

THE US CANNABIS TECH HANDBOOK

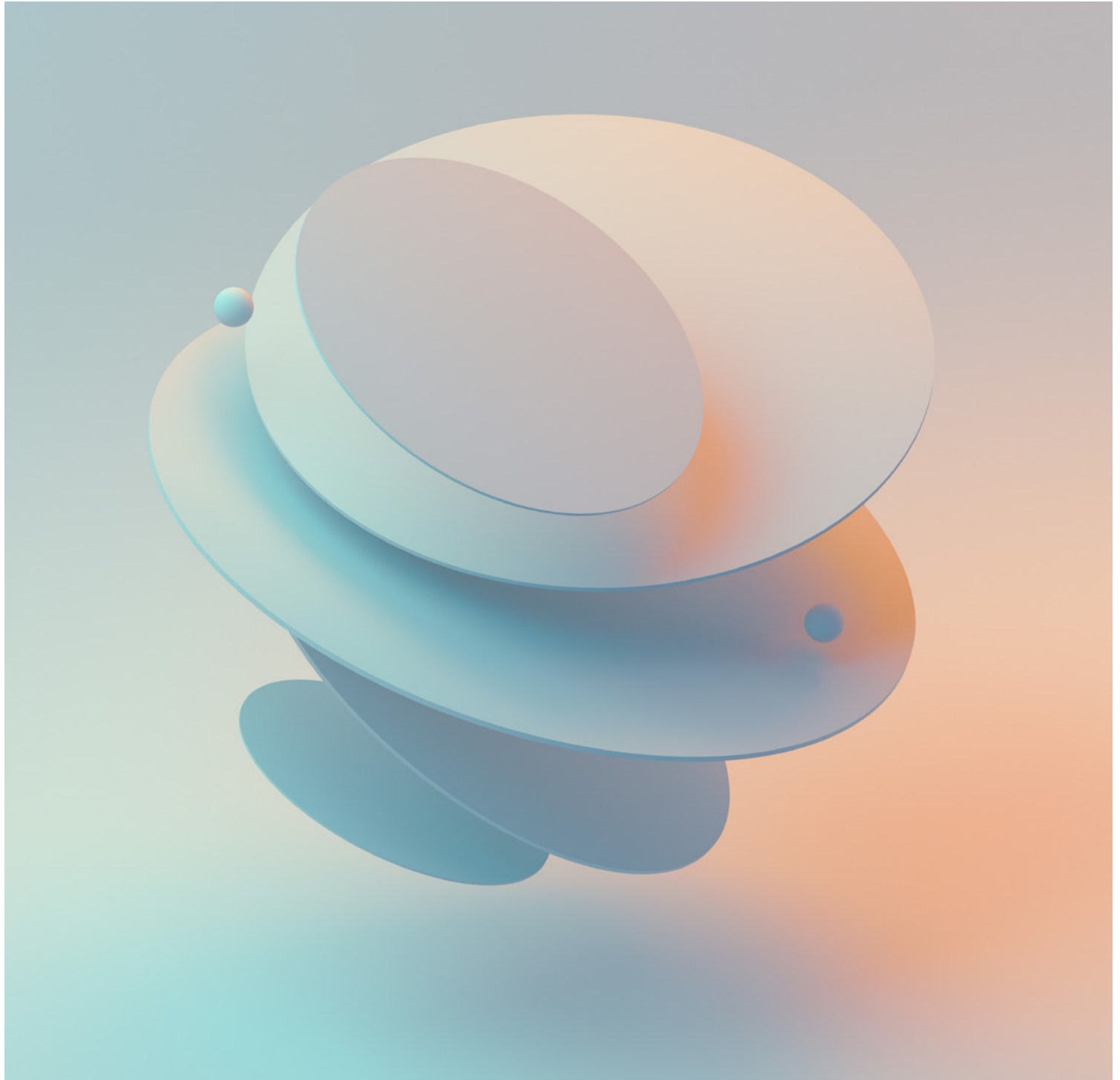


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US Tech Landscape Overview



US Tech Landscape

POS	eCommerce Solution	ERP
dutchie growflow BLAZE alleaves* BIOTRACK* mj freeway* flowhub VIRIDIAN SCIENCES	dutchie BLAZE alleaves* Jane SWeed Meadow dispense** RankReallyHigh	dutchie growflow BIOTRACK* mj freeway* VIRIDIAN SCIENCES 365 Cannabis canix Quantumleaf distru
Track-and-Trace (Compliance)	Retail Analytics	Online Marketplace (B2C)
365 Cannabis Jane SWeed metrc BIOTRACK* COVA TREEZ Meadow IndicaOnline POSaBIT	mj freeway*	Leafly weedmaps egze Leafythings
Online Marketplace (B2B)	Data & Analytics (Industry)	Last Mile Delivery
leaflink Cannafax™ MainStem NABIS APEX TRADING Leaf Trade TAMERLANE TRADING CO.	dutchie TREEZ growflow Happy Cabbage AQ** HEADSET B D S A	alleaves* onfleet ScarletEX drop Fleet
CRM	Payment Solution	Digital Menus & Merchandising
dutchie 365 Cannabis distru SPRINGBIG Clique™ GREEN CHECK PLAID Bankcard International Group stickycards sproutsocial STRAIN dutchie EMB Instabill Leafbuyer. AQ** stemless smbglobal aeropay AYBOTIC SKOOP Divvy	alleaves* BLAZE dispense** seed bud sense. Budvue	

*Companies owned by Alleaves | **Companies owned by AlpineIQ

Overview

The tech landscape in the US cannabis industry is a relatively self-contained and very fragmented ecosystem. This is a reflection of the nature of the cannabis industry in the country – existing not as a national market but as a series of state-limited (or territory-limited, e.g. Guam) markets with varying degrees of similarity to one another.

Each market is shaped by its own unique regulatory environment, while all share the constraints imposed by the federal illegality of cannabis.

Tech players face a challenge of creating technological solutions that are suited to operators in multiple states, which often have different business needs, compliance requirements, tax obligations, etc.

While there is some overlap with other industries, tech in the cannabis space is mostly purpose-built to serve cannabis operators exclusively. These tech categories already exist in other industries, but services are built from the ground up to be specialised for cannabis.

Connectivity, integration and interoperability between different components of the tech stack are hallmarks of the landscape, and a significant amount of the value of individual components is derived from their potential for integration with other leading services. Of critical importance is the facility to integrate core components of the tech stack, such as point of sale (POS), with the track-and-trace provider designated by each state, because such an integration is necessary for regulatory compliance. Without this integration, entire states are off limits for certain tech providers.

Some tech companies, such as Dutchie or Flowhub, try to go for an all-in-one approach, but many just opt to occupy one slot in the ecosystem, focus on providing best-in-class in that niche, and integrate with high-value services in other niches.

