

ICARUS matrix: generating novel scenarios in outer space cybersecurity

Instructions: Pick a variable from two or more columns to construct a scenario. This is not a comprehensive list but only a starter kit.

	A: Threat actors	B: Motivations	C: Cyberattack methods	D: Victims / stakeholders	E: Space capabilities affected
1	Major space-faring states	Nationalism	Insider attack	Major space-faring states	GPS / GNSS
2	Other space-faring states	Dominance / influence	Social engineering	Other space-faring states	Earth observation / remote sensing
3	Non-space-faring states	Financial / economic	Ransomware	Non-space-faring states	Military intelligence and capabilities
4	Insider threats	Fraud	Honeypot	State-owned entities	Spacecraft, robotic or crewed
5	Political terrorists	Employment	Sensor attack	Military and other contractors	Life-sustaining services
6	Mercenaries	Blackmail / coercion	Signals jamming	Scientific organizations	Other essential services
7	Eco-terrorists	Terror	Signals spoofing or hijacking	Corporations	Other safety of personnel / others
8	Corporations	Warfare	Eavesdrop / man-in-the-middle	Wealthy individuals	Loss of sovereignty / control
9	Mobile service providers	Disinformation	Network security	General population / society	Earthbound services
10	Launch service providers	Espionage	Supply chain, hardware	Indirect / secondary stakeholders	Emergency services
11	Social engineering groups	Sabotage	Supply chain, software	Marginalized populations	Financial transactions
12	Organized crime	Extremist ideology	AI / ML / computer vision	Social movements	Mining or manufacturing
13	Chaos agents	Cult of personality	Attack coverup	Cultural / religious groups	Scientific capability / research
14	Religious / apocalyptic	Paranoia / anti-technology	Software hacking	Unions / labor reps	Asteroid detection systems
15	Other ideological groups	Boredom / trolling	Systems security	Customers / users via their data	Space weather monitoring
16	Proxies / agents, esp. unwilling	See world burn / chaos	Multi-phase attack / APT	Individual targets	Space traffic management
17	Noncombatants, esp. unwilling	Social / distributive justice	Cloud hacking	Critical specialists	Space tourism
18	Amateur hackers / enthusiasts	Intellectual / tech demo	Account compromise	Critical infrastructure	Launch capabilities
19	AI / machine learning	Revenge / retaliation	Quantum computing / comms	Internet / media / entertainment	Communications
20	Unknown / anonymous	First contact, for and against	Death by 1,000 cuts / long game	AI / machine learning	News / social media