

## Chapter 14

# Developing a Blockchain Solution for West Virginia Medicinal Cannabis

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### ABSTRACT

*West Virginia became the 29<sup>th</sup> state in the country to legalize cannabis for medicinal purposes in 2017. Two years later, the state's medicinal marijuana program is scheduled to start enrolling patients; however, state legislators acknowledge that the program is still years behind actual implementation due to obstacles that have become seemingly insurmountable via existing channels. This paper undertakes a holistic evaluation of the value of blockchain to the nascent medicinal marijuana industry in West Virginia. Three use cases are presented to address the difficulties the state has experienced during the program's first two years of rollout efforts. Specifically, a blockchain use case is developed to address the issue of traceability to prove provenance, managing the vertically integrated supply chain and because of federal tax law the particularly cumbersome issue of collecting and storing payments.*

### INTRODUCTION

The West Virginia Center on Budget and Policy published a comprehensive report in 2016 examining the potential economic and budgetary impacts of marijuana legalization in the state that concluded the state could raise an estimated \$45 million annually in tax revenue and save \$17 million currently spent on enforcement (Holmes, 2016). The report goes on to say legalization has the potential to increase tourism to the state (Poole, 2016). The report also noted that marijuana could positively influence West Virginia's opioid-based painkiller and heroin epidemic by offering another less-addictive alternative to individuals who are suffering from debilitating medical conditions (Holmes, 2016). Prior research has shown that state implementation of medical marijuana laws was associated with lower rates of opioid prescribing; moreover, implementation of adult-use marijuana laws lowered opioid prescription rates even further (Wen & Hockenberry, 2018).

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April 19, 2017, West Virginia governor Jim Justice signed SB 386, making West Virginia the 29<sup>th</sup> state to legalize medical cannabis. However, the program's implementation, which allows patients to register with the program July 1 of this year, is delayed due to the state's current financial vendors' unwillingness to participate in the program and with the medical cannabis businesses themselves (Zuckerman, 2019). In response to concerns regarding banking services and to ensure compliance with federal law while handling monies associated with the state's medical cannabis program, on March 26, 2019, Gov. Justice signed HB 2538 that will allow different types of banking institutions, including credit unions to bid for the state's account (Adams, 2019). May 29, 2019, Gov. Justice signed into law SB 1037, enabling vertical integration of cannabis, allowing for a single person or business entity to simultaneously hold grower, processor, and dispenser permits (Beard, 2019). Presently, federal tax law make it nearly impossible to operate profitably without vertical integration. SB 1037 also allows for product testing by private labs unless the Department of Agriculture at some point would choose to take it over.

The remainder of this paper is organized as follows. The West Virginia medicinal cannabis industry is discussed in Section II. Vertical integration, the supply chain, and risks associated with the nascent medicinal marijuana industry in West Virginia is described in Section III. Blockchain's potential game-changing role in the West Virginia medicinal cannabis program is discussed in Section IV. Discussion, limitations, and suggestions for future research are summarized in section V.

## **MEDICINAL CANNABIS**

Medical cannabis, or medical marijuana, is cannabis and the associated cannabinoids that patients are prescribed to reduce amongst many other things anxiety, chronic pain, nausea and vomiting (Murnion, 2015; Borgelt et al., 2013). Cannabis has been used throughout history in many cultures for medicinal purposes dating back thousands of years (Amar, 2006). Medicinal cannabis can be administered through a variety of methods, including but not limited to capsules, lozenges, edibles, and vaporizing or smoking dried buds.

Presently in the United States (U.S.), thirty-three states and the District of Columbia have legalized cannabis for medicinal purposes (Parker et al., 2019). Because on the federal level medicinal cannabis remains prohibited, the Rohrabacher–Blumenauer Amendment, previously known as the Rohrabacher-Farr Amendment (2014) was enacted which precludes the Department of Justice (DOJ) from using federal funds to prosecute medical marijuana businesses (growers, dispensaries) operating in states where medical marijuana is legal at the state level (Parker et al., 2019).

### **Supply Chain Risks**

Given the West Virginia medical cannabis program is in a primordium stage, few if any companies in the state will be able to create at the outset, an adequate vertically integrated supply chain free of inefficiencies, as it was the case in Canada where cannabis producers have struggled with supply chain issues since the rollout of legal marijuana (Tabak, 2019). The Canadian government released a report on May 24, 2019, showing that sales of dried cannabis and cannabis oil had declined compared to the previous month in both January and February while finished inventories of both grew (Government of Canada, 2019). The consensus is that inventory is cultivated, and then the capacity is not there to process it further, resulting in product piling up.

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