

DEFEATING THE BOTS: HOW BLOCKCHAIN TECHNOLOGY CAN HELP OVERCOME THE WEAKNESSES OF THE BETTER ONLINE TICKET SALES ACT

I. INTRODUCTION

Sports fans are competitive by nature. Legendary football coach Vince Lombardi summarized this ambitious spirit when he stated, “Winning isn’t everything, it’s the only thing.”¹ Why then, do sports fans tolerate losing on the Internet to ticket bots when purchasing tickets to see their favorite teams play? Automated computer software known as bots are capable of purchasing thousands of tickets from primary ticket websites within milliseconds, often before consumers have the chance to purchase tickets.² In fact, Ticketmaster claims that bots have been employed to purchase up to 60% of available tickets for popular events.³ The lack of available tickets on primary ticket markets leads consumers to purchase tickets on the secondary online ticket market, at an average markup of 49%.⁴ Therefore, the people that create and utilize these bots earn huge profits to the detriment of consumers.⁵ However, the prolific use of bots has not been ignored by legislators, as Congress enacted the Better Online Ticket Sales Act of 2016 (“BOTS Act”). Unfortunately, this bill has been largely ineffective.

This article will explore why the BOTS Act has not been effective and argue that introducing blockchain technology into e-Ticketing can help defeat the bots. This article

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¹ Beau Dure, *Winning isn't everything; it's the only thing. Right?*, THE GUARDIAN (September 24, 2015), <https://www.theguardian.com/sport/2015/sep/24/winning-everything-sports>

² Noah Weiland, *Congress Considers Plan to Curb Ticket 'Bots'*, THE NEW YORK TIMES (September 14, 2016), <https://www.nytimes.com/2016/09/15/theater/congress-considers-plan-to-curb-ticket-bots.html>

³ Ben Sisario, *Concert Industry Struggles With 'Bots' That Siphon Off Tickets*, THE NEW YORK TIMES (May 26, 2013), <https://www.nytimes.com/2013/05/27/business/media/bots-that-siphon-off-tickets-frustrate-concert-promoters.html>

⁴ Hayley Cuccinello, *Brokers, Bots And Insiders: Why 'The Average Fan Has No Chance To Buy Tickets At Face Value'*, FORBES (January 29, 2016), <https://www.forbes.com/sites/hayleycuccinello/2016/01/29/brokers-bots-insiders-why-the-average-fan-has-no-chance-to-buy-tickets-at-face-value/#4a206ba86be6>

⁵ *Id.*

recommends two amendments that could strengthen the BOTS Act by compelling ticket companies to adopt measures that will achieve the same results in e-Ticketing that blockchain technology is capable of accomplishing.

II. A BRIEF HISTORY OF BOTS

Ken Lawson's FBI indictment demonstrates that he was not an ordinary ticket scalper. Lawson claims that his company, Wiseguys, invented ticket bot software in the late 90's or early 2000's.⁶ Before he utilized the Internet to automate his scalping business, Lawson's employees relentlessly called Ticketmaster's sales representatives to purchase tickets.⁷ Then, Lawson hired a Bulgarian programmer who would change the e-Ticketing business forever.⁸

This Bulgarian programmer changed the industry by building tools that auto-completed Ticketmaster's drop-down menus and refreshed pages automatically, enabling software bots to rapidly purchase tickets online in mass quantities.⁹ To prove how successful his software was, Lawson explained that his bots purchased approximately 900 out of the 1,000 tickets available on primary markets for the 2006 Rose Bowl.¹⁰ After his bots completed the raid, Lawson reaped the rewards on the secondary market, where desperate consumers, who stood no chance against Lawson's bots on the primary market, severely overpaid for tickets.¹¹ According to an FBI indictment from 2010, Lawson's company generated over \$20 million in profit and purchased over one million tickets in a ten-year period.¹² Lawson's bot software became so popular that, in

⁶ Steven Dubner, *Why Is the Live-Event Ticket Market So Screwed Up?* FREAKONOMICS (December 6, 2017), <http://freakonomics.com/podcast/live-event-ticket-market-screwed/>

⁷ *Id.*

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.*

¹² See *United States v. Lawson*, No. 10-114 (KSH), 2010 U.S. Dist. LEXIS 145647 (D.N.J. Oct. 12, 2010).

