

MOODY'S

2024 NASA Cost & Schedule Symposium
Supplier Risk Management

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Moody's is an exponential risk assessment provider that provides comprehensive perspectives on risk to our diverse base of more than 15,000 customers in 165 countries, including 97% of the Fortune 100.



RANSOMWARE X SUPPLY CHAIN



CLIMATE X BUSINESS CONTINUITY



CYBER RISK X AUTOMATED AGRICULTURE



INFLATIONARY PRESSURE X CREDIT RISK

The Era of Exponential Risk

Organizations and nations now find themselves increasingly vulnerable to a risk “domino effect.”

Recent events have further emphasized the need for a holistic of company understanding and of its customers.



SUPPLY CHAIN X SOVEREIGN DEBT



ENERGY INFLATION X COMMERCIAL REAL ESTATE



ETHICAL RISK X SUPPLY CHAIN



GOVERNANCE X COUNTERPARTY RISK

Who is Moody's?

MOODY'S

RATINGS

MOODY'S RATINGS

We provide forward-looking opinions of the relative credit risks of financial obligations issued by non-financial corporates, financial institutions, structured finance vehicles, project finance vehicles, and public sector entities.

ANALYTICS

MOODY'S

We provide rich data, expert analysis, robust tools supported by groundbreaking technologies, and a view of the future to enable our customers to unlock opportunity, advance their business, and act decisively.

PHILANTHROPY

MOODY'S FOUNDATION

We direct resources, tools, and services to support social and economic equality in the areas where we can make the most impact: helping entrepreneurs to scale their small businesses and restoring ecosystems in emerging markets.

