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ANALYSIS

Can Russia’s SORM Weather the Sanctions Storm?

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Abstract

Both Russia’s digital communications sector and its electronic surveillance system, SORM, were heavily reliant upon Western-produced technologies prior to Moscow’s war on Ukraine. Since then, Western sanctions and export controls have been putting necessary hardware and software increasingly out of Moscow’s reach. Russia’s repressive surveillance state thus faces uncertain prospects, as domestically or Chinese-produced tech may prove insufficient to fill the void.

Fifteen years before Edward Snowden leaked details about U.S. electronic surveillance capabilities, a young Russian journalist named Vika Yegorova came into possession of a document detailing Moscow’s own efforts to monitor telephone—and, increasingly, digital—networks. Over the next two decades, the veil of secrecy surrounding Russia’s “system of operational-investigative measures” (known by the acronym SORM) would lift, aided in large part by the work of investigative journalists Irina Borogan and Andrei Soldatov (Soldatov and Borogan 2015). Their findings, particularly against the backdrop of Moscow’s renewed invasion of Ukraine in 2022 and subsequent technological and economic isolation from the West, raise questions regarding SORM’s long-term viability.

Moscow’s initial research and development (R&D) efforts for a widescale system of telephonic surveillance began in the mid-1980s, at what was then the Soviet Union’s oldest security R&D facility, located in the Mos-

cow suburb of Kuchino. At that time, the KGB’s 12th Section oversaw the technical details of wiretapping and monitoring domestic telephone exchanges. Following the collapse of the Soviet Union, the KGB’s main successor agency, the Federal Security Service (FSB), ultimately took the helm of the program, bringing it under its own similarly named 12th Center.

As analog, landline telecommunications systems were gradually replaced by digital, mobile ones in the mid-1990s, SORM capabilities evolved alongside them. For instance, by 1998, as email was becoming ubiquitous, Russian communications regulators proposed that all Internet service providers (ISPs) be required to install, at their own cost, SORM-enabling “black boxes”: componentry allowing the FSB to snoop on their web traffic. Court orders would be required for eavesdropping on specific content, but the FSB would not be obligated to apprise third parties, including ISPs, about these orders (Soldatov 2013). The FSB would also serve as the sole

licensing authority for the cryptography used by Russian providers, making most web traffic easily decipherable (authorities would later grapple with end-to-end encryption at the user level, which complicated monitoring efforts—see *BBC* 2018). By the turn of the century, these mandates had been enacted and all major Russian telecoms and ISPs were expected to adhere to them.

As Russia under President Vladimir Putin became more politically repressive, SORM requirements followed suit. The 2016 anti-terrorism legislation known as the “Yarovaya Laws” forced telecoms companies and ISPs in Russia to retain all content—voice, text, video, and images—for six months and metadata—to, from, timestamp, and location indicators—for up to three years, as well as to make this data available to the authorities upon request. The logistical costs of adherence to these regulations were to be borne solely by service providers. In 2020, the FSB started demanding unfettered, remote access to all user data without exception, as well as automatic decryption of their communications. In early 2021, the Interior Ministry’s own law enforcement surveillance programs were consolidated and placed under the auspices of the FSB’s 12th Center.

By summer 2022, the Digital Ministry had moved from merely imposing fines on non-SORM-compliant ISPs and telecoms to denying or stripping their operating licenses outright. Federal communications regulator Roskomnadzor began piggybacking on SORM infrastructure to block traffic from, and access to, thousands of Western websites and services. Moscow’s long-running project to hive off its “sovereign internet” from any content inimical to Kremlin interests worked in concert with SORM to create a largely self-contained, more easily monitored, more pliant information ecosystem (Sherman 2021). In practice, the standard for digital communications in Russia—for which SORM is a centerpiece—is now “that which cannot be surveilled or censored will not be transmitted.” For example, Moscow’s shift from attempting to completely block the popular Telegram messaging app in 2018 to eventually adopting its widescale use by 2023 suggests some ability to decrypt traffic (Korsun 2022)—either with or without Telegram’s assent (*The Moscow Times* 2017). Today, Moscow likely uses SORM for some vestigial surveillance reach into former Soviet republics (Privacy International 2013), as well as marketing SORM capabilities to friendly states in Latin America (Farah and Richardson 2022) and elsewhere.

Western tech appears to have played a key role in SORM’s evolution. Maturing beyond mere telephonic interception to monitoring Internet traffic (called deep-packet inspection, or DPI) entailed massive data networking and storage requirements (called a storage area network, or SAN). American, Japanese, South Korean,

and European firms are the major players in the global SAN market. Meanwhile, documents leaked to *TechCrunch* (Whittaker 2019) and *The New York Times* (Satariano, Mozur, and Krolik 2022) from 2019 to 2022 indicate that equipment from Finnish-based Nokia and U.S.-based multinationals Cisco and Procera were key to SORM operability. This is not necessarily unusual, as governments worldwide—including democracies with more transparent warranting and judicial recourse—require digital networking products to facilitate interception programs for law enforcement agencies. However, the revelations gave the world a window onto Russia’s degree of apparent dependency on foreign tech that contrasted starkly with Moscow’s rhetoric about the need for “import substitution” and Russia’s technological autarky.

