

The Internet of Things Needs A Ledger of Things

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BETA

Investing

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Animating the Objects in our Environment

Using emerging software and technologies, we can instill intelligence into existing infrastructure such as a power grid by adding smart devices that can communicate with one another, reconfigure themselves depending upon availability of bandwidth, storage, or other capacity and therefore resist interruption.



Turns out blockchain, the powerful new technology that underpins cryptocurrencies like Bitcoin, is critical to this. Blockchain is a vast, global distributed ledger or database running on millions of devices and open to anyone, where not just information but anything of *value* – like money and units of energy - can be moved and stored securely and privately peer to peer, and where trust is established, not by powerful intermediaries like banks, governments and technology companies, but rather through mass collaboration and clever code.

PROMOTED

This Internet of Things depends on a Ledger of Things to track everything, ensure its reliability, and pay for its contribution. There are potential applications across virtually every sector.

1. **Transportation.** Autonomous vehicles will get us safely wherever we need to go. They will intuitively take the fastest route, avoid construction, handle tolls, park all on its own, negotiate passing rates with other vehicles on the road, and communicate with traffic lights.
2. **Infrastructure.** We will use smart devices to monitor the integrity and other critical factors of road, rail lines, power and pipelines, bridges, runways, ports, and other public and private infrastructure to detect problems and initiate a response both rapidly and cost-effectively.
3. **Energy, waste, and water management.** Traditional utilities can use blockchain-enabled things for tracking production, distribution, consumption, and collection. New entrants without infrastructure are planning to create new markets such as the neighborhood energy microgrid.
4. **Resource extraction and farming.** This technology can help make expensive, highly specialized equipment available for just-in-time usage and cost recovery, improve worker safety, and compile “infinite data” analytics to identify new resources or advise on best practices. Sensors could help environmental protection agencies to regulate land usage.
5. **Environmental monitoring.** Weather sensors will make money collecting and selling air, water, and tremor data, giving people advance warnings of natural disasters, rising levels of pollutants, and monitoring lightning strikes and forest fires—all to increase emergency response time, save lives, and improve our predictive capability.
6. **Health care.** Blockchain-enabled hospitals could link the devices that manage medical records, inventory, equipment and pharmaceuticals to monitor and manage disease and improve quality control. Smart drugs could track themselves in clinical trials and present untampered evidence of their effectiveness.

7. **Financial services and insurance.** Financial institutions could use smart devices and the IoT to tag, track, and trace their claims on physical assets—like an air traffic control for priceless objects, antiquities, jewelry, the stuff of museums, anything ever handled by Sotheby's and insured by Lloyd's.
8. **Smart documents.** Like smart contracts, the coding of all documentation related to a particular thing—a patent, deed, warranty, provenance, registration, insurance, and inspection certification—could control the operation of that thing. If a vehicle has failed a safety inspection or its liability insurance has expired, the vehicle will not start.
9. **Real estate management.** Digital sensors can create marketplaces for vacant assets by enabling real-time discovery, usability, and payment. In the evenings, a conference room could moonlight as a classroom for neighbourhood youth.
10. **Industrial operations.** The global factory of things needs a global ledger of things. Factory managers will use smart devices and offer software services for monitoring customer demand, production lines, warehouse inventory, distribution, quality, maintenance, and performance data.
11. **Household management.** Numerous products and services are entering the market to allow automated and remote home monitoring beyond the “nanny cam” to include access controls, temperature adjustments, lighting, and restocking the pantry, the bathroom, and the garage. The smart home will optimize energy and the in-house experience.
12. **Retail.** Retailers will be able to personalize products and services to identifiable customers as they walk in or drive by, based on demographics, known interests, purchasing history, and whether those customers gave retailers permission.

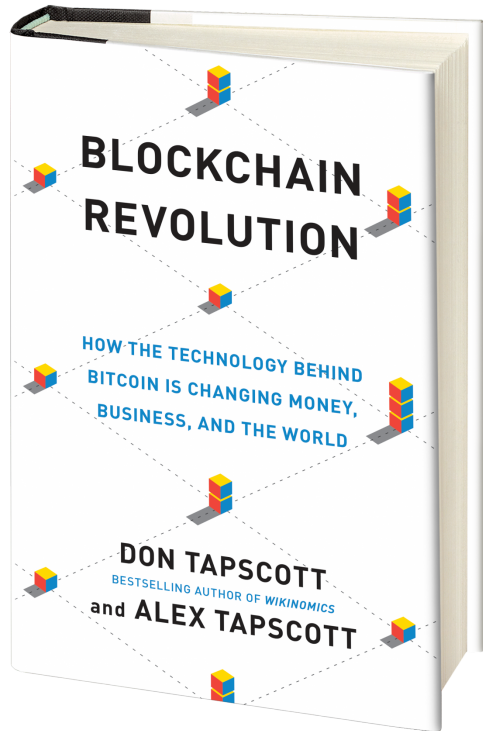
We can shape these markets according to our values—as individuals, companies, and societies—and code these values into the blockchain, such as incentives to use renewable energy, honour price commitments, and protect privacy. In short, the Ledger of Everything on top of the IoT animates and personalizes the physical world even as we share more.

