



THE 10TH JOINT INDUSTRY OUTREACH SEMINAR ON STRATEGIC TRADE MANAGEMENT - SINGAPORE 2022

Emerging Technology Panel:

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Emerging Technology: Key Points

- ***AI, Quantum Computing, and Additive Manufacturing will fundamentally change the way entire industries function***
- ***Export Controls can create supply chain choke points but regimes and regulations are not perfect***
- ***Regulators may want to consider military-civil fusion risks***





Lessons for Regulators

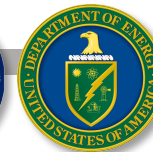
- **Research and innovation takes time**
- **Governments cannot out-regulate private sector innovation**
- **Closely follow academic and industry advances before a technology reaches operational maturity**
- ***Multilateral approaches strengthen industry's ability and willingness to comply with new regulations***





Why This Matters: Russian AI Military-Civil Fusion Timeline

- 2017:
 - **“Artificial intelligence is the future,” Russian President Vladimir Putin**
- 2018:
 - **Russia announces national-level R&D investments in AI**
- 2020
 - **Russia publicly announced the development of AI-enabled autonomous nuclear-armed torpedoes**
- 2022:
 - **Russia using AI-enabled drones and missile technologies in Ukraine**
 - **Russia has developed more than 150 AI-enabled weapon systems**
 - **The Russian Ministry of Defense created a Center to create new “weapons that use AI”**





