

# Car Counting: Gambling with OPSEC

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“The people in those camps probably know better than we do exactly what time the satellite’s going to pass overhead...unless you authorize us to re-task them, we are never going to know which camp they’re at.” In this scene from Patriot Games, Jack Ryan is foiled by a terrorist cell applying operational security (OPSEC) against our ability to use satellite imagery. He is blind and frustrated. What was once the exclusive dominion of government programs is readily accessible to civilians. Today, 0.3-meter, high-resolution satellite imagery is sold by a growing number of commercial vendors. Synthesizing these products with artificial intelligence to analyze parking lots produces lucrative reports for investment firms with predictable and repeatable results. This same model, when applied to sensitive Department of War (DoW) locations, can yield outputs of similar effect. Many will posit that this “parking lot” collection yields nothing of value or that it is a reality we must simply accept. However, this paper will demonstrate that the combination of unregulated satellite imagery, and the ever-growing capacity of AI to process large volumes of visual data, provides competitors with a powerful analytical tool and presents a significant OPSEC gap. The DoW must move at the pace of these changes and enact policies that support simple but robust screening of high-value parking lots. By closing this gap, the DoW will deny this type of passive collection to foreign collectors while protecting the operational status of our agencies, which will quickly become what it should be to any foreign competitor: an enigma.

## Commercial High Fidelity Satellite Market

For decades, satellite imagery was once the exclusive product of government agencies, however, this is no longer a reality. Today, companies such as Vantor and Planet Labs offer high-fidelity imagery to any customer for a price. For example, a Vantor subscription provides access to .3 to .5 meter imagery for \$10,000–\$30,000 per seat annually (Pande, 2025). A resolution of .3 meters enables an analyst not only to count vehicles but also to identify them by make and model. Through sub-pixel enhancements, these images can replicate .15 meter resolution for any customer willing to pay \$30–\$100 per km with a 100 km minimum order (LAND INFO Worldwide Mapping, n.d.). These costs increase rapidly if a satellite needs to be re-tasked to meet customer deliverables. However, these expenses are negligible for competitors services.

Unfortunately, OSPEC concerns are largely absent in today’s commercial market (figure A). While U.S. vendors like Vantor stipulate they have guardrails to prevent unauthorized use, these measures are irrelevant to foreign corporations, and demand for these products is

### 30cm satellites in orbit and planned

	Company	Satellites in orbit	Planned satellites	Country
Established players	AIRBUS	Pleiades Neo 3 (2020) Pleiades Neo 4 (2021)	Pleiades Neo 5 & 6 (crashed during rocket launch accident in Dec 2022 but will be relaunched in the future)	
	MAXAR	WorldView-3 (2014) WorldView-4 (2016-2021)	WorldView Legion (2023-2024) (constellation of 6 satellites)	
	ISI IMAGERY INTL.	EROS C1 (2020) EROC C2 (2021) EROC C3 (2022)	EROS C4 (2026)	
	SIIS SATELLITE INTL. SYSTEMS	N/A	Kompsat 7 & 7A (2024) SpaceEye-T (2024)	
Emerging players	planet.	N/A	Pelican 32 satellites (2023-)	
	China Space	SuperView Neo 1 (2022) SuperView Neo 2 (2022)	SuperView Neo 16 satellites before 2025	
	SATELLOGIC	N/A	40+ satellites planned	
	ALBEDO	N/A	Albedo plans 10cm GSD constellation with 24 satellites to be launched between 2024-2027	
Total number of satellites		8 satellites	123 satellites	

figure A:foreign Imagery Market Saturation (GEOAWESOME, 2023)

exploding. In the space industry, the French conglomerate Airbus Space Systems reported a 40% increase in nine-month revenue as of October 2025 (de Selding, 2025). Similarly, the Chinese provider, China Siwei, recently launched a constellation of satellites, including 16 high-resolution (.2 to .3 meter) optical satellites and another 8 synthetic aperture radar (SAR) satellites offering .5 meter resolution imagery that does not rely on clear skies (GEOAWESOME, 2023). As the new and rapidly evolving market proves: what was once sensitive technology has swung wildly into the public square. Our OSPEC response must be equally aggressive when we examine how this new market is being exploited.