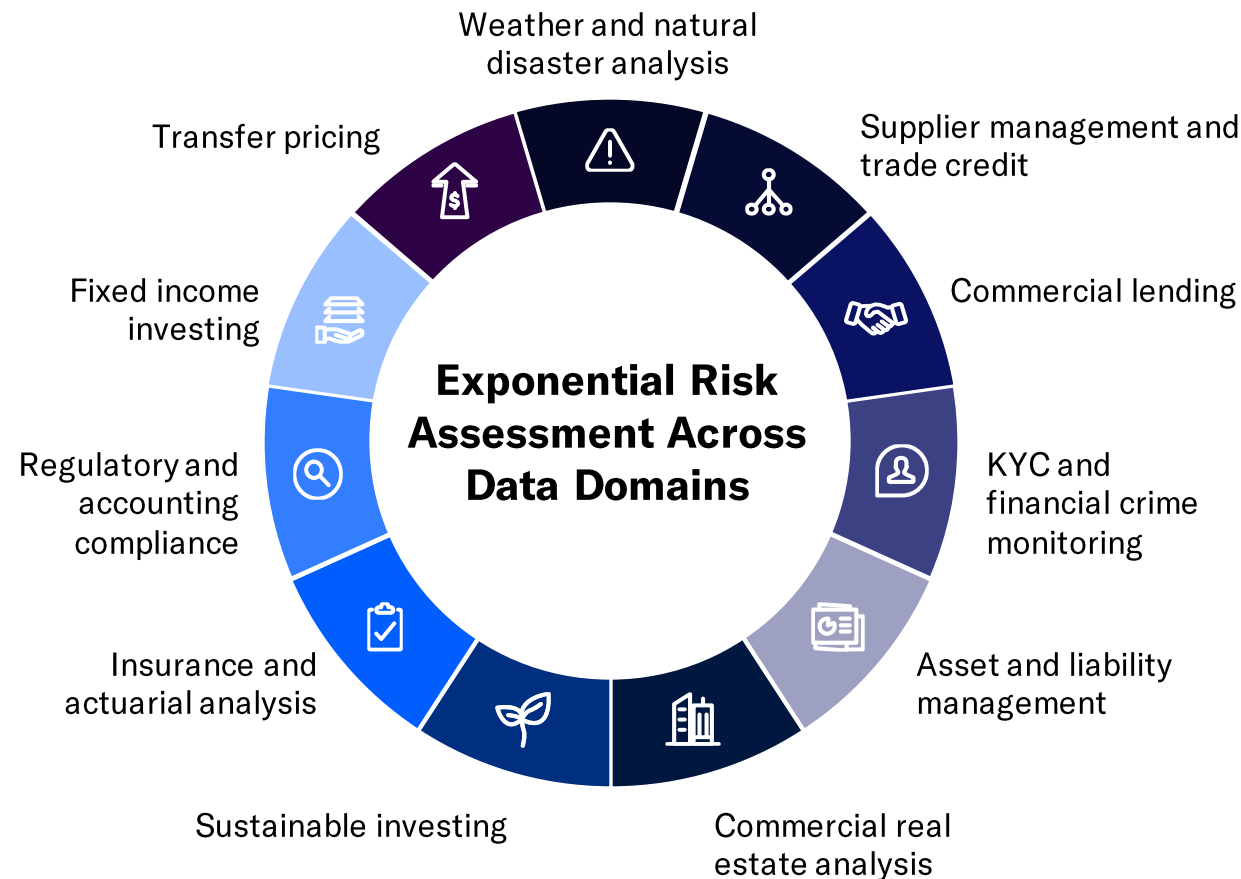
Awards & Recognition





Our Journey in Supplier Risk Management

We operate in many data domains



Curated data and analytics



489 million+
Public & private entities



21 million+
Risk profiles



325 million+
Entities scored against cyber risks



11,000+
Companies with sanctions risks



360,000+
Companies on watchlists

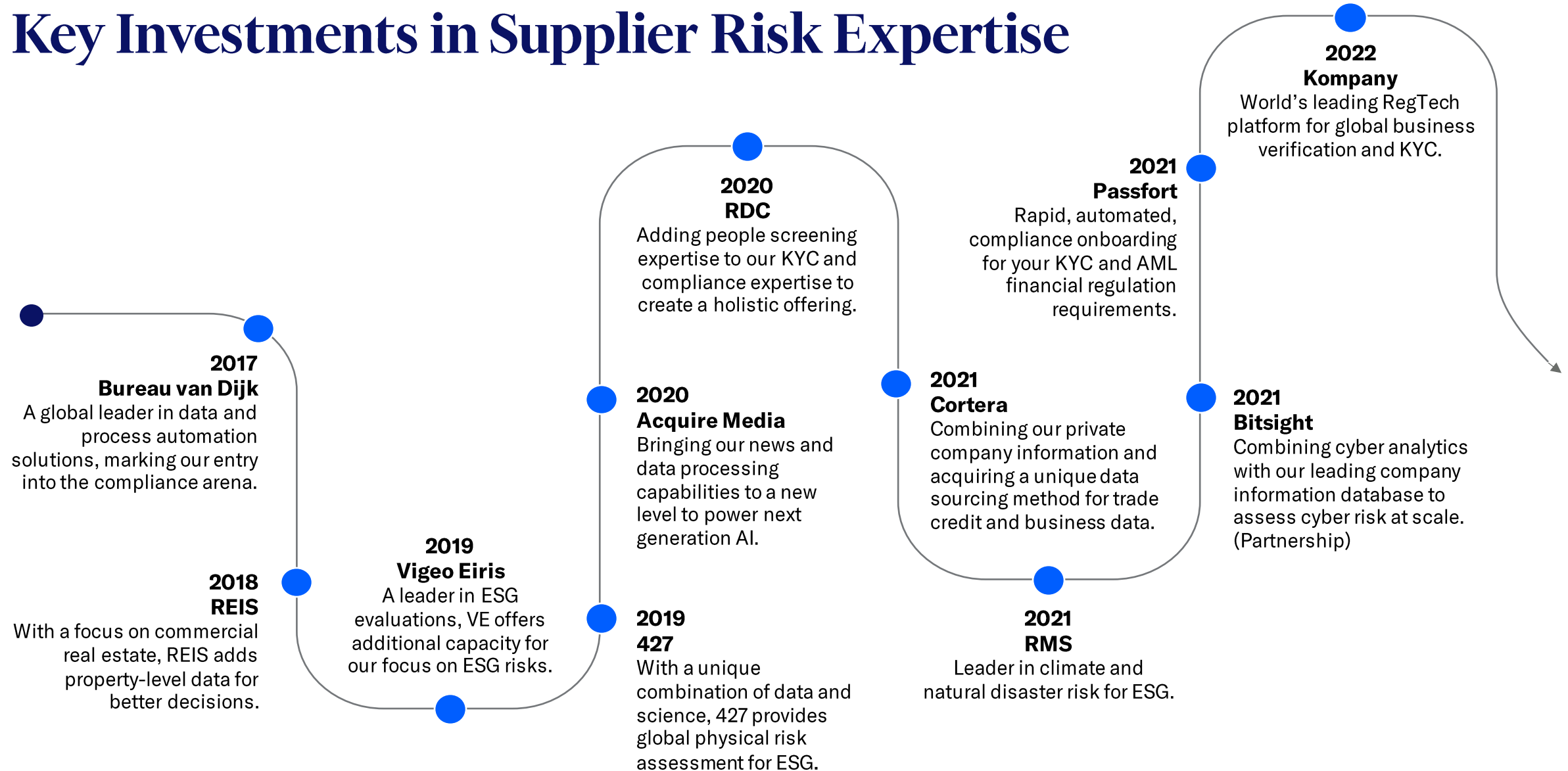


800,000+
Entities with adverse media



90 million+
Entities with at least one beneficial owner

Key Investments in Supplier Risk Expertise





Supply Chain Challenges & Risks

Major Supply Chain Challenges



Supplier performance and disruption risk



Materials shortages and price increases pre-dating the pandemic



Unprecedented demand planning difficulty



Complexity of sanctions, anti-corruption, and other areas of compliance



Labor shortage and increased competition for skilled resources



Geopolitics leading to low supply and high prices



Deteriorating global economy



Inflation complicating price negotiations with suppliers



Need for additional inventory of important materials



Cyber attacks on suppliers and threats to sensitive data, documents, and drawings



Limited visibility into suppliers and the products, services, and materials they deliver



Environmental, social, governance (ESG) performance and susceptibility to climate disasters

Visibility into the most Important Supplier Risks



Financial / Supplier Performance Risk

What does the financial health of your key suppliers predict about their near-term performance?



Geopolitical Risk

What important disruption risks stem from the location of key suppliers' operating sites?



Cyber Risk

What level of cyber risk is associated with your key suppliers?



Regulatory / Compliance Risk

What is a supplier's risk level for key compliance areas?



ESG / Sustainability Risk

What ESG risks and opportunities do your important suppliers create for you?



Operational Risk

Which of your critical suppliers have vulnerable supply chains?



Reputational Risk

What significant risks are created for your company by suppliers' scandals?



Natural Disasters Risk

Which key supplier sites are at risk of significant disruption from natural disasters?



Supplier Coverage

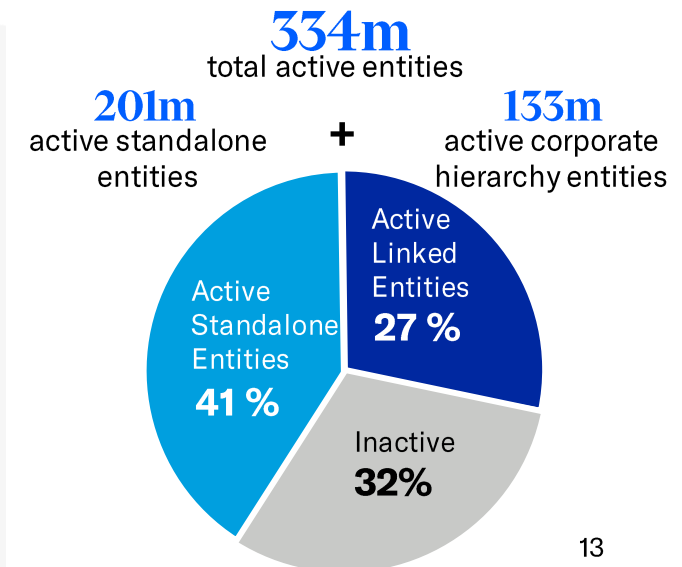
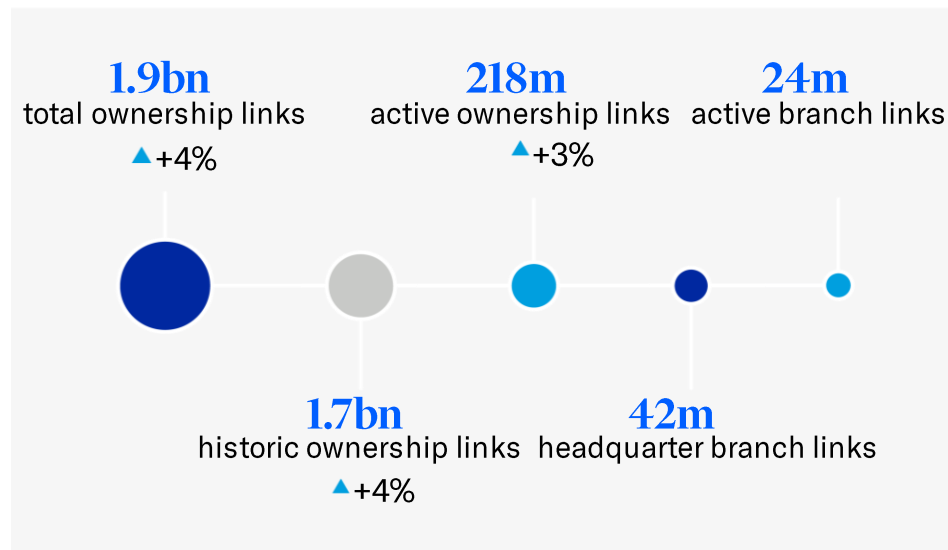
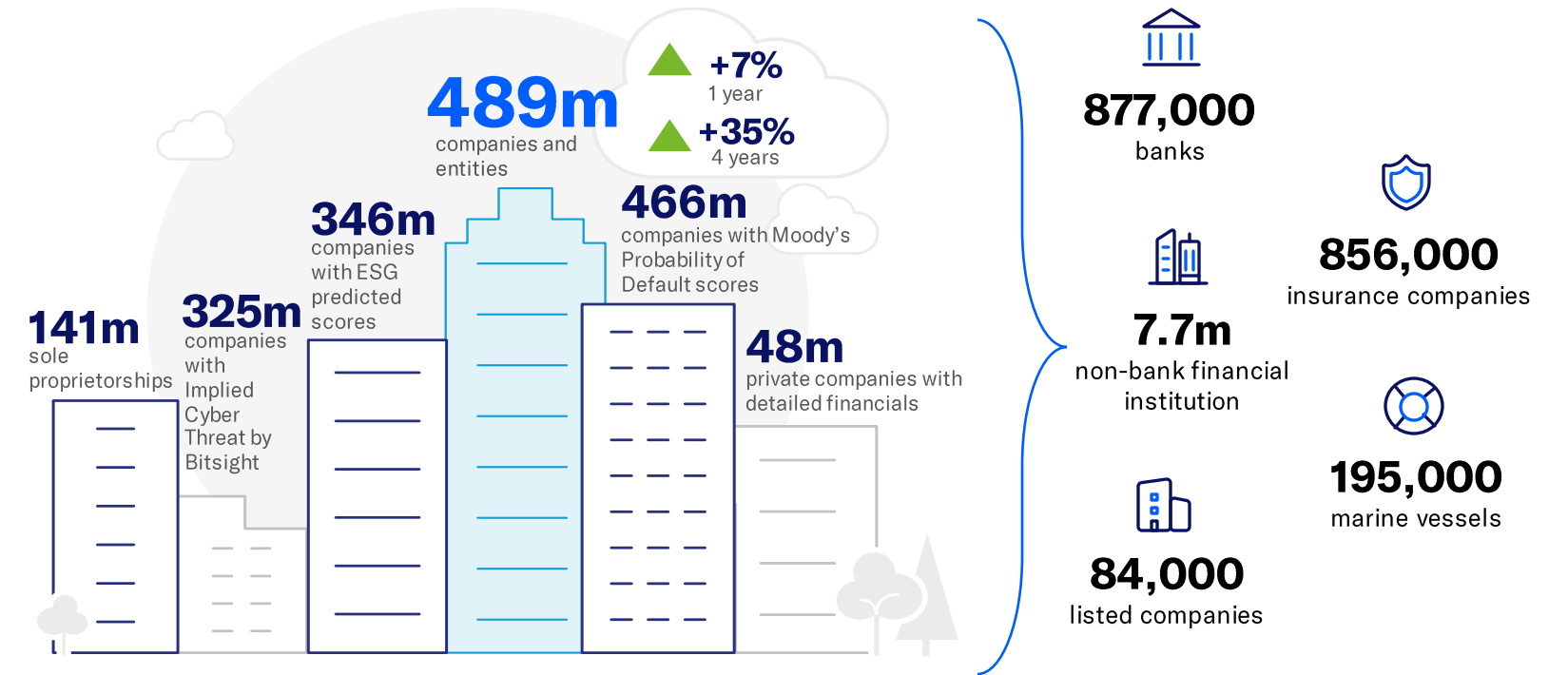
Information at Speed & Scale

