to delays.

Consider an aerospace OEM building a satellite: if a critical microchip's origin is unknown, contract officers may halt progress until its source is verified. In 2022, a defense R&D company struggled to locate *BAA-compliant microchips* needed for a project. The risk isn't merely bureaucratic -- it can impact project schedules and costs. Moreover, an audit or **Buy American Act audit** can occur, where the government asks for proof of compliance. Without organized records, a manufacturer could fail an audit and incur penalties or reputational harm. In summary, the aerospace industry faces a dual risk: the *legal risk* of violating BAA clauses (losing contracts, fines) and the *program risk* of supply disruptions if parts turn out non-compliant.

How the Problem Manifests Day-to-Day

On a practical level, aerospace supply chain managers and engineers grapple with tracking part origins through complex Bills of Materials (BOMs). Day-to-day, this means sending frequent inquiries to suppliers asking: "Where is this alloy sourced? Is this component American-made or from overseas?"

Often the answers are slow or incomplete. Small component suppliers might not know the origin of their raw materials without lengthy investigation. As a result, program managers maintain **massive spreadsheets** where each line item corresponds to a part number, with columns for country of origin, percentage of U.S. content, etc.

Maintaining these sheets is error-prone -- one update from a supplier can require changes to dozens of entries. The problem is particularly acute during design changes or when substituting parts (a common occurrence in aerospace development): every new part must be vetted for BAA compliance, which can stall the design if information isn't readily available.

In production, procurement teams may hesitate to buy cheaper foreign-sourced components even if legally allowed under trade agreements, due to uncertainty and fear of violating rules. This can drive up cost.

Alternatively, if they do buy globally, they face *constant stress* that an inspector might flag an unauthorized foreign material. Additionally, the **reporting workload** is significant -- some contracts require periodic reports on Buy American compliance or waivers for specific items. Compiling those from disjointed supplier data is a scramble. Thus, the daily reality is a mix of tedious data gathering, anxious compliance checking, and potential supply delays while waiting for origin confirmations.

Intelleges' Intervention (Protocol + Workflow + Verification)

Intelleges addresses these challenges with an integrated "Buy America Compliance" workflow tailored for tracking part origins and content.

The platform introduces a *structured, iterative questionnaire system* that allows the aerospace firm to survey its entire BOM efficiently.

Here\'s how it works: Intelleges loads the product's parts list (by part number or SKU) into the system. For each part (and sub-part), a questionnaire is deployed to the relevant supplier automatically, asking for specific data -- e.g., country of origin, manufacturing location, and percentage of U.S. content. Importantly, Intelleges supports **iterative drill-down**: if a supplier responds that a part contains sub-components from abroad, the system can trigger follow-up queries.

This cascades down the supply chain until origin info is collected at the raw material level. The **automation and template** approach is crucial. Intelleges comes with templates aligned to Buy American Act reporting needs, so it asks the right questions (e.g., "Is this product a commercial off-the-shelf item exempt from BAA?" or "List all countries of origin for raw materials and their approximate weight/cost share").

Suppliers enter data through a secure link, and Intelleges validates entries for consistency (for instance, it recognizes country names or ISO codes to avoid ambiguity). The platform also integrates **live verification** where possible: for example, if a supplier claims an item is made in USA, Intelleges can cross-check that supplier's CAGE code or DUNS against SAM.gov to see if they've registered any Trade Agreements Act waivers or if they are classified as a domestic manufacturer.

For complex assemblies, Intelleges can calculate the aggregate U.S. content percentage by rolling up the values provided for subcomponents. This instantly shows whether the assembly meets the required threshold. All of this happens in a *dashboard view* for the compliance manager -- parts are color-coded (green if compliant, red if not, yellow if data pending).

If a non-compliant part is identified, Intelleges' workflow can initiate a **waiver request template** or suggest approved alternate suppliers (leveraging stored profiles of suppliers, including whether they have domestic manufacturing).