## Commercial Parking Lot Density Analysis

Hedge funds and academic institutions are now combining these commercial satellite images with artificial intelligence to extract highly sensitive insight from unwitting corporate targets. Parking lot density analysis (PLDA), also known as alternative data, is as simple as it is brilliant. They synthesize commercial high-resolution satellite imagery and machine learning to actively track meticulous details of retail parking lots. By documenting baseline vehicle volumes and fluctuations at specific locations over a year, they can estimate total consumer foot traffic. Research shows that hedge funds using commercial imagery data can achieve a high level of predictive accuracy for retail earnings that exceeds market estimates by several percentage points (Dore & Shive, 2022). In another comprehensive study, researchers from Eagle Alpha and Professor Panos Patatoukas of the University of California combined 4.7 million daily observations across 67,078 unique retail locations with machine learning to automate the PLDA process (see figure B) (Mayhew, 2025). The results were equally significant. Patatoukas noted that this informational advantage yields a 4% to 5% increase in stock price predictability around quarterly earnings—a significant return in a short window (Hass, 2018). They knew the direction of a stock before anyone.



[Figure B: Eagle Alpha AI-Assisted PLDA (MAYHEW, 2025)]

Clearly, the effectiveness of Parking Lot Data Analysis (PLDA) is evident in its financial value. The predictive nature of this data has made it worth tens of millions, which is why investment bankers like UBS gladly pay millions every year for high-fidelity imagery. The skyrocketing demand for commercial satellite imagery (CSI) is a strong indicator that PLDA, as a business intelligence process, is being adopted at a similar rate. If the simple act of “counting cars” provides this level of quantitative advantage

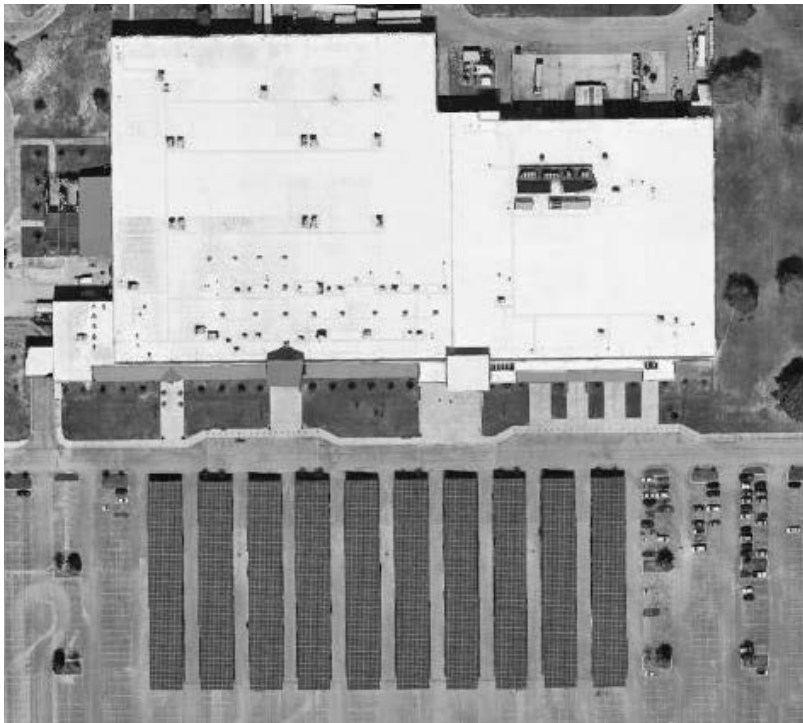
for investment firms, then what insights could a competitor deduce from applying the same PLDA process to the exposed parking lots of high-value agencies in the DoW?

## Competitor Parking Lot Analysis Applied

It is reasonable to assume that foreign PLDA programs targeting unwitting and high-value DoW locations are either under development or are already in place. Companies like Eagle Alpha sell “alternative data” products, such as the one in Figure B, to any buyer. Using either Eagle Alpha’s products or a similar mirrored effort, foreign competitors could reasonably determine:

- **Staffing and Battle Rhythm Density:** Presuming a 1:1 ratio for car to person, total staffing can be exposed. Images taken on weekends or on federal holidays could provide insights into whether an organization has 24-hour staffing or how many personnel it may have deployed (if there is a collection of cars grouped and parked at the edges of the lot).
- **Socioeconomic Profiling:** The prevalence of luxury features, such as sunroofs, can indicate the salary bands an organization offers. In 2025, SUVs accounted for 43.1% of the sunroof market; notably, 40% of SUV buyers earn over \$100,000 annually (Hedges & Company, 2019; Mordor Competitors, 2026). If a foreign competitor purchases, or organically uses, .3 meter imagery from an unregulated provider, this type of second-tier analysis is possible.
- **Reductions in Force:** If a Congressional funding shift results in significant fiscal realignment for the DoW, the delta from prior PLDA inventories could enable a competitor to discern the impact on personnel strength.