Meanwhile, a domestic ecosystem of contractors and suppliers props up SORM. Through a series of mergers and acquisitions over the past decade, many of these entities were consolidated under the direct and indirect tutelage of a single figure: Uzbekistan-born Russian tycoon Alisher Usmanov. Among the 100 wealthiest people in the world, Usmanov reportedly maintained close links to both senior Kremlin and FSB officials and owned major stakes in the largest Russian telecoms company, Megafon. He was also a key partner for the Tsitadel conglomerate, which controls an estimated 60–80 percent of the companies that outfit SORM nationwide—among them MFI Soft, Norsis-Trans, and Special Technologies—and is staffed by former 12th Center officers (Kovalenko 2019). By all accounts, Tsitadel became the leading beneficiary of the “Yarovaya Laws.”

Russia’s renewed incursion into Ukraine in late February 2022 proved an inflection point. Within weeks, a host of Western tech firms voluntarily suspended operations in the Russian market or began a process of wholesale withdrawal. The exodus included Nokia, Cisco, and Procera, as well as other major players like Intel, Adobe, Hewlett-Packard, Microsoft, Dell, Eriksson, LG, Nvidia, Kyocera, Siemens, SAP, Oracle, Juniper Networks, and Samsung (Yale School of Management 2023). By some measures, tech companies comprised nearly one-fifth of this historic pullback. The drawdown scuttled the Digital Ministry’s designs for a 5G rollout in Russia, leading many industry insiders to worry that withdrawal-related equipment shortages would cripple the country’s mobile networks in the long term. For example, gear from Ericsson and Nokia—including everything from antennas to fiber-optic cabling—serviced nearly half of the total cellular base stations in Russia, a market which, in turn, comprised a mere 2–3 percent of their revenues.

Then came Western sanctions and export controls. A complex and coordinated wave of restrictions by the United States and 37 other countries aimed to choke off the supply of strategic technologies—including semicon-

ductors and other microelectronics—to the Russian military. This included the United States' first application of its Foreign Direct Product Rule against an entire country (Froehlich 2022), with a view to substantially limiting Russia's access to foreign-assembled products that use U.S.-made software and hardware. While such restrictions have not (yet) broadly targeted the Russian telecommunications sector, there is ample reason to suspect that crucial componentry might be diverted by Moscow to service more immediate military needs. For example, Ukrainian officials have reported that chips from household appliances have been found in captured Russian tanks and downed drones. In a potentially related development, as the U.S. digital communications giant Cisco completed its exit from Russia in spring 2023, the company destroyed upwards of \$23 million in unsold inventory and spare parts rather than see it inherited gratis by an increasingly repressive regime waging a brutal war on its neighbor.

The extension of SORM into occupied Ukrainian territory opened the door for the United States to designate the Tsitadel holding company and other suppliers in early 2022. Nor did Usmanov and his business empire escape the crosshairs. After freezing his personal assets soon after the onset of the war, in April the United States blocked any transaction with commercial entities “owned, directly or indirectly, 50 percent or more” by him, including Megafon. The European Union followed suit. Possibly in anticipation of the move, in early 2023 Usmanov announced his “retirement” from commercial activity (*Radio Svoboda* 2023) and began selling his stakes in major SORM-linked enterprises (*Vedomosti* 2022), while Moscow was reportedly angling behind the scenes for state-backed Rostelecom to acquire Megafon (*Interfax* 2023). Russian Digital Development Minister Maksut Shadaiev told *Interfax* in February that such a merger would expand territorial coverage by optimizing the distribution of scarce equipment, rather than having each provider service only their own network and subscriber base. He gave only a cursory nod to any potential antitrust concerns.

The lack of such consolidation has been a hindrance to SORM, even prior to—and irrespective of—sanctions and tech shortages. In the absence of a unified, state-run telecom, independent providers have long been able to drag their feet or satisfy only the bare minimum of SORM-related requirements, which assume a degree of technological interoperability and longevity that are often unrealistic in practice, per industry insiders.

Meanwhile, full compliance is costly. An investigation by Russia Business Consulting from 2016–2017 found that Roskomnadzor issued over 450 SORM-related administrative violations against over 200 providers and individuals during that period, detailing how

the financial burdens of SORM implementation were prohibitive for all but the major players (*RBK* 2017). The FSB and the Digital Ministry in 2017 assessed SORM-related costs to industry to be upward of 4.5 trillion rubles (*Zvezda* 2017); the Russian Union of Industrialists and Entrepreneurs countered with their own estimate of over triple that sum (*Kommersant* 2018). In other words, both the politics and the economics surrounding SORM appear to have incentivized consolidation of the largest ISPs and telecoms (*Reuters* 2023a), as smaller outfits find the costs of SORM compliance and non-compliance alike prohibitive and lack the political sway of major competitors like Rostelecom, MTS, and Megafon (Soldatov 2019). If the latter indeed ends up under state ownership, it will signal once again Moscow's refusal to distinguish between spurring its tech sector and merely subjugating it (Epifanova and Dietrich 2022).