The large tech providers are Multi-State Operators (MSOs) in a different way than operators involved in the physical supply chain, in that the product they provide is essentially the same across different markets. Those involved in the physical supply chain have to build or harness a different supply chain in every state due to the prohibition of cross-border trade.

Some large MSOs involved in the physical supply chain, such as Cresco Labs, build their own proprietary internal tech stack for use by their businesses across the country.



Definitions

Point of Sale (POS)

Essential software used by dispensaries to log sales and track inventory. Integrated with hardware in the dispensary. Defines the sales transaction and shapes the customer experience. (For more information, see 'Point of Sale' section.)

Track and Trace (Compliance)

A system that tracks the production and movement of cannabis products across the supply chain, from cultivation to retail sale, in order to ensure compliance with regulation at all times. All operators are obliged to record data using these systems, with recorded data available to state authorities. (For more information, see the 'Track and Trace' section.)

Enterprise Resource Planning (ERP)

A system used by operators to streamline and optimise their processes. Can be thought of as a hub for a business, which centralises many of the processes, while recording the details of those processes for the purposes of analysis and optimisation. More useful for producers and larger businesses. (For more information, see 'Enterprise Resource Planning' section.)

Payment Solution

Software solutions offered to cannabis operators to process and receive payments electronically, without using major credit card networks such as those operated by Visa and Mastercard. (For more information, see 'Payments' section.)

e-Commerce Solution

Software used by dispensaries to fulfil retail sales online, offering a virtual shopping experience, with products then delivered to or collected by customers.

Online Marketplace (B2B)

Platform where businesses compare and source products from multiple other businesses. As in non-cannabis industries, these marketplaces act as connection hubs for wholesale transactions.

Online Marketplace (B2C)

Platform where customers compare and source products. Rather than just having individual e-commerce solutions for customers to buy from online, dispensaries can sign up to B2C marketplaces, where customers can compare between different dispensaries and order a delivery depending on their location.

Customer Relationship Management (CRM)

Same as in non-cannabis industries – software that centralises customer data, tracks communication, and facilitates customer service, sales, marketing and support. Non-cannabis CRM services are used by cannabis operators; however, a number of cannabis-focused CRM companies do exist.

Retail Optimisation Analytics

Software that uses analytics to optimise the operations of a retailer, maximise revenue and customer engagement, optimise inventory turnover and sales strategies, etc.

Data & Analytics

Market intelligence platforms that centralise data from multiple sources and offer insight on activity, products, prices, trends, patterns and dynamics within the cannabis industry across various markets.