Orbis is the most powerful comparable data resource on private and listed companies.

- Access standardized and comparable data, extensive corporate ownership structures, and a holistic view of emerging risks
- We bring supplier data to life by enriching it with our content and presenting it in simple dashboards, so you can interpret it quickly and work more efficiently

Note: Figures collected January 31, 2024. Figures are rounded.

MOODY'S



US Entities in Air & Spacecraft Fields

429,100+

Entities involved in **air and spacecraft-related** fields worldwide

46,500+

Entities scores against **ESG exposure**

46,300+

Entities with risk indicators directly or across the ownership chain and network

9,800+

Entities with a least one **shareholder**

6,800+

Entities with watchlist and **sanctions risks** across the ownership chain and network

6,200+

Entities with **reputational risk and PEP exposure** across the ownership chain and network

265+

Entities with direct exposure to reputational risk and PEPs

180+

Entities with shareholders from risky jurisdictions, including Russia, China, Iran, Turkey, and tax havens

106+

Entities directly on watchlists and / or sanctioned







NASA Prime Contractors

Managing complex programs with a growing number of suppliers poses increasing challenges.

Our Capabilities

- Compare and contrast suppliers across risk factors
- Alert notifications on significant changes
- Easily spot risk factors that need due diligence

Company name Latin alphabet		Flags	Probability of default %	Payment risk score - value Last month	ESG - Overall score Last avail. yr	Cyber risk - Rating Last month
BOEING COMPANY (THE)	 	  	0.27	506	45	670
RTX CORP	 	  	0.04	508	31	660
LOCKHEED MARTIN CORP	 	  	0.03	640	40	640
NORTHROP GRUMMAN CORPORATION	 	 	0.03	620	43	690
LEIDOS HOLDINGS, INC.	 	 	0.05	731	37	710
SPACE EXPLORATION TECHNOLOGIES CORP.	 		1.28	511	24	460
SCIENCE APPLICATIONS INTERNATIONAL CORP	 	 	0.05	613	31	580
KBR, INC.	 	  	0.13	548	31	730
THE JOHNS HOPKINS UNIVERSITY INCORPORATED	 		0.78	342	30	530
ARCTIC SLOPE REGIONAL CORPORATION	 		0.91	682	28	710
AEROJET ROCKETDYNE HOLDINGS, INC.	 	 	0.04	686	24	700
CALIFORNIA INSTITUTE OF TECHNOLOGY	 		0.96	329	18	520
JACOBS ENGINEERING GROUP INC	 		7.04	144	24	n.a.
SCIENCE SYSTEMS AND APPLICATIONS, INC	 		0.51	860	23	640
SYNCOM SPACE SERVICES LLC	 		5.69	335	27	n.a.
ASSOCIATION OF UNIVERSITIES FOR RESEARCH IN A...	 		0.61	400	25	n.a.
PERATON CORP	 		2.74	n.a.	24	n.a.
RADIANT MISSION SOLUTIONS INC	 		3.98	370	31	640
STATE OF CALIFORNIA CONTROLLERS OFFICE	 		2.43	381	29	620



