

A Model for Responsible Cloud Engineering

Virginia Beach, VA, USA (18 November 2025) – Cloud adoption has accelerated at a pace that few anticipated, reshaping how organizations build, deploy, and sustain digital capabilities. But this rapid growth has produced a difficult truth: while the cloud promises agility and scalability, it also introduces an operational risk that is too often overlooked. Cloud costs rise quietly, relentlessly, and without the right engineering discipline, they can outpace value creation.

This is not a cloud provider issue. It is an engineering and governance issue. All cloud service providers charge for every active resource, whether it is being used or not. And without continuous visibility, those resources accumulate silently in the background. Once the invoice arrives, the cost is locked in. There is no undoing it.

The organizations that thrive in this landscape are the ones treating cloud consumption as a first-class engineering concern, not an afterthought.

Applying Engineering Discipline to the Cloud

This is the mindset G2 Ops brought to our federated IL5 cloud environment supporting SOFIA, G2 Ops' model-based cyber risk assessment tool. Over several months, the G2 Ops team applied the same rigor we expect in mission engineering, cybersecurity, and digital systems design. The result was a **44% reduction** in cloud consumption from September to October.

"Our team showed that disciplined engineering and clear visibility can deliver immediate impact," said Dr. Corren McCoy, senior fellow of enterprise engineering and AI strategy at G2 Ops. "Reducing cloud costs by 44 percent is an important milestone, and it reflects the kind of responsible innovation we expect across all of our digital programs."

This achievement was not an isolated effort. It was the result of intentional design decisions, measurement discipline, and a willingness to challenge long-standing assumptions about how cloud environments should operate.

SOFIA's Role

SOFIA provides Cyber Ready bodies of evidence by integrating system architecture, configuration data, threat intelligence, and vulnerabilities into a unified, model-driven risk analysis. It is used today to support several PEO IWS 1.0 systems.

The tool itself is a reminder that cyber readiness is inseparable from engineering practice. The cloud is no different. Visibility, modeling, and governance matter just as much in infrastructure as they do in mission systems.

What Responsible Cloud Engineering Looks Like

The improvements the team implemented were not exotic. They were thoughtful, deliberate changes rooted in engineering fundamentals.

- **Strengthened account structure and tagging:** Separating workloads into smaller, dedicated tenant spaces made consumption visible. It created accountability. It allowed us to see what mattered and retire what did not.
- **Increased cloud transparency:** Real time dashboards and alerts replaced assumptions with evidence. Visibility became the operational foundation.
- **Streamlined storage management:** Old data was archived or removed. Retention periods were set intentionally. Data stayed only as long as it added value.
- **Optimized system uptime:** Environments that were traditionally left running 24x7 were aligned with real human working hours. Idle time stopped draining resources.
- **Modernized data processing:** SOFIA's daily ingestion of Open-Source Intelligence (OSINT) feeds was redesigned to run only when needed. Retiring the large, always-on server that powered the old workflow produced the largest single reduction in cloud consumption.

None of these actions degraded capability. They strengthened it.

The Bigger Message: Cloud Discipline Is Now a Leadership Issue

The organizations that succeed in the next decade will be the ones that treat cloud consumption the way they treat cybersecurity, system readiness, and mission engineering: with **continuous attention, structured governance, and measurable accountability**.

At G2 Ops, we believe the future belongs to teams that embrace questions like: *Do we understand our cloud footprint? Can we model it? Can we tune it? Can we defend it?*

Responsible cloud engineering is not about spending less. It is about **spending with intention**, aligning digital infrastructure with mission outcomes, and ensuring the cloud remains an accelerant, not a liability.

We encourage leaders across government and industry to take a fresh, honest look at their cloud environments. Validate what is needed, turn off what is not, and commit to engineering discipline as the path to digital resilience.

Small changes compound. And as SOFIA demonstrated, the impact can be immediate, measurable, and strategically meaningful.

G2 Ops leverages over a decade of experience integrating Systems, Cybersecurity, and Software Engineering techniques to provide solutions to a growing list of Government and private customers. We combine cutting edge tools with innovative engineering practices, data analytics, and risk algorithms that enhance visibility into complex infrastructures, optimizing resiliency in system design and operations.

G2 Ops is a woman-owned small business led by an executive staff known for providing innovative solutions to solve our nation's most complex engineering challenges. G2 Ops has been named to the Inc. 5000 list of America's fastest growing companies each of the last 8 years (2018-2025) and has locations in Arlington, VA, Virginia Beach, VA, and San Diego, CA.