



Engineering Physics Lesson 2 — "Red Wing Simulation"

Doc 3 of 3 · Law — regulation, jurisdiction and the visa

Not legal advice. A lawyer vets everything before anything is filed or flown.

The question

Engineering says what can fly. Business says who pays. This doc asks **what the law lets us build, fly, and sell — and where** — plus the green-card route the whole project feeds.

Part 1 — Legislation: what the drone itself runs into

The weight line lands right on our design. Doc 1's firefighter weighs 25 kg (15 kg drone + 10 kg water).

Jurisdiction	Rule	Where Red Wing sits
USA — FAA Part 107	Covers small drones under 55 lb (24.9 kg)	25 kg is <i>just over</i> — it falls out of the simple rulebook into exemptions
Canada — CARs Part IX	Covers drones 250 g – 25 kg	Right at the edge; heavier needs a special flight operations certificate
USA — Part 137	Dispensing from aircraft (e.g. crop spraying)	Applies to the pest-control variant

Design rule this forces: keep the loaded drone **under 24 kg** — carry 9 L, not 10. One litre of water buys the simple rulebook in both countries. That is a legislation constraint changing an engineering number.

Export control — the payload decides.

- **Weapons** → **ITAR**. Defense articles and their technical data are restricted to US persons and licensed contractors. This is why the "pew pew" stays out of scope: *"requires a licensed US partner."*

- **Firefighting** → **mostly civilian**, but **thermal cameras can be export-controlled** under the EAR. Check the camera's classification before shipping hardware or data across a border.

- **Grants:** US defense small-business grants (SBIR/STTR) require **majority US ownership** — unavailable to a foreign-owned startup.

Part 2 — Jurisdiction: where to build

- **Canada first** is the low-friction path: we're here, Part IX is clear, and a civilian firefighting drone has no ITAR problem.
- **The US** is where the defense partners and the bigger market are — which is where the visa comes in.

Part 3 — Visa: EB-2 NIW

Gate 0 — do we qualify for EB-2 at all? NIW is a waiver *inside* EB-2. First USCIS checks one of:

- **Advanced degree** — a US master's or equivalent, **or a bachelor's + 5 years of progressive experience**.
- **Exceptional ability** — 3 of 6 criteria.

Action: credential evaluation + employer letters for the 5 progressive years. If this fails, nothing below matters.

The Dhanasar test (three prongs):

1. **National importance** — wildfire is a recognised national problem; AI/autonomy sits on the US critical-tech lists.
2. **Well positioned** — the prototype, the lesson portfolio, partner and expert letters.
3. **Waiver makes sense** — a founder has no employer to test the labour market against.

The odds have changed. NIW approvals fell from **95.7% (FY2022) to roughly 43–55% in FY2026** (decided petitions, per law-firm analyses of USCIS data — re-check against USCIS's own numbers). Thin files get denied.

Sequencing

- **Now–2 mo:** Gate 0 · evidence inventory · NVIDIA Inception · status check (TN needs Canadian/Mexican citizenship; E-2 needs a treaty-country passport — Hong Kong is not one).
- **2–8 mo:** build the prototype, pilots, letters.
- **8–12 mo:** file I-140 with premium processing (45 business days; confirm the current fee at filing).
- **After:** the wait depends on **country of birth** — check the Visa Bulletin.

The honesty rule

Tactical Visor, AI Tank and the Red Wing architecture are **design studies**, and the teaser is a **concept render**. Present them exactly that way. Overstating evidence in a petition is **material misrepresentation**, which carries a **permanent bar** from US immigration. The working prototype is what turns "design study" into "track record."

Scorecard

- **Legislation changed the design:** 25 kg → under 24 kg, to stay inside Part 107 and Part IX.
- **Export control picked the scope:** firefighting yes, weapons only through a licensed partner.
- **Jurisdiction picked the order:** build in Canada, partner into the US.
- **The visa is a by-product, not the product:** a real prototype is the strongest evidence there is.