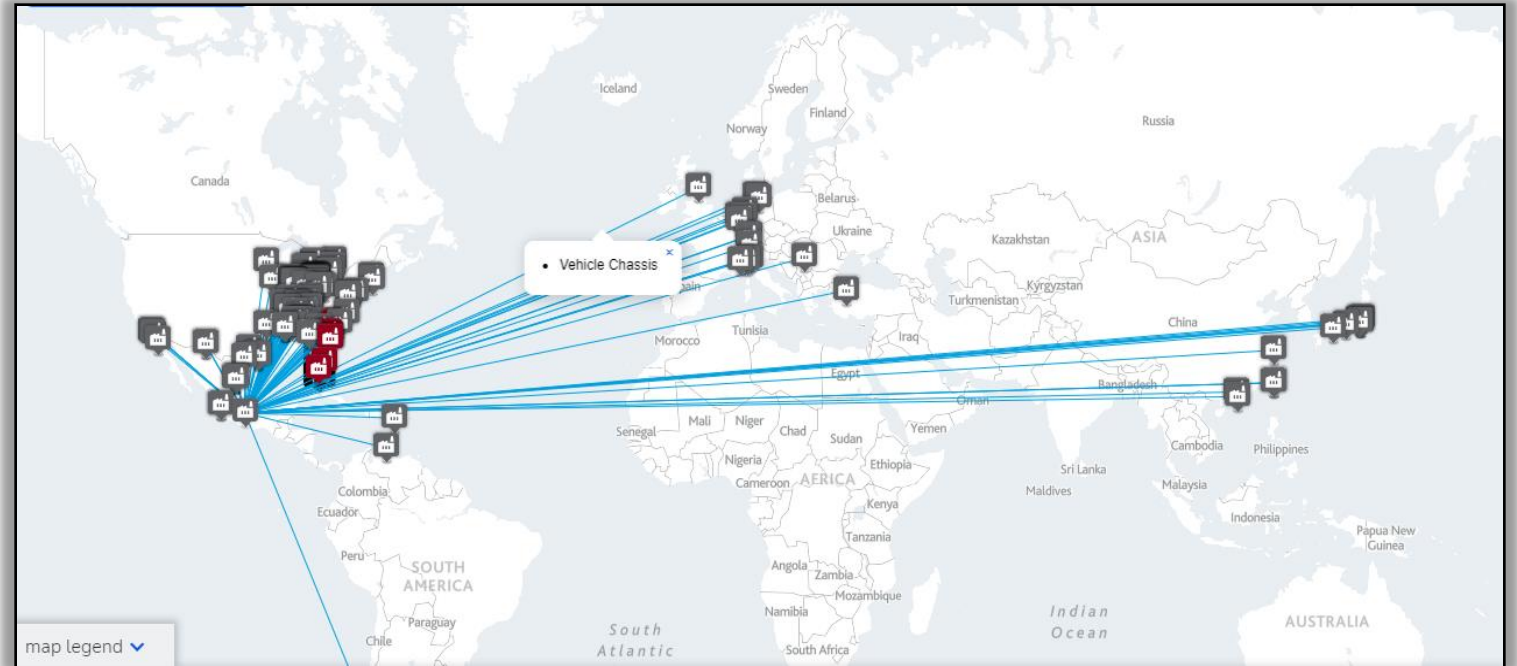
Risk Factors

Operational Risk

The biggest challenge today is gaining visibility and transparency across supply chains to identify and mitigate key factors that expose you to risk.

Our Capabilities

- Gain visibility into geographic concentration, supplier concentration, and key parts/components concentration
- Identify vulnerabilities in critical suppliers

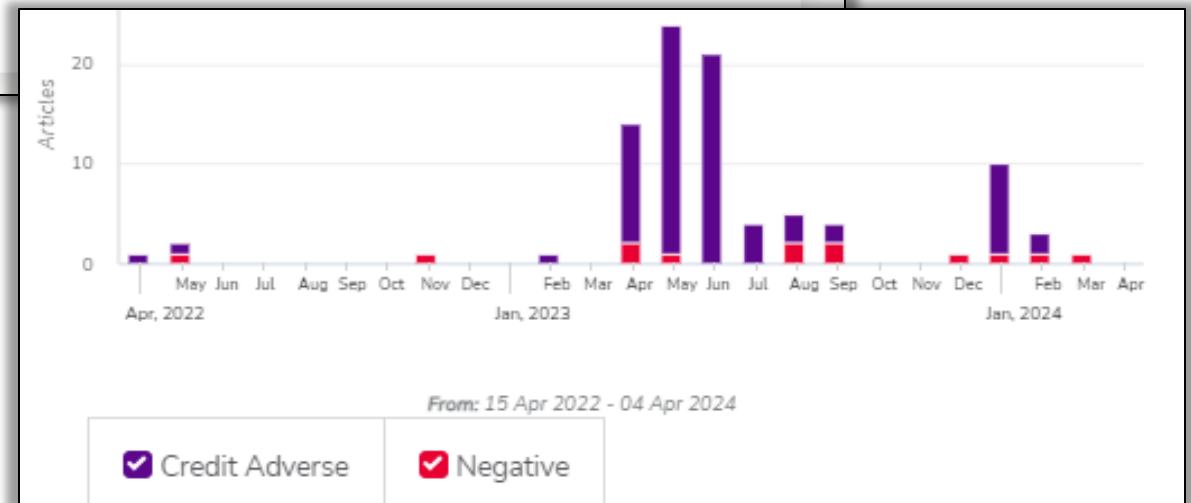
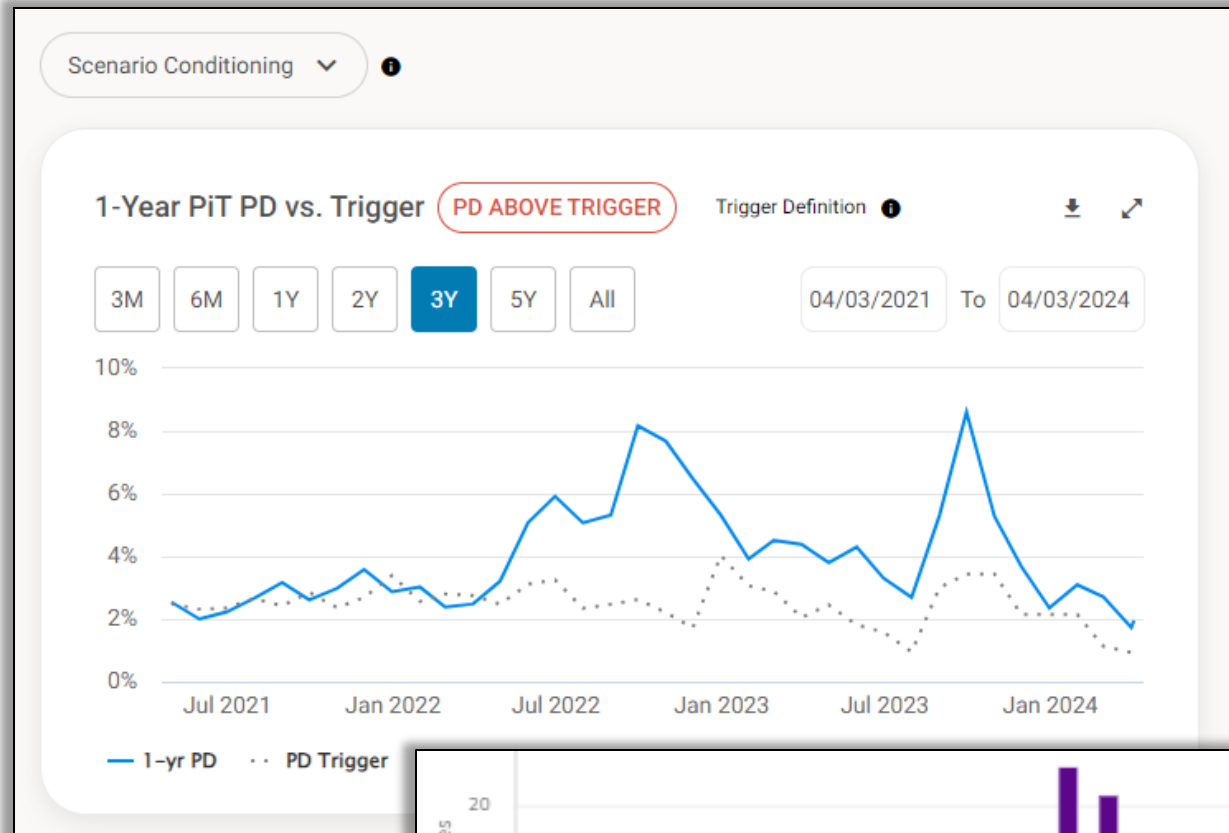


Financial Risk

Deterioration in a supplier's financial health often leads to lower employee morale and shortage of problem-solving resources, which translate to poor product quality, increasing cost, and delivery problems.

