Testimony of Christopher Rubio
Vice President, Global Customs and Brokerage Staff
United Parcel Service

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Introduction
Chairman Abraham, Chairwoman Comstock, Ranking Member Beyer, Ranking Member Lipinski and distinguished members of the Committee, thank you for the opportunity to testify before you today on how blockchain technology can be leveraged to provide greater supply chain visibility and possibly help combat the distribution of counterfeit products. I applaud the Committee's efforts to get in front of this rapidly evolving technology, and this hearing before two subcommittees speaks to the importance of this issue.

With over 434,000 global employees delivering more than 19 million packages and documents every day in over 220 countries and territories around the world, we work hard to be United Problem Solvers. At UPS, our business processes are complex and our technology advanced, but our objective is simple: to ensure world-class service for our customers.

UPS has been researching the use of blockchain technology with the purpose of identifying ways blockchain may impact, disrupt and/or drive efficiency in the supply chain. Our goal is to engage in a collaborative discussion with customers and policymakers on how blockchain technology can be utilized to further enable supply chain digitization, efficiency and security.

Blockchain as an Enabler
A blockchain can be thought of as a distributed "database" of information and records created chronologically in a series of "blocks"—with each block having a timestamp and a connection to its previous block. The information contained in a blockchain, a cloud-based "ledger," is not stored in a single location; rather, it is shared and continually updated over a network of computers. One common example that some of us might use is that of a Google Doc: one can access a single, shared document from many computers, see edits from various people in real time, and any additions to the text are recorded and timestamped.

In terms of logistics applications, blockchain could bring together buyers, sellers, suppliers, payment companies and logistics companies to provide end-to-end supply chain visibility while addressing privacy and data security concerns. For government border agencies, blockchain could enable greater transparency of a transaction, possibly including what's in the box and who's buying it, how much they are paying for it, assurance that duties and taxes are paid, and possible confirmation that shipments are not under-declared—resulting in faster release and a more trustworthy product supply chain. To this end, we can envision a possible fast-path customs clearance procedure for validated/secured/authenticated shipments versus those that are not.

As a result of the technology underlying blockchains, UPS sees four key benefits for our company and our customers. First is integrity. Because a blockchain is spread among many different internet users, it cannot be controlled by any single party. Additionally, network failure—either intentional or unintentional—can't significantly disrupt it. Second is transparency. The information encoded in the

blockchain is accessible across the entire network because blockchain operates by mass collaboration and verification. Third is incorruptibility. Blockchain uses the latest encryption technology, and as a result, the ability to verify one's identity and the source of documents and products raises the level of trust in commercial interactions. Finally, blockchain provides a vitally important level of security. Anti-money laundering (AML) and know-your-customer (KYC) practices have a strong potential for being adapted to the blockchain. Currently, financial institutions must perform a labor-intensive, multi-step process for each new customer. These manual steps today can result in delays in the supply chain, resulting in products not getting to their ultimate destination in a timely manner.

In particular, our large customers have the potential to benefit greatly from the adoption of this technology. Given the complexities of the modern supply chain, multinational corporations have invested large amounts of money in enterprise resource planning (ERP) and supply chain management software yet only have limited visibility and insight into where all their products are at any given moment. Through the utilization of blockchain technology, companies' supply chain networks are able to create one overarching database without it having to be stored on one server or on one network. This will not only make these companies more efficient but also leave them better equipped to handle the continued growth of e-commerce.

However, it is not only large multinationals that will benefit. We also see the potential for small and medium size enterprises (SMEs) to realize the many benefits of blockchain. For example, by taking advantage of this technology, a small business will be more easily able to ship its products globally due to the blockchain framework that enables multiple parties to share important trade information in a single ledger for the contents of that shipment. By streamlining customs and duty procedures, the global marketplace will be more accessible and less intimidating for SMEs, allowing them to ship their products to new markets and drive growth by taking advantage of the massive buying potential of overseas consumers.

