

Company Data

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Case Study 5: ITAR/EAR - Satellite Manufacturing

The Industry Problem

Satellite and space system manufacturers operate under some of the most stringent export control regulations in the world: the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations (EAR). These rules dictate how defense-related and dual-use technologies (which satellites often are) can be shared, who can access technical data, and which components can be exported to or sourced from foreign nations. The *challenge* is that compliance with ITAR/EAR is extraordinarily complex and burdensome. Every component of a satellite must be classified -- is it on the US Munitions List (ITAR-controlled) or the Commerce Control List? If ITAR-controlled, even sharing drawings with a non-U.S. person (including foreign employees or offshore suppliers) requires a license. Satellite manufacturers historically managed this with manual processes: engineers label schematics "ITAR-controlled" and rely on training to not accidentally email them abroad; export compliance officers maintain spreadsheets of which parts have licenses, and who is authorized to see what. But as satellite supply chains become more global (using commercially available electronics, for example), keeping track of all these classifications, licenses, and foreign national interactions by hand is error-prone. One misstep -- an engineer emailing a controlled design to an overseas vendor without a license -- is a serious violation. The industry problem is essentially *maintaining rigorous control and documentation of technical data and hardware movements*, without slowing down the pace of innovation. Many companies find their compliance "firewalls" strain to keep up, and they fear the dire consequences of a violation: huge fines or loss of export privileges. The complexity multiplies when considering EAR dual-use items and their de minimis content rules, or re-export provisions. For a satellite maker juggling hundreds of export licenses and Technical Assistance Agreements (TAAs), the administrative load is massive and the risk of something slipping through is ever-present.

Regulatory or Operational Risk

The risks of ITAR/EAR non-compliance in satellite manufacturing are severe. Legally, penalties for ITAR violations can reach *up to* **\$\$\$1.2 million per violation in civil fines, and criminal penalties up to \$\$\$1 million and 20 years imprisonment. Cases in the aerospace sector have borne this out -- for instance**, Loral Space & Communications paid \$\$\$14 million to settle ITAR violation allegations *related to satellite tech transfer*. *Beyond fines, a company can face debarment, losing its export license entirely, which for a satellite business could be fatal (since they couldn't ship satellites or even share data with foreign launch providers). There's also the risk of government sanctions on future contracts;*



the U.S. government will hesitate to contract with a company that has poor export controls. On the operational side, even without a violation, inefficient compliance can bog down production. If license approvals are delayed or mismanaged, critical components might not arrive in time or engineers might be barred from collaborating freely, causing schedule slips. Satellite projects often have tight launch windows -- a missed regulatory step could mean missing a launch opportunity, costing millions. Another operational risk is data security and espionage: ITAR compliance is partly about preventing adversaries from accessing sensitive tech. A lapse could lead to intellectual property theft or national security breaches, as when sensitive satellite information was shared without authorization in the past, leading to accusations of improving foreign missile programs. In summary, failing to comply risks massive fines, criminal charges, loss of business privileges, schedule delays, and even national security harm. Conversely, over-compensating (being so cautious that you slow work to a crawl) is a risk too -- missing market opportunities because compliance overhead is unmanageable. The industry walks a knife's edge where mistakes in either direction (too lax or too restrictive) carry high costs.

How the Problem Manifests Day-to-Day

On a daily basis, the burdens of ITAR/EAR in a satellite manufacturing company are felt by engineers, export officers, and supply chain staff alike. Engineers must constantly be aware of who is in the room or on a call -- for example, a propulsion specialist might pause a technical meeting because a non-U.S. citizen colleague walked in, until it's confirmed that colleague is covered under a Technical Assistance Agreement. This interrupts workflows and can breed frustration if not handled smoothly. For every piece of hardware leaving the facility (even to go to a domestic testing lab), someone has to check "Is this export-controlled? If so, do we have the license/exemption?" Often this is done by consulting a thick binder or spreadsheet listing part classifications. Day-to-day, that means *lots of emails and forms* back and forth with the export compliance office: "Can I ship part #123 to our UK partner? Did we list it on TAA #456? What license exception might apply?" The answers are not always straightforward, and a conservative answer (no, wait for a license) can cause a schedule slip. For procurement, sourcing parts from abroad triggers similar questions: "This star tracker is made in Europe -- is it ITAR-free? If it contains any U.S. components, that could bring it under U.S. re-export controls." Tracing that origin is tedious. A lack of integrated data means each potential transaction is a mini research project. Furthermore, every few months, compliance staff must compile **reports and maintain records** of all ITAR activities -- whom did we send tech data to (with copies of each DSP-5 license), what hardware was exported under each license, did the quantities match the license allowances, etc. Many use rudimentary databases or even paper files for this. The specter of audits by the State or Commerce Department looms; employees know any small mistake in record-keeping could be discovered. Consequently, a culture of over-caution may pervade: workers might delay sharing even permissible data because they are unsure, hurting collaboration. There's also continuous training -- ITAR training sessions are a routine, pulling staff off projects to refresh on rules. In essence, without a streamlined system, **compliance is a heavy manual overlay** on every design discussion, email, shipment, and purchase order in the day-to-day life of a satellite program.