Our Capabilities

- 12 month forward looking probability of default
- Comparison with peer group
- Credit sentiment score from real-time news



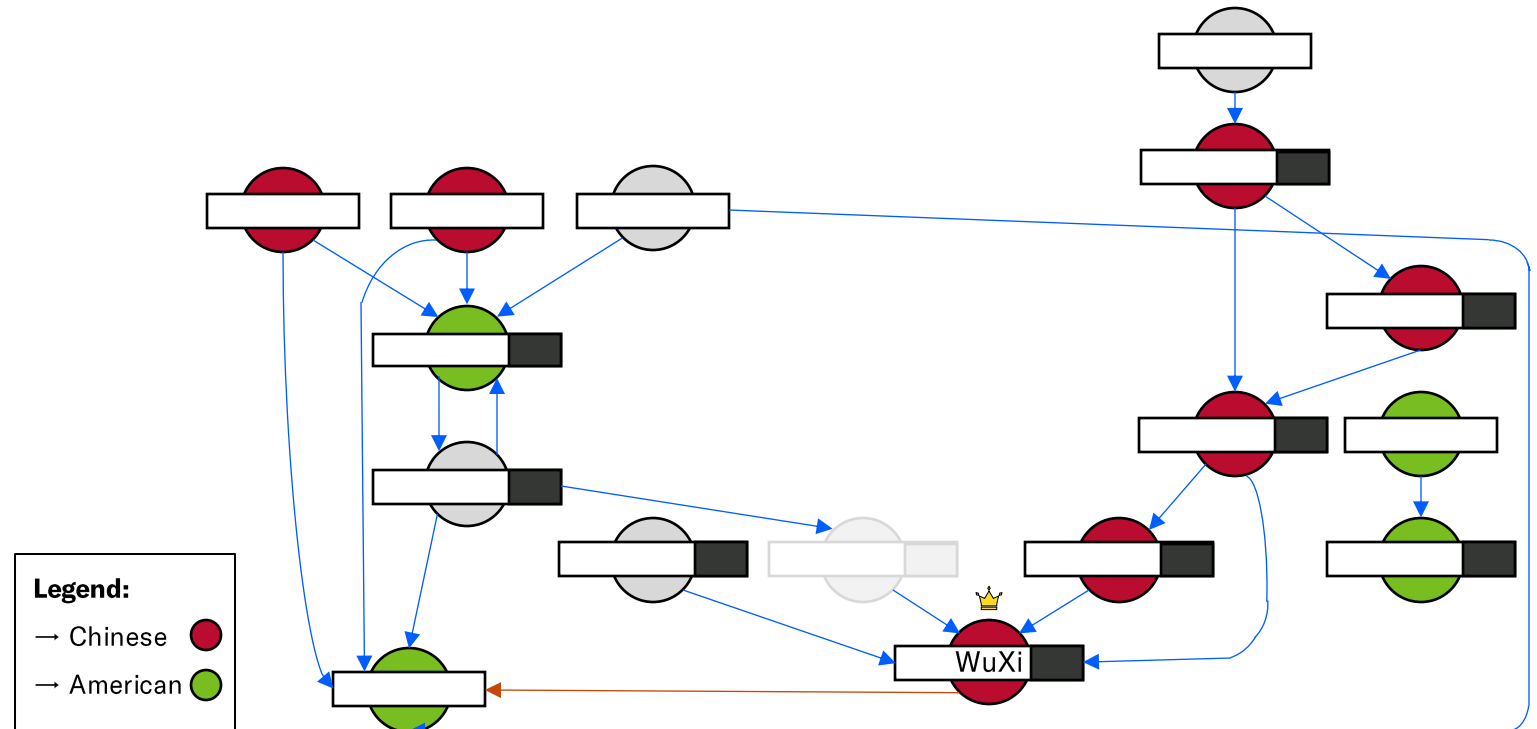
Regulatory / Compliance Risk

Regulatory & Compliance risks are now being vigorously enforced by authorities.

Our Capabilities

Facilitate investigations into:

- Foreign government influence
- Beneficial ownership
- Sanctions, PEPs, state-owned enterprises
- Anti-bribery & corruption
- Nonconformance with European directive on Supply Chain



Riskography: A class action lawsuit was filed against WuXi PharmaTech (Cayman) Inc. under Sections 10(b) and 20(a) of the Securities Exchange Act of 1934, with the company's subsidiaries being WuXi AppTec, WuXi Biologics, and WuXi NextCODE.

- US lawmakers urged the Biden administration to conduct a formal investigation into WuXi AppTec, citing concerns about its ties to the Chinese Communist Party (CCP) and military, potentially endangering US national security.
- The lawmakers accused WuXi AppTec of being closely affiliated with The People's Liberation Army, the armed wing of the CCP.
- Intelligence officials informed senators that WuXi AppTec had transferred US intellectual property to Beijing without consent, raising further concerns about the company's activities.

Regulatory / Compliance Risk

Shell companies are being formed and dissolved at an alarming pace.

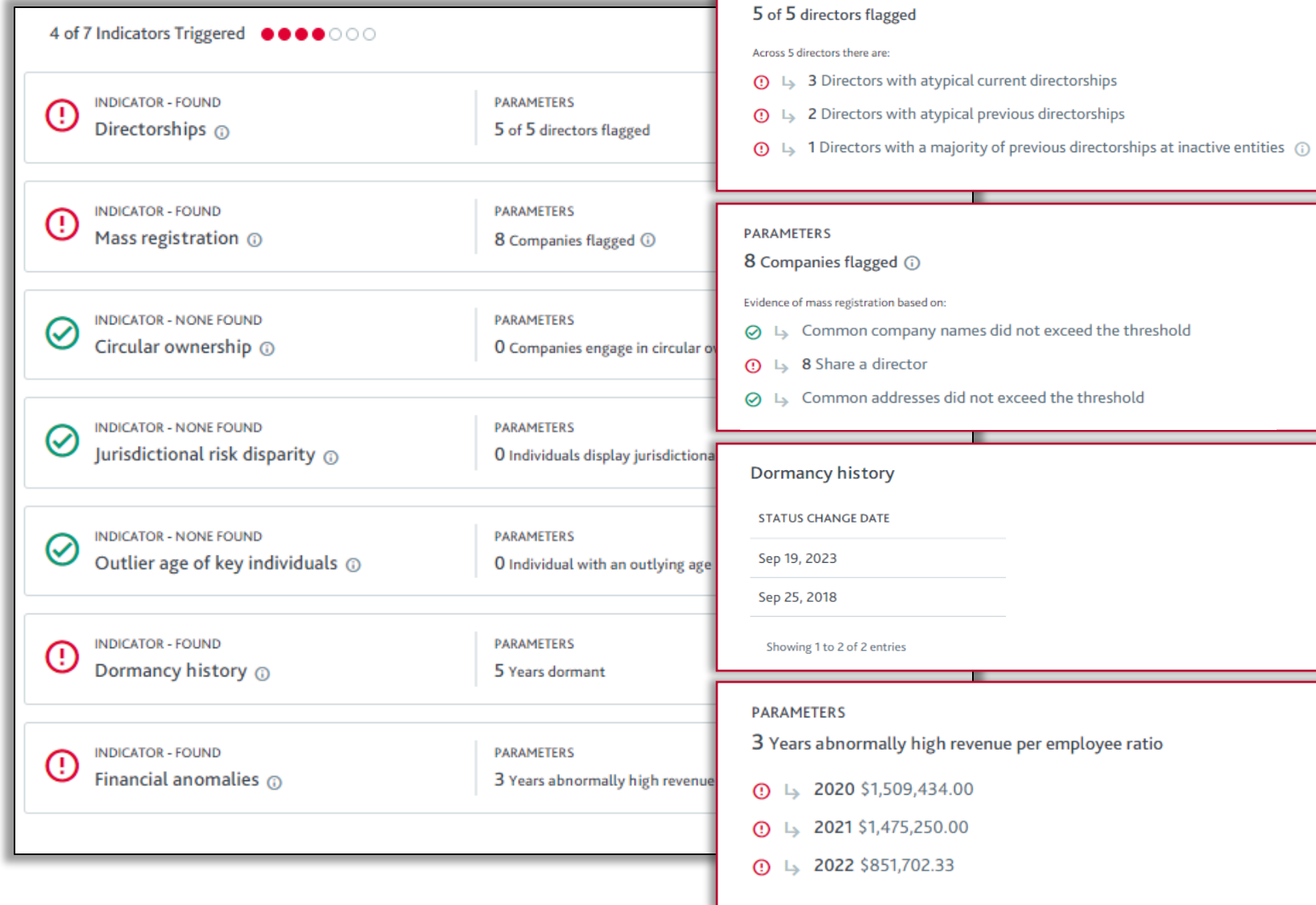
Our Capabilities

Gain visibility into:

- Unusual number of directorships and many companies sharing a common director
- Companies that have been dormant for many years before they suddenly become active
- Companies that have atypically high revenue and very low employment count



MOODY'S



The company shown here has multiple historical and current risk findings associated with fraud, SEC violations, Regulatory Action, Business Crimes, and Misconduct, ranging from 2012 to 2024.