Digital Menus

Software for displaying product menus on screens in-store, as well as online. Generally useful for engagement and efficiency. Useful in an environment where different inventory needs to be pushed at different times, for example the rate at which menus are required to be updated is rapid. Also opens up opportunities for screen time to be offered to vendors/wholesalers in exchange for discounts on products.

Last-Mile Delivery

Service used by dispensaries which uses real-time tracking and route optimisation to streamline the process of receiving, processing and dispatching customer orders in order to deliver packages as affordably, quickly and accurately as possible.



Mergers and Acquisitions



Between 2020 and 1 October 2024, Prohibition Partners identified 35 M&A transactions in the US digital cannabis landscape. The sector saw the largest number of M&A deals in 2023. The number of transactions dropped in 2024 to only six transactions; however, there is potential for more transactions to occur in the last quarter of 2024.

In the nascence of the digital cannabis sector in 2020, there were two transactions, including the compliance-driven digital cannabis marketing company Fyllo's acquisition of CannaRegs, a US cannabis regulation data platform, for US\$10 million.

Following a rather calm year, 2021 saw a considerable increase in M&A activity (nine transactions) as companies aimed to consolidate in the cannabis industry and benefited from the surge of cannabis sales driven by the COVID-19 pandemic, providing many players with enough capital to expand through acquisitions. During this period the cannabis software platform provider Dutchie acquired the POS software company Greenbits as well as ERP software company LeafLogix Technologies, to offer vertical e-commerce solutions to its dispensary partners. This trend of consolidation continued in 2022 with eight M&A transactions, including Fyllo's acquisition of digital menu provider Ninesixteen and CRM solution company Semasio, continuing its aim of expanding its digital marketing solutions.

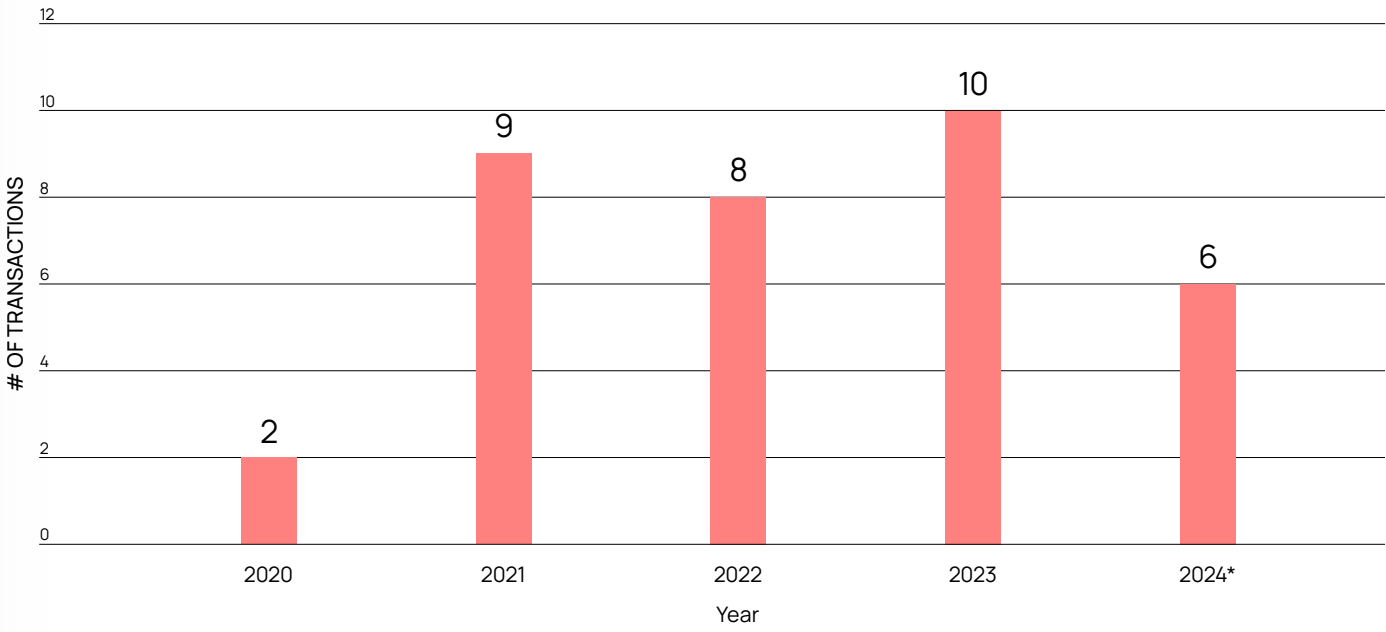
2023 saw a substantial rise in M&A activity (ten transactions), the year starting off with cannabis dispensary software provider BLAZE acquiring e-commerce solution company Tymber. In the same year, the technology company Forian exited the cannabis industry through its US\$30 million sale of track-and-trace software provider Biotrack to cannabis software company Alleaves, thereby expanding Alleaves' product offering.