Ironically, greater state control over the telecoms sector would likely make the SORM program more vulnerable than ever to punitive Western sanctions and technological isolation. The longer Russia's telecoms run on hardware and software solutions for which no updates or services are forthcoming, the greater the technological debt burdens SORM will assume by extension. As industry analyst Roger Entner told *The Moscow Times* in April 2022, “Russia will be frozen in 2022, while the rest of the world will move forward. It could turn into a failing technology museum” (*The Moscow Times* 2022). More recent signs point to this becoming a reality, as both the Digital Development Ministry and industry insiders acknowledged in spring 2023 that a broad-scale 5G rollout across Russia is unlikely until at least 2030 (*Kommersant* 2023b)—blaming a lack both of foreign-made componentry and of domestic production capacity that might compensate for this. Whether companies like Ericsson are willing to license Russian-produced versions of their equipment is an open question (*Kommersant* 2023a), while so-called “parallel imports” (deCourville 2022) via third countries are subject to bottlenecks and crackdowns (*EurasiaNet* 2023; Caglayan and Spicer 2023).

Telecoms and ISPs are not the only entities on which Russian authorities piggyback to enable their widespread surveillance dragnet. In 2017, the Central Bank established the Unified Biometric System (UBS) to warehouse the millions of voice- and facial-recognition samples of the Russian banking sector's clients. Within four years, connecting to UBS and populating it with data had become mandatory for the financial sector. Late last year, President Vladimir Putin decreed UBS the exclusive repository for biometric data under the law, which now includes everything from fingerprints to street-level CCTV footage. He also delegated the entirety of UBS oversight and operational control to the FSB,

which almost certainly intends for UBS and SORM to be mutually complementary. Such interoperability—including sufficient data-warehousing to support it (*Kommersant* 2022b)—seems unlikely in the short term.

Whether they can become so remains unclear. Even if the Kremlin decided to take on the billions of dollars in costs to swap out obsolescing Western tech in Russia's digital communications and surveillance infrastructure, it is unlikely that domestically or Chinese-produced gear could entirely fill the gap. For example, the Russian state-run newspaper *Kommersant* (2022a) reports that foreign-made computing servers comprise half the current Russian market. However, according to a recent study by the Bank of Finland Institute for Emerging Economies, the value of overall global technology imports to Russia plummeted by 30 percent from December 2021 to December 2022—including those from China, which fell by 10 percent (Simola 2023).

Dependency on China would bring its own risks, as outlined in a recently leaked memo from Russia's digital development ministry to national security officials dated summer 2022 (*The Moscow Times* 2023). The document warned of dangers not only to the functioning of critical information infrastructure, but also to the viability of homegrown tech firms, and suggested curbs on imports of Huawei and other Chinese kit. It also put Russia on a timeline of up to 24 months to avoid total reliance on Beijing (potentially a nod to dwindling stocks of key componentry). However, more recent analysis of trading data indicates that while China has

been a lifeline for some key technology exports to Russia since the war began (Simola and Röyskö 2023), it simply cannot backfill the totality of newly unavailable gear (Byrne et al. 2022).

In this regard, however sincerely Beijing might reassure Moscow about the depths of their friendship, Western sanctions appear to have hamstrung Chinese tech giants like Huawei and ZTE from charging to the rescue of the ailing Russian tech sector. For example, while Huawei (unlike Ericsson and Nokia) will continue to maintain and upgrade installed equipment in Russia, it has curtailed Russian operations and halted new orders. Moreover, both countries' firms largely depend on global semiconductor producers and assemblers like Taiwan-based TSMC, U.S.-based Intel, and South Korea-based Samsung, which are thus far complying with Western-backed restrictions. This will limit the extent to which they can backfill Russia's mounting advanced technology deficits.

Ultimately, the FSB-led surveillance state envisioned by the Kremlin prior to the Ukraine war—and by the KGB in its Cold War heyday—is now beset by a potentially crippling web of dependencies. Much about the program remains shrouded in secrecy. However, available insights suggest that SORM's fate is largely anchored to that of the Russian tech sector. As costs rise, componentry becomes scarcer, and Western governments zero in on enabling entities like Tsitadel, the coverage and capacity of the FSB's monitoring will likely suffer, too.

About the Author

Gavin Wilde is a Senior Fellow in the Technology and International Affairs program at the Carnegie Endowment for International Peace, where he explores cyber and information conflict. He previously served as Director for Russia, Baltic, and Caucasus Affairs at the U.S. National Security Council and as a senior analyst within the U.S. intelligence community. He is a distinguished graduate of the National War College, where his studies focused on information warfare.

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We are looking forward to engaging with authors and readers.

Eduard Klein, Jeronim Perovic and Heiko Pleines
(Initiators of the Ukrainian Analytical Digest)