Case Study - Quantum R&D In Russia



Russian Quantum Center



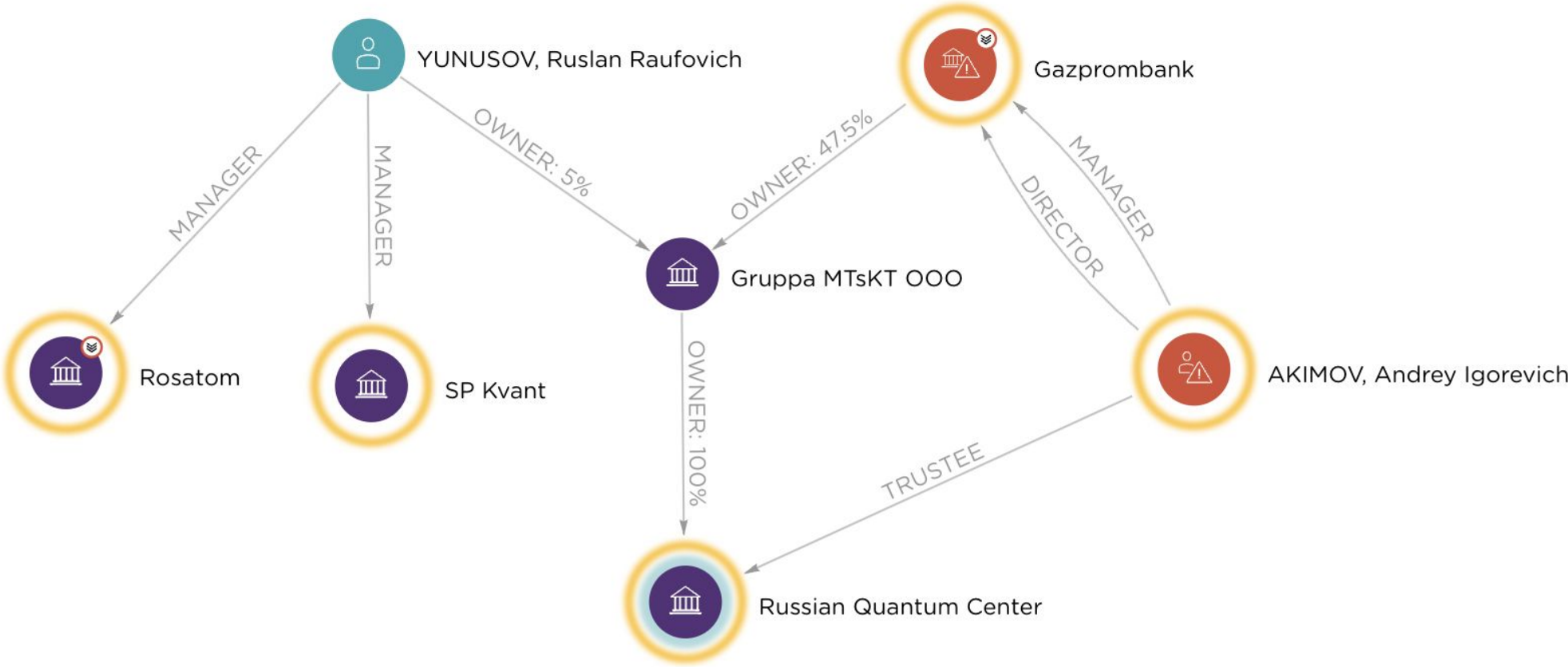


Case Study: Hidden Risks



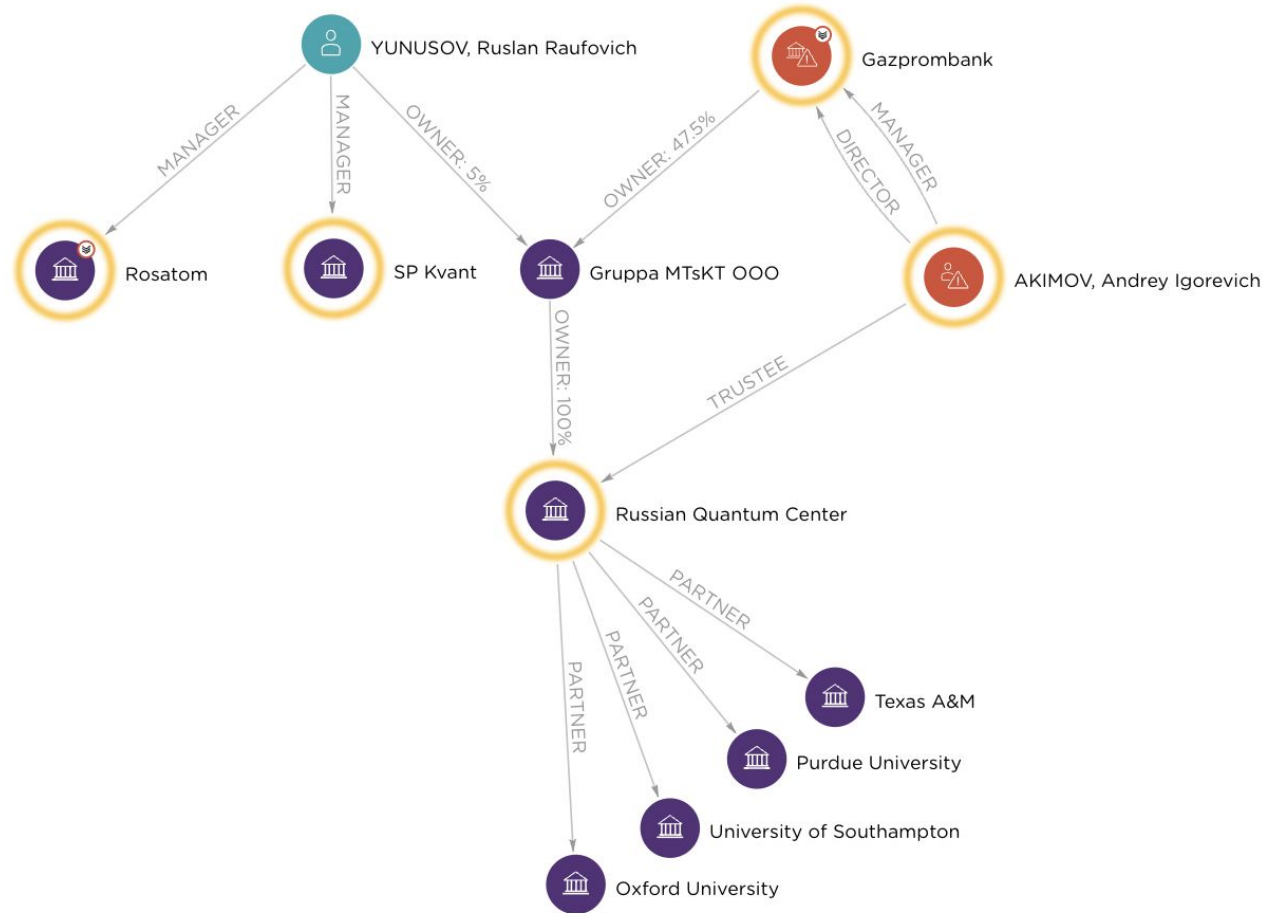


Case Study: Overlapping Regulations: Sanctions and Export Controls





Case Study: Academic Partnerships





Case Study Lessons

- ***Multiple regulatory authorities can target dual-use emerging technologies without hindering innovation and global trade.***
- ***Regulators may utilize export controls, sanctions, research security/integrity requirements, and foreign direct investment screening to stem the flow of technology and capital into Russia's defense industrial base.***





Thank You!

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