2017, Ticketmaster claimed to have blocked five billion bot purchase attempts.¹³ In 2012, Ticketmaster released a statement claiming that bots “hammer our system and website, they substantially increase our technology costs, they anger our customers and they keep us from building a direct relationship with fans.”¹⁴ In an effort to combat this practice, Congress passed the BOTS Act of 2016.

III. THE BOTS ACT AND ITS WEAKNESSES

The BOTS Act of 2016 states:

...it shall be unlawful for any person--
(A) to circumvent a security measure, access control system, or other technological control or measure on an Internet website or online service that is used by the ticket issuer to enforce posted event ticket purchasing limits or to maintain the integrity of posted online ticket purchasing order rules; or
(B) to sell or offer to sell any event ticket in interstate commerce obtained in violation of subparagraph (A)...¹⁵

The BOTS Act was enacted to regulate the use of bots, and to protect consumers who purchase tickets on primary and secondary online ticket markets.¹⁶ The statute attempts to prevent bots from purchasing tickets to events in excess of the purchasing limits posted by the ticket distributors.¹⁷ The statute’s definition of “event” includes sporting events in which the venue has a seating capacity over 200 people.¹⁸ Subparagraph (B) prevents anyone from selling any ticket obtained through the measures specified in Subparagraph (A) on the secondary

¹³ Lindsay Maisland, *Why federal law hasn't stopped online ticket scalpers from cheating*, WGRZ (June 13, 2018), <https://www.wgrz.com/article/news/nation-world/why-federal-law-hasnt-stopped-online-ticket-scalpers-from-cheating/507-563962209>

¹⁴ <https://blog.ticketmaster.com/why-we-are-leading-the-fight-against-bots-and-you-should-too/>

¹⁵ BOTS Act S.3183, 114th Cong. (2016).

¹⁶ Robert McFadden, *The BOTS Act: A Small Step for Fankind When a Giant Leap is Needed*, 55 Washburn L.J. 427, 443.

¹⁷ Sammi Elefant, *Beyond the Bots: Ticked-Off Over Ticket Prices or the Eternal Scamnation?*, 25 UCLA Ent. L. Rev. 1, 6.

¹⁸ *Id.*

market. Additionally, the BOTS Act gives the FTC enforcement power to take criminal and civil action against violators, who could be fined up to \$25,000.¹⁹

Experts claim that the BOTS Act is narrowly defined and limited in enforcement power, which is why the FTC has yet to bring an action against any purported bot user.²⁰ First, it is difficult for United States law enforcement to actually locate foreign bot companies, as inexpensive bot software can be utilized from anywhere.²¹ Therefore, Ken Lawson's Bulgarian programmer could operate bots from Bulgaria without substantiated fear of FTC enforcement. Second, it is difficult for the FTC to even learn of any foreign or domestic bot user unless ticket companies report suspicious activity.²² This procedure is problematic because bots can actually increase ticketing companies' revenue, disincentivizing the reporting of suspected bots.²³ In fact, StubHub has never banned a suspected bot user.²⁴

Primary ticketing companies, like Ticketmaster, generate revenue by charging service fees for each ticket sold, ranging from a 15% to 50% markup of the face value of the ticket.²⁵ Secondary market operators, like StubHub, also charge exorbitant service fees,²⁶ which has led teams like the Denver Broncos to encourage fans to only use the team's resale website.²⁷ Presently, Ticketmaster and StubHub are blended markets, meaning they operate *both* a primary

¹⁹ McFadden, *supra* note 16, at 444.

²⁰ Rebecca Beitsch, *Despite Bans, Ticket-Buying Bots Still Snag the Best Seats*, PEW TRUSTS (February 2, 2018), <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2018/02/02/despite-bans-ticketbuying-bots-still-snap-the-best-seats>

²¹ McFadden, *supra* note 16, at 434.

²² Maisland, *supra* note 13.