- Access risk-relevant information about a person or organization, collated into a risk profile
- Up-to-date summaries on risk profiles

Recent Events (1)

BUS_Business Crimes (Antitrust, Bankruptcy, Price Fixing) / PRB_F
 Texas Attorney General has opened an investigation into Spirit Aero certain airplane parts provided to Boeing. Spirit AeroSystems, "one commercial airplanes," according to the company, produces the fus 737, apparent manufacturing defects have led to numerous concern air. The Texas Business Organizations Code authorizes the Office organization, conduct, and management by requesting to examine p instructed to produce a variety of documents relevant to manufactu <https://texasattorneygeneral.gov/news/releases>, Texas Attorney Ge

FRD_Fraud, Scams, Swindles / DMS_Dismissed, Date: 21/08/2023
A U.S. appeals court upheld the dismissal of a lawsuit accusing Boeing supplier Spirit AeroSystems of misleading investors by withholding information about production cuts on the 737 MAX following two crashes in 2018 and 2019. Court of Appeals ruled that investors pursuing the proposed class action against Spirit had not met the "stiff burden" of adequately alleging anyone intended to defraud them., Approval Date: 21/08/2023, Reuters Article - L1N3A21TM

FRD_Fraud, Scams, Swindles / DMS_Dismissed, Date: 14/05/2015
Judge dismisses investor lawsuit against Spirit alleging fraud, Approval Date: 14/05/2015, LexisNexis Article - 5G0B-5K71-DYJM-M1B8

SEC_SEC Violations (Insider Trading, Securities Fraud) / DMS_Dismisssed, Date: 08/09/2023
United States Court of Appeals for the Tenth Circuit affirmed dismissal of a consolidated putative class action alleging violations of Section 10(b) of the Securities Exchange Act of 1934 (the "Exchange Act"), and Rule 10b-5 promulgated thereunder, against a large aerospace structures manufacturing company (the "Company") and certain of its executives. Meitav Dash Provident Funds and Pension Ltd., et al. v. Spirit AeroSystems Holdings, et al. The Northern District of Oklahoma dismissed plaintiffs' complaint, holding that plaintiffs failed to adequately plead scienter.. Approval Date: 08/09/2023, NewsBank Article - 193E1CDD17880088

SEC_SEC Violations (Insider Trading, Securities Fraud) / SET_Settlement or Suit, Date: 01/07/2023
Throughout the Class Period, Defendants made materially false and/or misleading statements, as well as failed to disclose material adverse facts about the Company's business, operations, and prospects. Specifically, Defendants failed to disclose to investors: (1) that Spirit lacked effective production quality controls; (2) that, as a result, Spirit incorrectly installed fittings designed to join the aft fuselage to the vertical tail for some Boeing 737 Max airplanes that Spirit sent to Boeing; (3) that, as a result, Spirit would have to develop an inspection and repair procedure for the affected fuselages; (4) that the foregoing would negatively impact Spirit's financial results; and (5) that as a result of the foregoing, Defendants' positive statements about the Company's business, operations, and prospects were materially misleading and/or lacked a reasonable basis. Approval Date: 01/07/2023, NewsBank Article - 19280A15AB823EA0

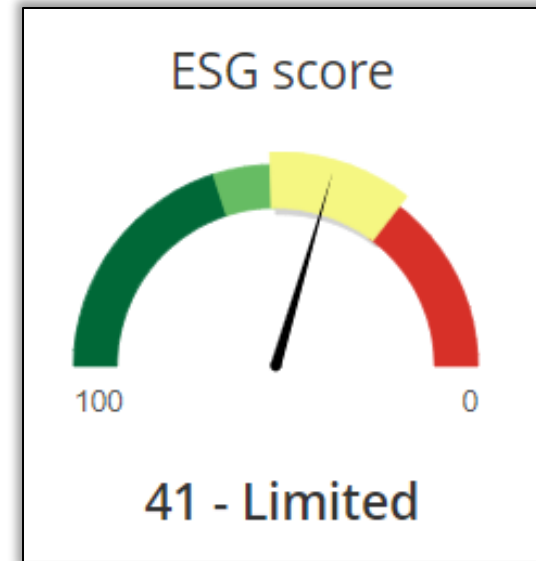
SEC_SEC Violations (Insider Trading, Securities Fraud) / SET_Settlement or Suit, Date: 26/02/2020
Hagens Berman urges investors in Spirit AeroSystems Holdings, Inc who have suffered significant losses to submit their losses now. A securities class action has been filed, and certain investors may have valuable claims. The Complaint alleges Defendants misled investors by misrepresenting and failing to disclose that (1) Spirit lacked effective internal controls over financial reporting; (2) the Company was violating its established accounting principles related to potential contingent liabilities; and, as a result, (3) Defendants financial reporting and statements about Spirits business, operations, and prospects were misleading. Approval Date: 26/02/2020, Acquire Media Alert - 8fd33605b2880ab9ce05bf18fd02a0ba26f9ed

Geopolitical & ESG Risk

Geopolitical events (e.g., Russia & Ukraine War, tensions with China and key countries in the West, sanctions and tariffs) limit supplies, increase supply chain costs, and push global and regional prices up.

Our Capabilities

- Access data on Human Trafficking & Modern Slavery
- Access data on Human Resources, Environment, Business Behavior, Community Involvement, Corporate Governance and Human Rights