Alex Tapscott is the Co-Author (with Don Tapscott) of the Globe and Mail bestselling book Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business, and the World; and the CEO and Founder of the tech advisory firm Northwest Passage Ventures.



Alex Tapscott

I am a passionate advocate for the disruptive potential of new technologies (such as blockchain) to transform money, business, government and society for the better....



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I cover breaking news for Forbes.

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Topline

Former President Donald Trump asked a federal judge Monday to appoint an independent “special master” to look through documents seized from his Mar-a-Lago home, marking the first formal legal action by Trump’s attorneys since the FBI searched Mar-a-Lago two weeks ago amid a federal investigation into his handling of government records.



President Donald Trump's Mar-a-Lago resort is seen on April 3, 2019.

Getty Images

Key Facts

In a court filing, Trump's lawyers argued for a special master—an independent third party who would decide whether some of the items seized by the FBI during the search are private or privileged—instead of letting a “filter team” of Department of Justice attorneys who aren't part of the Trump investigation pore through the documents, which is a common DOJ practice.

Trump's attorney Jim Trusty told conservative radio host Mark Levin last week he planned on asking a judge to appoint a special master, but it's unclear why the former president's team waited two weeks before filing a motion for one.

The case was assigned to Judge Aileen Cannon, a Trump appointee.

Monday's filing also asked Cannon to force the DOJ to return any items that weren't covered by the search warrant and give a more detailed list of the items seized by the FBI, after a receipt unsealed earlier this month said FBI agents found classified and top secret records at Mar-a-Lago but didn't specify the exact documents that were taken.

Trump's legal team argued the Mar-a-Lago search warrant issued by a federal judge earlier this month was “overbroad” according to the Fourth Amendment, and claimed federal agents may have swept up privileged documents and items that fell outside the limits of the search warrant, including the former president's passports.

The filing also called the search “shockingly aggressive,” insisting Trump’s team had complied with earlier efforts to take back federal documents stored at his home.

Forbes has reached out to the DOJ for comment.

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Tangent

Trump’s request for a special master isn’t unusual. After the FBI searched the office of then-Trump attorney Michael Cohen in 2018, retired federal judge Barbara Jones was appointed as a special master and tasked with sifting through documents recovered by agents for an investigation into tax and campaign finance issues. Three years later, Jones was again picked to serve as a special master following an unrelated FBI raid of former Trump lawyer Rudy Giuliani, who was reportedly investigated for foreign lobbying but hasn’t faced charges.

Key Background

The FBI searched Mar-a-Lago as part of a wider investigation into why troves of sensitive federal documents were brought to the former president’s Florida residence after he left office, instead of remaining in government custody. It followed a months-long dispute

between Trump's team and federal authorities, with the National Archives removing 15 boxes of government documents from Mar-a-Lago in January and the FBI reportedly serving a subpoena for additional federal records in June. The investigation's status isn't clear, but the search warrant suggests FBI agents were looking for evidence of crimes involving the concealment, removal or destruction of government records, and the *Washington Post* reports nuclear weapon-related documents were among the items sought by agents. The search—an unprecedented action against a former president—has turned into a political lightning rod: Trump and his allies have accused the FBI of deliberately targeting him and insisted many of the documents sought by the FBI were actually declassified by Trump, while Attorney General Merrick Garland has defended FBI agents against “unfounded” attacks.

What To Watch For

Federal Judge Bruce Reinhart is weighing whether to unseal a DOJ affidavit explaining why the government wanted a search warrant at Mar-a-Lago. Media outlets and conservative groups have asked Reinhart to unseal the document, which could offer more details about the Trump probe, but the DOJ has argued the affidavit's release could compromise its ongoing criminal investigation. Reinhart suggested last week he's leaning toward releasing parts of the affidavit, though he asked the DOJ to propose redactions. Trump has stated publicly that he wants the affidavit to be released but hasn't formally petitioned the court to unseal it.

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