²³ McFadden, *supra* note 16, at 449.

²⁴ Maisland, *supra* note 13.

²⁵ David Randall, *Angry About Tickets? Here's Who To Blame*, FORBES (February 11, 2018), https://www.forbes.com/2009/02/11/ticketmaster-live-nation-tickets-concerts-business-media_0211_tickets.html#730fd17c6300

²⁶ *Id.*

²⁷ McFadden, *supra* note 16, at 449.

and secondary ticket marketplace.²⁸ Blended market companies want tickets to be resold on their platform as many times as possible because they earn service fees from each transaction.²⁹ Since a bot will resell a ticket more often than a human, assuming that a human may buy the ticket and attend the event, blended markets threaten the mission of terminating bots.³⁰ Consumers have noticed the problems with these blended markets. In fact, a class action suit against Ticketmaster has been proposed, in which consumers claim that Ticketmaster’s new “verified resale program” is merely another mechanism to collect more service fees.³¹

IV: STATES BATTLE AGAINST BOTS

In addition to administering enforcement power to the FTC, the BOTS Act also gives enforcement power to state attorney generals.³² Fifteen states have enacted or proposed anti-bot legislation, but New York appears to be the only state actually fighting bots.³³ In fact, New York has reached settlements, totaling \$4.19 million, with companies who employed bots.³⁴ However, it will become more difficult for states and ticketing companies to identify bot companies as the software becomes more advanced. The solution to identifying bots lies within blockchain technology.

²⁸ *StubHub Launches a Revolutionary New Ticketing Platform for Rights Holders*, BUSINESS WIRE (February 8, 2016), <https://www.businesswire.com/news/home/20160208005940/en/StubHub-Launches-Revolutionary-New-Ticketing-Platform-Rights>

²⁹ McFadden, *supra* note 16, at 449.

³⁰ *Id.* at 449.

³¹ Corrado Rizzi, *Class Action Lawsuit Alleges Ticketmaster, Live Nation Double Dip on Event Tickets with ‘Verified Resale’ Program*, CLASSACTION.ORG (December 12, 2018), <https://www.classaction.org/news/class-action-lawsuit-alleges-ticketmaster-live-nation-double-dip-on-event-tickets-with-verified-resale-program>

³² BOTS Act S.3183, 114th Cong. (2016).

³³ Elefant, *supra* note 17, at 5.

³⁴ Maisland, *supra* note 13.

V: THE BENEFITS OF INTRODUCING BLOCKCHAIN INTO E-TICKETING

Before describing how the use of blockchain can drastically improve the goals of the BOTS Act, it is important to establish what blockchain is. A blockchain is a digital ledger that contains records of economic transactions.³⁵ Simply, blockchain is a way to store and record data.³⁶ Each block is unique and traceable because it contains the date, time, dollar amount of a purchase, information about the purchaser, and a unique identifier.³⁷ In order for a block to be added to the blockchain, it must be verified by a web of computers that meticulously keeps track of the digital ledger.³⁸ Blockchain's key feature is that information is stored chronologically, meaning that every additional block is placed at the end of the chain.³⁹ If anybody attempts to alter the information of any singular block in the chain, the unique identifier of that block changes, which in turn alters the identifier of the previous block, and so on.⁴⁰ Since thousands of computers keep track of the digital ledger, no user can modify the ledger without being identified and traced.⁴¹

Blockchain was originally used for cryptocurrencies, but it is being introduced into e-Ticketing.⁴² Ticketmaster has already purchased a blockchain company, though it is unclear how they plan on implementing its technology.⁴³ One company, UTIX, explained how blockchain

³⁵ Luke Fortney, *Blockchain, Explained*, Investopedia (February 10, 2019), <https://www.investopedia.com/terms/b/blockchain.asp>

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ *Id.*

⁴² *Id.*

⁴³ Variety Staff, *Ticketmaster Acquires Blockchain Ticketing Company Upgraded*, Variety (October 18, 2018), <https://variety.com/2018/biz/news/ticketmaster-acquires-blockchain-ticketing-company-upgraded-1202984750/>

could be utilized in e-Ticketing,⁴⁴ and the following sample process exhibits how a ticketing company like Ticketmaster could combine UTIX's concepts with current blockchain capabilities.