Levels of performance: Environmental: 32
Social: 43
Governance: 46

Detailed ESG scores breakdown

	2020	2021	2023
^ Human resources	31	44	44
Promotion of labour relations	39	59	59
Personnel management	25	29	29
Responsible management of restructurings	22	26	26
Career management and promotion of employability	32	36	36
Labour conditions	35	58	58
Improvement of health and safety conditions	35	58	58
Respect and management of working hours	n.a.	n.a.	n.a.
^ Environment	10	34	34
Respect for the environment	32	45	45
Environmental strategy and eco design	35	60	60
Pollution prevention and control (soil, accident)	29	29	29
Development of green products and services	n.a.	n.a.	n.a.
Protection of biodiversity	n.a.	n.a.	n.a.
Impact on the environment	0	30	30
Protection of water resources	n.a.	n.a.	n.a.
Minimising impacts from energy use and financed emissions	0	33	33
Management of atmospheric emissions	0	31	31
Waste management	0	26	26
Management of local pollution	n.a.	n.a.	n.a.
Business travel and commuting	n.a.	n.a.	n.a.
Management of impact from the use and disposal of products	0	26	26
^ Business behaviour	34	36	36
Relations with customer	31	38	38
Product safety (process and use)	31	38	38
Information to customers	n.a.	n.a.	n.a.
Responsible customer relations	n.a.	n.a.	n.a.
Supply chain	25	25	25
Sustainable relationships with suppliers	n.a.	n.a.	n.a.
Integration of environmental factors in the supply chain	25	25	25
Integration of social factors in the supply chain	n.a.	n.a.	n.a.
Irregular practices	37	38	38
Prevention of corruption and money laundering	50	44	44
Prevention of anti-competitive practices	44	44	44
Transparency, integrity of influence strategies and practices	12	23	23
^ Community involvement	25	28	28
Promotion of social and economic development	25	28	28
Impact on society	n.a.	n.a.	n.a.
Societal impacts of company's products/services	n.a.	n.a.	n.a.
Philanthropy	n.a.	n.a.	n.a.
^ Corporate governance	48	51	52
Board of directors	44	51	51
Audit and internal controls	56	59	59
Shareholders	49	49	53
Executive remuneration	43	46	46
^ Human rights	45	50	50
Respect for human rights standards and prevention of violations	49	49	49
Human rights on the workplace	40	50	50
Respect freedom association and right to collective bargaining	34	36	36
Non-discrimination and diversity	43	57	57

Cyber Risk

As companies expand their digital footprint and third-party ecosystem, they become increasingly vulnerable to cyber attacks.

Our Capabilities

- Measure a supplier's exposure to cyber risk
- Quantify impacts of a potential attack
- Quantify the inherent risk of a supplier based on firmographic factors
- Data anchored to leading correlation to bad cyber outcomes



Natural Disaster Risk

Events, such as natural catastrophes, disruptions, disease outbreak, geopolitical, explosions, and labor strikes can impact and disrupt supply chains.

Our Capabilities

- Monitor the impact of natural events and real-time news to mitigate cost increases, schedule delays, etc.
- Forecast future climate risks on important facility locations

Current Impact Events

6 Disasters Events

Bangladesh Government News
[Syria's Assad in UAE for second post-quake Gulf visit](#)
Published: Apr 10, 2023, 8:54:00 AM

Turkish Government News
[Strong international solidarity gives strength to quake-hit Türkiye: Foreign minister](#)
Published: Apr 10, 2023, 4:21:00 AM

Turkish Government News
[Qatari ruler urges int'l community to help Türkiye overcome quake devastation](#)
Published: Apr 10, 2023, 3:57:00 AM

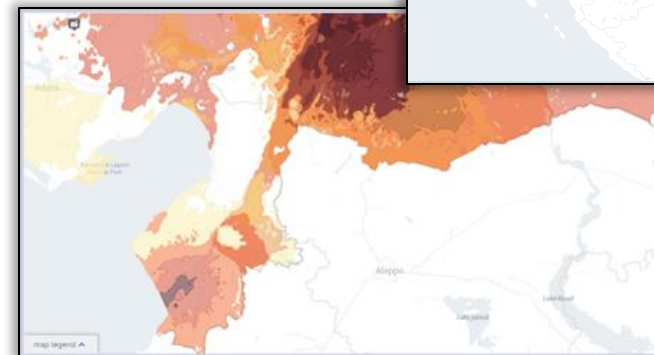
Turkish Government News
[Qatar prepares to send 1,400 mobile homes for quake victims in Türkiye](#)
Published: Apr 10, 2023, 2:21:00 AM

Turkish Government News
[Qatar sends 3 additional planes of earthquake relief to Türkiye](#)
Published: Apr 10, 2023, 2:21:00 AM

Turkish Government News
[Türkiye appreciates post-quake rescue, relief efforts pouring in from around world](#)
Published: Apr 10, 2023, 1:16:00 AM