Audit-ready documentation is a natural output: the system can generate a BAA compliance report listing each part and its origin data, along with timestamps and supplier attestations, which is exactly what an auditor or contracting officer would need as proof. Essentially, Intelleges turns what was a manual, piecemeal data chase into a coordinated, transparent process.

Results & Measurable Impact

The introduction of Intelleges for BAA compliance yields immediate and measurable impacts. A prominent aerospace manufacturer that implemented Intelleges reported that it **cut the time to assemble a complete product origin report by over 200%**.

What used to require dozens of person-hours in chasing supplier emails was largely automated. In one instance, when a critical project was at risk due to sourcing of electronic parts, Intelleges enabled the company to pinpoint which parts were non-compliant and quickly source alternatives.

In fact, **when a large R&D company needed compliant microchips on an emergency timeline, Intelleges leveraged its network and data to secure those parts in record time, ensuring all necessary hardware arrived without delaying the project launch**. This not only averted a schedule slip but also saved the program from a potential violation of Buy American clauses.

Quantitatively, the manufacturer saw the percentage of parts with verified origin info jump to 90%, from barely 10% before (the remainder being truly commercial items not subject to BAA).

This increase in transparency meant fewer last-minute surprises; for example, in a recent audit, the firm confidently demonstrated over **60% domestic content for a complex avionics system**, satisfying new stricter requirements -- a threshold that many peers struggled to prove before Intelleges.

Financially, being able to verify and document compliance protected millions of dollars in contract payments that could have been withheld if content rules were not met. Another

impact area was supplier behavior: suppliers, knowing that Intelleges would be collecting detailed origin data, became more proactive in qualifying *their* sources.

Some suppliers even modified their supply chain to increase U.S. sourcing, after seeing the ease of Intelleges' analysis highlighting their foreign content. This collaborative effect strengthened the overall supply base's compliance posture. Internally, the stress level around BAA dropped markedly; program managers stopped fearing a "Gotcha" moment in reviews because the information was at their fingertips.

One senior supply chain director noted that Intelleges' clear visualization of data **"pinpointed problems and patterns that lend themselves to enterprise-wide solutions"**, echoing how the platform doesn't just collect data but helps solve the root issues (for instance, identifying a handful of consistently problematic foreign-sourced commodities to potentially domestic-source in the future). In summary, Intelleges delivered compliance assurance, time savings, and strategic insight, turning BAA from a headache into a manageable metric.

Why This Makes Sense for the Industry

For the aerospace industry, which is heavily regulated and intertwined with government procurement, Intelleges' solution is almost a no-brainer. **Compliance with Buy America Act is not optional** in this field -- it's a gate to doing business.

Historically, firms treated compliance as a cost center activity to be minimized, but Intelleges changes the game by making compliance data readily available and even strategically useful. Aerospace programs are long-term and complex; having a reliable system for origin tracking means fewer disruptions over a program's life (for example, if BAA thresholds increase or trade wars restrict certain sources, the company can swiftly adapt because it *knows* its exposure). Intelleges' platform fits well with the industry's push towards model-based systems and digital twins -- now the "digital thread" can include compliance attributes like material origin alongside design data.

This integration of compliance into the engineering data flows means **faster decision-making** and greater agility. Moreover, aerospace firms are under public and political pressure to bolster U.S. manufacturing. By using Intelleges, a company can demonstrably increase its American-made content and easily report that achievement to stakeholders, turning compliance into a marketing and political advantage. The platform's use of **automation and live data** aligns with the aerospace sector's advanced use of technology in other areas (like automation in design, simulation, etc.), so it feels natural rather than foreign.

Finally, given the scale of aerospace supply chains, an integrated approach is the only sustainable way -- you can't feasibly manually police tens of thousands of parts. Intelleges offers that scalable solution, ensuring that whether an aircraft has 1,000 parts or 1,000,000, the compliance check can scale too. In an industry where a single non-compliant bolt could hold up a multi-million-dollar project, having Intelleges is a sensible insurance policy and efficiency booster. It allows aerospace companies to **focus on innovation and performance, while Intelleges quietly handles the heavy lift of compliance** -- a symbiosis that makes perfect sense for the future of the industry.