Every person who wishes to attend an event will need to sign up for an account on Ticketmaster and provide personal information such as an email address, phone number, and even photo identification.⁴⁵ After Ticketmaster verifies the account's information, the user will receive a digital wallet.⁴⁶ For every new event, Ticketmaster will create unique tickets in the form of non-fungible tokens.⁴⁷ Only the person who has that token, or ticket, in their digital wallet, can enter the event.⁴⁸ Due to the uniqueness of each ticket, they will become impossible to replicate or counterfeit.⁴⁹ These tickets/tokens will be stored on Ticketmaster's blockchain, where a network of computers can track the ledger for each event.⁵⁰ Ticketmaster's database will create a new block every time a purchaser buys a ticket on their primary market.⁵¹ Each time that ticket is sold on a secondary market, a new block will be added to the end of that ticket's individual blockchain.⁵² Each one of these unique tickets will require programmable logic in the form of a smart contract.⁵³ A smart contract can encrypt rules into a ticket's "electronic DNA," such as the ticket's maximum price.⁵⁴ For example, Ticketmaster can program a rule into a ticket for the Rose Bowl which states: "This ticket can never be sold for more than \$100." Once the

⁴⁴ Maxwell Mayhew et al., *A Blockchain-Based Event Ticketing Protocol*, <https://utix.io/assets/download/Utix%20Whitepaper.pdf>

⁴⁵ *Id.* at 6.

⁴⁶ *Id.* at 6.

⁴⁷ *Id.* at 7.

⁴⁸ *Id.* at 9.

⁴⁹ *Id.* at 5.

⁵⁰ Fortney, *supra* note 35.

⁵¹ *Id.*

⁵² *Id.*

⁵³ Maxwell, et al., *supra* note 44, at 7.

⁵⁴ Elefant, *supra* note 17, at 37.

rules are programmed into the ticket, they could never be altered or broken.⁵⁵ Therefore, no purchaser will be able to digitally break the ticket's rules.⁵⁶

These features of blockchain technology protect consumers in a number of ways. First, if ticketing companies use smart contracts to set maximum resale values on tickets, bots will not be able to buy tickets at face value on primary markets and resell for significantly more on secondary markets.⁵⁷ Maximum resale values in sports is not unprecedented, as the New England Patriots revoke the tickets of any season ticket holder who is caught selling their tickets on secondary markets for profit.⁵⁸ An additional benefit of blockchain in e-Ticketing is that ticketing companies will be better equipped to identify which accounts may be bots, for it will be easy to track an account's purchase patterns and transaction activity.⁵⁹

VI. RECOMMENDED POLICY CHANGES

Legislators should amend the BOTS Act to compel ticketing companies to employ technology that achieves the same results as blockchain. For now, it is unlikely that Congress will force any private company to implement blockchain, since no legislation containing the word 'blockchain' has ever been passed.⁶⁰ For this reason, amendments should be proposed that achieve the same means of blockchain, without actually referencing blockchain. There are two amendments in particular that can immediately help consumers fight bots.

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ McFadden, *supra* note 16, at 440.

⁵⁹ Niall O'Doherty, *Guest Post: Battle Ticket Bots with Blockchain? Why Not?*, Medium (February 22, 2017), <https://medium.com/robin/guest-post-battle-ticket-bots-with-blockchain-why-not-cfc0edc70656>.

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<https://www.congress.gov/search?q=%7B%22congress%22%3A%22116%22%2C%22source%22%3A%22legislation%22%2C%22search%22%3A%22blockchain%22%7D&searchResultViewType=expanded>.