## Competitor Parking Lot Analysis Denied



[Figure C: KAFB (Google 2024)]

When parking lot screening is enabled, even unintentionally, the OPSEC effects are striking. Figures C and D show an image of a commissary at Keesler Air Force Base (KAFB). In this example, the Air Force installed a solar panel superstructure over a preexisting parking lot. It is doubtful that it was built to mitigate the grocery shopping patterns of resident Airmen. However, the panels, which have an appearance similar to redaction marks on a downgraded report, completely screen the actual volume of vehicles. If the Air Force chose to screen this entire parking lot, what could any foreign competitor deduce, even with 0.3-meter imagery? Now, imagine this same level of OPSEC screening structures built over to the parking lots of the National Security Agency or Special Operations Command.



[Figure D: KAFB (Davis, 2022)]

## Conclusion

The “transparent battlespace” is a theoretical concept that is rapidly becoming a reality. The commercial saturation of high-fidelity satellite imagery, particularly when synthesized with artificial intelligence, provides foreign competitors with a potent tool for analysis. The DoW should not gamble by presuming that they do not also have this capability. Therefore, as the commercial imagery landscape rapidly evolves, the DoW’s response must match its velocity. The solution is not complex, as the earlier example using solar panels proves. By closing this OPSEC gap with the engineering of literal blind spots in a foreign PLDA process, the DoW will force a reactionary shift. Their analysts will find themselves in a position reminiscent of Jack Ryan at the beginning of this paper: mitigated and frustrated.

## References

- de Selding, P. B. (2025, October 29). Airbus Space Systems reports 40% increase in revenue for 9 months ending Sept. 30. SpaceIntelReport. <https://www.spaceintelreport.com/airbus-space-systems-reports-40-increase-in-revenue-for-9-months-ending-sept-30/>
- Geoawesome. (2023, June 8). A revolution is coming in satellite imagery: Why 30cm satellites are set to transform the industry. <https://geoawesome.com/eo-hub/a-revolution-is-coming-in-satellite-imagery-why-30cm-satellites-are-set-to-transform-the-industry/>
- Google. (n.d.). Keesler Air Force Base [Map]. Retrieved February 18, 2024, from <https://earth.google.com/web>
- Google. (n.d.). Missile Competitors and Space Command [Map]. Retrieved February 18, 2024, from <https://earth.google.com/web>
- Haas Newsroom. <https://newsroom.haas.berkeley.edu/how-hedge-funds-use-satellite-images-to-beat-wall-street-and-main-street/>
- Hedges & Company. (2019, January). Automotive trends: New car buyer demographics. <https://hedgescompany.com/blog/2019/01/new-car-buyer-demographics-2019/>
- Katona, Z., Painter, M., Patatoukas, P. N., & Zeng, J. (2018). On the capital market consequences of big data: Evidence from outer space [Working paper]. SSRN. <https://doi.org/10.2139/ssrn.3222741>
- LAND INFO Worldwide Mapping. (n.d.). Satellite imagery pricing. Retrieved February 12, 2025, from <https://landinfo.com/satellite-imagery-pricing/>
- Mayhew, M. (2022, November 14). Satellite data for investors: A note on recent market trends and demand drivers. Integrity Research. <https://www.integrity-research.com/satellite-data-for-investors-a-note-on-recent-market-trends-and-demand-drivers/>
- Novelly, T. (2026, January 21). Where's all that Golden Dome money going? Lawmakers want to know. Defense One. <https://www.defenseone.com/policy/2026/01/wheres-all-golden-dome-money-going-lawmakers-want-know/410828/>
- Pande, A. (2023, December 1). Demystifying satellite data pricing: A comprehensive guide. Geoawesome. <https://geoawesome.com/demystifying-satellite-data-pricing-a-comprehensive-guide/>