Intelleges' Intervention (Protocol + Workflow + Verification)

Intelleges introduces a specialized **Export Controls Compliance protocol** tailored for ITAR/EAR management in the satellite manufacturing environment. This protocol embeds export control checks and documentation into the company's everyday workflows. **First**, Intelleges serves as a centralized repository of export-controlled items and data. Every part number, assembly, or technical document is tagged in the system with its export classification (ITAR USML category or EAR ECCN). The platform can reference the USML and CCL lists to assist classification decisions, using built-in rules to suggest classifications



based on item attributes (for example, flagging that a star sensor likely falls under a particular ECCN). Once classified, any time that part or document is involved in a transaction, Intelleges automatically raises the relevant controls. For instance, if an engineer attempts to share a drawing (integrated with their PLM or document system), Intelleges will prompt: "This file is ITAR -- are all recipients U.S. persons or covered by export authorization?" This is **live verification** at the user interface level, preventing accidental disclosures. If a foreign national needs access, Intelleges checks the database of approved licenses (TAAs, DSP-5s) to see if that individual or their organization is named and for what scope. It will either allow access (and log it) or block it pending authorization. **Second**, Intelleges manages all export licenses and agreements. It keeps a digital record of each license, its scope, expiration, and provisos. The system can send alerts well in advance of a license expiration or if a quantity/dollar limit is nearing exhaustion, preventing those "uh-oh" moments when a shipment can't go because the license lapsed. The **workflow** aspect means when procurement tries to issue a PO to a foreign supplier for a controlled gyro, the system can prompt "export license required -- initiate license application?" and track that process. Intelleges even provides **templates** for common export forms and Technical Assistance Agreements, auto-filling known information (like parties' details, part descriptions) to speed up preparation. For shipping, Intelleges can generate the proper export documentation (commercial invoice statements, DSP-5 citations) and ensure **audit-ready records** by logging each export transaction against the relevant license. The platform also integrates screening: any foreign entity or individual is checked against denied parties lists in real time (so you don't inadvertently export to a sanctioned party -- a crucial EAR compliance step). Additionally, Intelleges guides **tech data management**: it can enforce rules like marking ITAR documents automatically and controlling their distribution. With an **automation** rule set, it ensures, for example, that an email attachment via the company's email system that's ITAR is only sent to approved domains or encrypted channels. Intelleges essentially becomes an export control co-pilot, always on, always cross-referencing the regulations. It also provides **visual dashboards** for compliance officers: e.g., a chart of how many ITAR licenses are active, how many exports occurred this quarter, any potential violations caught by the system (like attempted unauthorized access blocked). This proactive monitoring and integrated control dramatically reduce reliance on human memory and vigilance, which are prone to error.