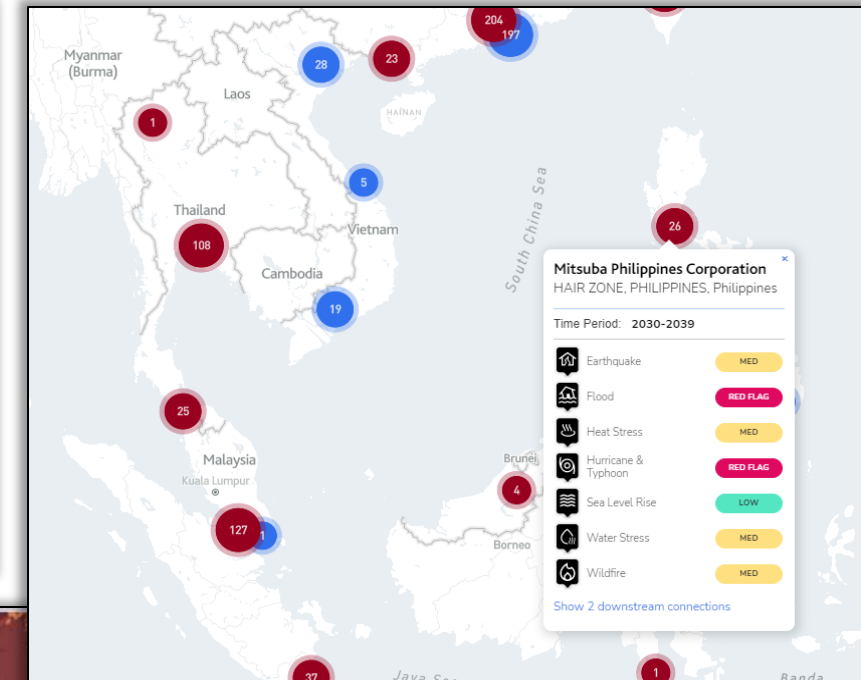


Hurricane Ian



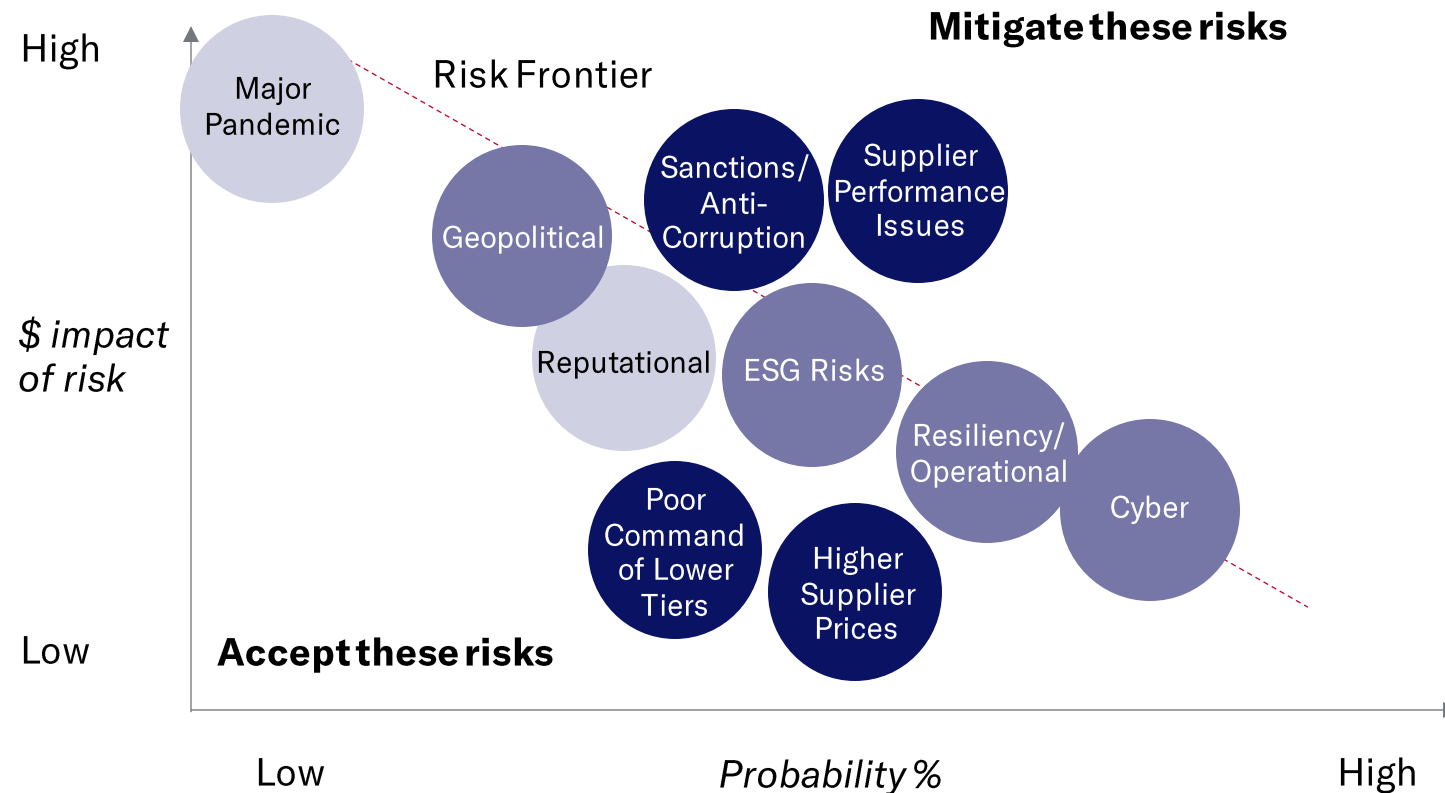
Earthquake in Turkey

Future Climate Risks



Prioritizing Supplier Risk

Mapping risks by their impact and probability



Risk Map Example

- There are several ways to quantify risks and rank them by importance
- Your key business decision is to determine where to draw your risk tolerance line
- Your risk tolerance determines which risks are accepted and which risks need to be mitigated



Case Study: UK Ministry of Defense (UK MoD)

Defense Equipment & Support (DE&S) Department

We help the DE&S body of the UK Ministry of Defense build supply chain resilience.

UK MoD's Focus Risk Areas:

- Foreign interference risk
- Sanctions risk
- Political exposure risk
- Adverse media and negative news
- IP transfer risk
- Merger and acquisition risk
- Critical technology research



UK MoD Objectives

Developing supply chain resilience

DE&S 2025

DELIVERING THE EDGE THROUGH
PEOPLE, TECHNOLOGY AND INNOVATION

1

Critical Capabilities

- Access to the capabilities and items we need

2

Identify Vulnerabilities

- Identify and address vulnerabilities in their supply chain to ensure they remain resilient, secure, and diverse

3

Pilot Digital Mapping

- Pilot digital supply chain mapping with suppliers for five critical capabilities by 2022

4

Eliminate Disruptions

- No unexpected or unmitigated supply chain failures causing disruption to their delivery by 2025



Case Study: European Space Agency (ESA) / European Union Space Agency (EUSPA)

Supporting Space Programs & Organizations

Moody's plays a critical role in supporting the activities of space programs in Europe.

- **ESA:** The European Space Agency, a multilateral organization including 22 member states
- **EUSPA:** The European Union Space Agency, the specific body of the European Union
- **DG DEFIS:** The Directorate General of the European Commission for Defence and Aerospace



How we Support Space Programs & Activities

ESA & EUSPA selected use cases

SUPPLY CHAIN SCREENING



The ESA requests entities willing to bid to register in the dedicated portal, *ESA-STAR*. Our data helps with the validation of ESA's registration bidders on attributes, such as nationality, size classification, etc.

PROCUREMENT & CONTRACT MANAGEMENT



Our datasets are utilized as a consultation tool to countercheck the requirements for eligibility of bidders or existing suppliers of EUSPA tenders and contracts.

FINANCIAL VIABILITY



The ESA is implementing a mechanism based on our data that will allow them to systematically assess the financial viability of ESA bidders. Currently this type of analysis is only conducted on a case-by-case basis.

SANCTIONS SCREENING



The ESA is implementing a mechanism to flag ESA bidders with potential legal issues, and we will further support their sanctions screening activities.

ESA INCUBATOR



Our data supports the activities of the ESA incubator. Bidders are assessed against their “Small and Medium Enterprises (SME) eligibility” while systematic follow-ups are conducted for assessing the financial risks related to start-ups in the space industry in Europe.

MARKET ANALYSIS



Within the ESA, a future implementation of our data, including M&A data, will be around market analysis. This will serve to assess duplications and gaps of capability within the European Space sector and can also be used to benchmark European Space companies worldwide.



Case Study: NASA & Bitsight, a Moody's Partner

Digital Supply Chain Risk Management with Bitsight, a Moody's Partner

Mitigating supply chain vulnerabilities with Bitsight's third-party risk management solution

Bitsight provides deeper insights into NASA's extensive Information & Communications Technology (ICT) supply chain, enabling them to:

- 🇺🇸 Uncover high-risk vendors using banned services in line with the National Defense Act
- 🇺🇸 Ensure vendors' cybersecurity postures meet the administration's NIST Cybersecurity Framework requirements
- 🇺🇸 Accelerate cyber risk assessments prioritizing supplier risk management
- 🇺🇸 Work with suppliers to reduce their own risk and, as a result, pose fewer threats to NASA
- 🇺🇸 Measure exposure to cyber risk using data-driven cyber risk ratings and analytics

Bitsight has allowed us to automate our security monitoring process, resulting in about 50% time and efficiency savings. We can sign into Bitsight and get real-time information right from the easy-to-use dashboard.

Kanitra Tyler

Information and Communications Technology (ICT) Supply Chain Risk Management (SCRM) Service Element Lead at NASA



Why Moody's?

Supporting Government Institutions & Authorities Globally

We support a wide range of Public Sector customers on a multitude of national issues

NATIONAL SECURITY



- US Department of Defense
- UK Ministry of Defense
- Intelligence Community
- European External Action Service – EEAS

NATIONAL POLICY



- US Department of the Treasury
- US Department of Commerce
- US Department of State
- European Commission

NATIONAL ISSUES



- Financial Crimes
- Sanctions Evasion & Enforcement
- Counter Threat Finance
- Supply Chain Intelligence
- Foreign Ownership, Control, or Influence (FOCI)
- Fentanyl Investigations
- Forced Labor



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GOVERNANCE X COUNTERPARTY RISK

Who is who?

Come speak with our experts



Rakesh Parameshwar

Head of Strategic Initiatives, Data
Solutions

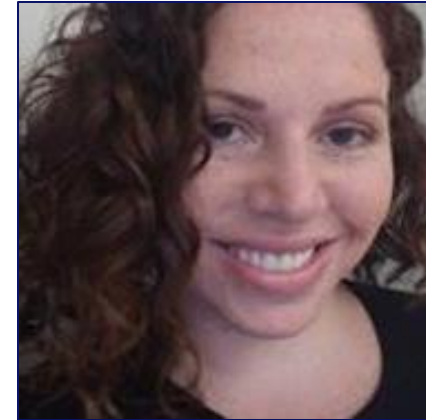
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Thank you

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