The first amendment involves restricting the maximum resale value of certain tickets. Some states have already enacted restraints on the maximum resale value. For example, Michigan prohibits the reselling of any ticket above face value unless the venue grants permission.⁶¹ However, this legislation is rather weak, since StubHub has gained the requisite permission from the largest venues in Michigan.⁶² Thus, a potential amendment to the BOTS Act may state: “50% of tickets sold for sporting events on any online ticket market cannot be resold for more than face value.⁶³ Any ticket company that does not comply will be fined [X amount of dollars].” This amendment accomplishes crucial goals. First, it shifts the responsibility of monitoring and reporting suspected bot users to the ticketing companies. Second, the potential fine diminishes the revenue incentive that blended market ticketing companies have in not reporting bots. Additionally, ticketing companies will comply with this amendment to demonstrate to frustrated consumers that they are making good-faith efforts to reduce fees. Third, since only half of the tickets sold on primary markets in this scenario can be sold above face value, the maximum revenue for companies that use bots could decrease by 50%. Here, the easiest way to track that 50% of tickets are not resold above face value would be through blockchain, as ticketing companies can track a ticket’s entire transactional history up until the moment the ticket holder enters the venue.⁶⁴

A second amendment that could promote the use of blockchain in e-Ticketing is requiring purchasers to use multi-factor authentication when buying tickets online. Such an amendment could utilize the standard currently set forth in the Drug Enforcement Agency’s Electronic

⁶¹ Melissa Anders, *Ticketmaster, StubHub policies come under scrutiny of Michigan lawmakers*, MLive (August 10, 2012), https://www.mlive.com/business/2012/08/michigan_lawmakers_consumer_gr.html.

⁶² *Id.*

⁶³ The 50% threshold was picked arbitrarily. The percentage can range anywhere from 0-100%.

⁶⁴ Elefant, *supra* note 17, at 38.

Prescriptions for Controlled Substances law. Under Title 21 Code of Federal Regulations §1311.115, a doctor can only electronically prescribe a patient medication for a controlled substance by verifying the prescription through multi-factor authentication.⁶⁵ The statute defines multi-factor authentication as using two of the following three methods: something you know, something you have, and something you are.⁶⁶ For example, a password is something you know, a hard token is something you have, and a fingerprint is something you are.⁶⁷ If electronic prescription law could mandate that prescribers must use specific security measures, then surely the BOTS Act can be amended to require similar security.

Here, an amendment designed for the ticket industry could state: “In order to purchase a ticket on a primary ticketing company’s website for an event, the ticketing company must require the purchaser to authenticate their acquisition using a protocol that utilizes multi-factor authentication.” This amendment would strengthen the BOTS Act, since blockchain in e-Ticketing requires purchasers to set up accounts on primary ticketing companies’ websites by submitting forms of identification such as email address, phone number, and photo identification. With multi-factor authentication, a user purchasing a ticket on a primary market website will have to use extra security measures to complete the purchase. One such scenario could involve the purchaser entering their account’s password, followed by entering a one-time access code sent to their mobile device. This prevents rampant bot use in multiple ways. First, it will slow down the speed in which bots could purchase tickets on the primary markets, since the person using the bot will have to fulfill a second security measure, such as confirming the purchase on their smartphone. Second, these more intensive security measures will make it easier for

⁶⁵ See 21 C.F.R. § 1311.115.

⁶⁶ *Id.*

⁶⁷ *Id.*

ticketing companies to track which accounts may be bots, since bots' accounts will be linked to real phone numbers or photo identification. Ticketing companies could identify which phone numbers are connected with buying and reselling tickets in large quantities, and report suspected bot accounts to the FTC. Thus, requiring multi-factor authentication for purchasing tickets will help catch and terminate bots.

VII. CONCLUSION

The widespread use of bots in e-Ticketing has forced consumers to drastically overpay for tickets. Congress enacted the BOTS Act in 2016, but the legislation is ineffective mainly because ticketing companies do not have to report suspected bot users. Blockchain technology can significantly benefit consumers in the battle against bots. While it would be unprecedented for Congress to force a private company to use blockchain, Congress could amend the BOTS Act so that ticketing companies are compelled to use technology that can achieve the same results that blockchain is capable of accomplishing. Recommended amendments include limiting the number of tickets that can be resold above face value and requiring multi-factor security authentication for all purchases on primary ticket websites. While these measures will not completely eliminate the widespread use of bots, it will provide some immediate relief to consumers.