Blockchain as a Protector of Intellectual Property Rights (IPR)
Restricting the access of illicit and IPR-violating goods within networks is a top priority for many companies in our industry, especially given the need to ensure efficient, cost-effective and secure global supply chains. Every day, express delivery service (EDS) providers carry approximately 30 million shipments and, despite ongoing efforts, illegal goods make it into the system. In fact, in 2016, 63,000 IPR infringement cases were reported by EU Customs Authorities. Of these cases 8.3% involved express shipments but the vast majority of these cases (65%) involved postal shipments. Though the problem may be bigger in the postal lanes, it remains an active issue for EDS companies as well given that we are currently held to a higher standard than the posts.[1]

UPS and other EDS providers engage regularly with customers and governments to ensure that our network around the world only carries legitimate and legal products. However, there are practical limits to what we and other EDS providers can do day-to-day: first, we are not the originators of information about shipments, and limitations exist on the quantity of information that we can obtain from customers; second, we and other EDS providers do not have the requisite expertise to identify counterfeit or pirated goods; and, third, we are not law enforcement agencies, which means we are subject to national data protection and commercial information confidentiality rules. These limitations underscore the importance of information sharing and collaboration between all involved parties—the rights-holders, customs authorities, and the EDS industry for preventing illicit and counterfeit goods from entering our system.

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[1] https://ec.europa.eu/taxation_customs/sites/taxation/files/report_on_eu_customs_enforcement_of_ipr_at_the_border_2017.pdf

This is where blockchain can potentially provide a solution. According to a recent Deloitte study, "blockchain could help companies understand how ingredients and finished goods are passed through each subcontractor, and reduce profit losses from counterfeit and gray market trading, as well as increase confidence for end-market users by reducing or eliminating the impact of counterfeit products."[2] By having the ability to track any product from the beginning of its journey through the supply chain, blockchain may provide a solution to unknown or unverified product origins. In fact, we are already seeing this technology used to trace the origins of various products – from diamonds and mangos. By creating a digital record of each individual item, the company and consumer are able to verify the authenticity of the product and ensure standards are met each step of the way.

The U.S. and International Governments Role in Fostering Blockchain
The United States Congress, federal agencies and our international counterparts will play a vital role in the adoption and success of blockchain in the supply chain. Governments must take a balanced and measured approach between regulating this ever-changing technology and allowing for its innovation and evolution. As e-commerce and global trade flows continue to rapidly grow, the United States must work with our international trading partners to establish a common set of blockchain standards that are recognized throughout the world. As I mentioned previously, UPS operates in over 220 countries and territories around the world and I know firsthand that a patchwork of global regulation would stifle innovation, slow the flow of goods across borders and increase the likelihood that illicit material would enter the country undetected.

Increasingly, efficient border clearance is contingent on trust and border agencies' ability to have whole-of-supply-chain visibility. This is especially true for business-to-consumer (B2C) shipments which represent great risks to border agencies. Blockchain has the potential to mitigate such risks.

One example of this is in Singapore where they are undertaking an effort focused on the Singapore National Trade Platform (NTP). The platform is an extension of Singapore's Single Window TradeNet and aims to bring all trade stakeholders onto a single platform to digitize the end-to-end process. The Singapore government is looking to establish a blockchain network with Hong Kong, Netherlands, and Australia with the goal of ensuring all trading partners can share information securely to facilitate trade. Today, document submission and approval processes for sellers, banks, logistics, consumers and government agencies are repeated along the value chain. The platform, powered by blockchain technology, provides a ledger for documents and records that stakeholders can use and reuse without worrying about the integrity of their data and privacy-related issues.

Barriers to Blockchain Adoption
Despite the potential upside to the widespread adoption of blockchain, a few key barriers exist that must be overcome. The first and biggest hurdle is the linking of all physical objects to the information digital stream. Currently, individual items may be tagged digitally with radio-frequency identification (RFID), near field communication (NFC) or a 2-dimmensional barcode. However, in order for blockchain to realize its full potential, all products would have to be tagged digitally, requiring an overhaul in today's supply chain practices. Without an industry and supply-chain-wide commitment to adopt this digitalization, many organizations will not make the investment in this technology.

Similarly, cultural adoption and privacy concerns are additional key barriers that must be addressed. Without strong and reliable safeguards in place, the public may not be amenable to uploading every object's history into the cloud and having that data stored across various network devices. Furthermore, while the incorruptibility of blockchain is a potential benefit, it may also be seen as a detriment as data cannot be deleted from the chain.

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[2] https://www2.deloitte.com/us/en/pages/operations/articles/blockchain-supply-chain-innovation.html

Finally, the international community must come together to ensure there is one unified set of standards for blockchain. This will give companies the confidence they need to know the technology they adopt will be recognized throughout the world. Without these common standards, uncertainty will prevent the large-scale investment that is needed to make blockchain in the supply chain a success.

Conclusion
Thank you once again for inviting me to testify before you on this technology that could change the way the world understands supply chains. I look forward to any questions.