Results & Measurable Impact

Implementing Intelleges yields a transformative reduction in compliance incidents and effort. A satellite manufacturer that deployed Intelleges saw **zero unauthorized export incidents** in the year following, compared to a few minor infractions in prior years (e.g., sending a controlled document to an un-cleared foreign partner -- which Intelleges now catches and blocks in real time). By preventing these incidents, the company avoided potential fines or consent agreements that could have cost millions and strict government oversight. Moreover, Intelleges saved time: export license processing time was cut by an estimated 40%, partly by eliminating back-and-forth for data gathering. Intelleges' auto-fill and tracking meant an export officer could prepare a license application in hours instead of days, and nothing would fall through the cracks waiting on information. In one instance, the company faced an urgent need to export replacement satellite batteries to a foreign customer -- something that normally might get held up in compliance. Intelleges quickly identified that the batteries were classified under EAR99 (not restricted), allowing same-day shipment, whereas previously uncertainty might have delayed that by days. Another measurable outcome: **training and audit prep time decreased**. Since Intelleges enforces rules in software, employees needed fewer remedial trainings and refreshers -- compliance became intuitive through the system's prompts. Additionally, when the State Department's DDTC (which oversees ITAR) did a routine compliance audit, the company was able to generate complete reports of all technical data transfers and hardware exports **with a few clicks**, impressing auditors with thorough record-keeping. The audit concluded with no findings, a



stark contrast to past audits where manual logs had minor discrepancies. Financially, the avoidance of fines is a huge though unquantifiable benefit (considering fines can reach \\ \$78 million in worst cases, even averting a small penalty or legal bill is significant). Also, by streamlining compliance, Intelleges effectively **sped up engineering collaboration by about 15%** (per internal project manager estimates) because engineers weren't constantly waiting on email approvals to share info -- the system facilitated immediate authorized sharing or flagged the exact constraint to resolve. The company also noticed improved morale: previously, compliance was seen as the "Office of No." With Intelleges, compliance officers could say "yes, here's how" more often, since they had confidence the system would ensure boundaries are respected. This fostered a more cooperative culture between engineering and compliance. One powerful metric: prior to Intelleges, the company's average time to clear a foreign national hire to work on ITAR projects was 3 months (to get them on TAAs etc.); with Intelleges tracking and template TAAs, they reduced that to 1.5 months, making HR and project teams much happier. In summary, the platform delivered risk reduction (near elimination of violations), time savings, and even schedule benefits for programs by removing compliance bottlenecks. It turned export control from a periodic fire-fighting exercise into a continuously managed, almost background process -- compliance became "built-in" rather than bolted on.

Why This Makes Sense for the Industry

For the satellite and aerospace industry, **stringent export control compliance is as mission-critical as quality control**. Intelleges makes perfect sense here because it *directly addresses the core pain point*: managing complex, changing regulations in an integrated, automated way. The cost of a single major ITAR violation can be enormous -- possibly business-ending if export privileges are revoked -- so investing in a system like Intelleges is akin to an insurance policy, except it also improves efficiency. The industry deals with highly sensitive tech and thus must strike a balance between innovation and protection. Intelleges embodies that balance: it allows engineers to work swiftly (since it handles the gatekeeping) while ensuring nothing leaves the orbit of allowed access. Moreover, the regulatory environment for space is dynamic (e.g., certain satellite components moved from ITAR to EAR under reform, new controls on emerging tech appear). Intelleges can be updated with new regulations centrally, pushing updates to all users so the company is instantly compliant with the latest rules, something individual training might lag on. This agility is crucial in aerospace where regulatory shifts can open or close markets overnight. Another reason it fits: **global collaboration** is increasing in space projects (international partners, foreign launches). Without a tool like Intelleges, the administrative overhead to safely collaborate is huge. With it, even smaller NewSpace companies can confidently partner globally because they have a strong compliance backbone from day one. Culturally, the satellite industry is very detail-oriented (by necessity of physics and engineering) -- having a detail-oriented compliance system resonates; it logs and checks every little action like an engineer would log test results. The trust this builds with government regulators can also be a competitive advantage: a company known for impeccable compliance might get export licenses approved faster due to regulator confidence. In an industry where schedule and reliability are everything, that's gold. Finally, using Intelleges signals a **commitment to security and compliance** that is important for national security customers (Air Force, Space Force, etc.). It shows the company goes above and beyond bare minimum, leveraging best-in-class technology to safeguard controlled tech. In essence, Intelleges aligns with the aerospace industry's twin priorities of cutting-edge innovation and rigorous control. By automating the "guardrails," it frees human talent to focus on designing satellites rather than paperwork, all while maintaining the highest compliance standard. Given notorious past cases where lapses cost companies tens of millions, the question for the industry isn't "can we afford Intelleges?" but rather "can we afford not to," making it a smart and sensible adoption.