In 2024, there was a slowdown of M&A transactions (six deals), which can be attributed to economic uncertainty in the market; however, the cannabis recruitment platform Vangst made some significant moves by acquiring its competitor CannabizTemp and the cannabis recruitment provider Greenforce with the goal to expand their offerings in Oregon and Arizona. Additionally, retail analytics and CRM provider AlpinelQ acquired Dispense Software, and the B2B marketplace platform Leaflink acquired Dama Financials' banking solution assets.

Date	Target	Target Sector	Purchaser/Investor(s)	Investment Type	Transaction Size
17/01/2020	CannaRegs	Other	Fyllo	Acquisition	\$10 million
26/02/2020	Good Harvest Co.	Retail Analytics	Surfside Solutions Inc	Acquisition	Undisclosed
20/01/2021	DataOwl	CRM	Fyllo	Acquisition	N/A
14/09/2021	Sprout	CRM	WM Tech (weedmaps)	Acquisition	Undisclosed
15/09/2021	Wikileaf	Data & Analytics (Industry)	Fire & Flower Holdings Corp (Hifyre)	Acquisition	\$7.5 million
15/09/2021	Potguide	Data & Analytics (Industry)	Fire & Flower Holdings Corp (Hifyre)	Acquisition	\$8.5 million
08/06/2021	Blackbird	E-commerce Solution	Herbl	Acquisition	Undisclosed
16/03/2021	LeafLogix Technologies, Inc	ERP	Dutchie	Acquisition	Undisclosed
13/09/2021	365 Cannabis	ERP	Akerna Corp	Acquisition	\$17 million
18/09/2021	Green Dragon	Other	Eaze	Acquisition	Undisclosed
16/03/2021	Greenbits, Inc	POS	Dutchie	Acquisition	Undisclosed
12/04/2022	Semasio	CRM	Fyllo	Acquisition	N/A
04/05/2022	Enlighten	Digital Menus & Merchandising	WM Tech (weedmaps)	Acquisition	Undisclosed
14/06/2022	NineSixteen	Digital Menus & Merchandising	Fyllo	Acquisition	N/A
16/11/2022	Dabber	E-commerce Solution	Cova Software	Acquisition	Undisclosed
21/01/2022	GrowFlow Corp	ERP	Dama	Acquisition	Undisclosed
02/11/2022	Swifter	Payment Solution	Treez	Acquisition	Undisclosed
16/11/2022	Rockview Digital Solutions, Inc. d/b/a Abaca ("Abaca")	Payment Solution	Safe Harbor Financial	Acquisition	\$30 million
10/05/2022	Greenline	POS	BLAZE	Acquisition	Undisclosed
11/01/2023	Tymber	E-commerce Solution	BLAZE	Acquisition	Undisclosed
11/01/2023	365 Cannabis	ERP	Founders	Acquisition	\$2.8 million
31/05/2023	Camino Technologies	Other	Clariti	Acquisition	Undisclosed
03/04/2023	Hypur Inc	Payment Solution	POSaBIT	Acquisition	\$7.5 million
28/03/2023	Sweed POS	POS	Leaf Trade	Merger	Merger
24/10/2023	Candid AI	Retail Analytics	Dama	Acquisition	Undisclosed
06/12/2023	Nugget Data	Retail Analytics	CannMenus	Acquisition	N/A
13/02/2023	Biotrack (Bio-Tech Medical Software, Inc.)	Track-and-Trace (Compliance)	Alleaves	Acquisition	\$30 million
28/04/2023	MJ Platform and Leaf Data Systems	Track-and-Trace (Compliance)	MJ Freeway Acquisition Co Alleaves, Inc	Acquisition	\$5 million
06/06/2023	Komplyd	Track-and-Trace (Compliance)	Green Check Verified (GCV)	Acquisition	Undisclosed
27/02/2024	Blackbird	E-commerce Solution	Nabis	Acquisition	\$850,000
05/03/2024	Dispense Software	E-commerce Solution	Alpine IQ	Acquisition	Undisclosed
03/09/2024	GrowFlow Corp	ERP	TDV Capital Partners	Acquisition	Undisclosed
12/04/2024	CannabizTemp	Other	Vangst	Acquisition	Undisclosed
24/07/2024	Dama Financial's banking division (assets)	Other	LeafLink	Acquisition	Undisclosed
10/09/2024	GreenForce	Other	Vangst	Acquisition	Undisclosed

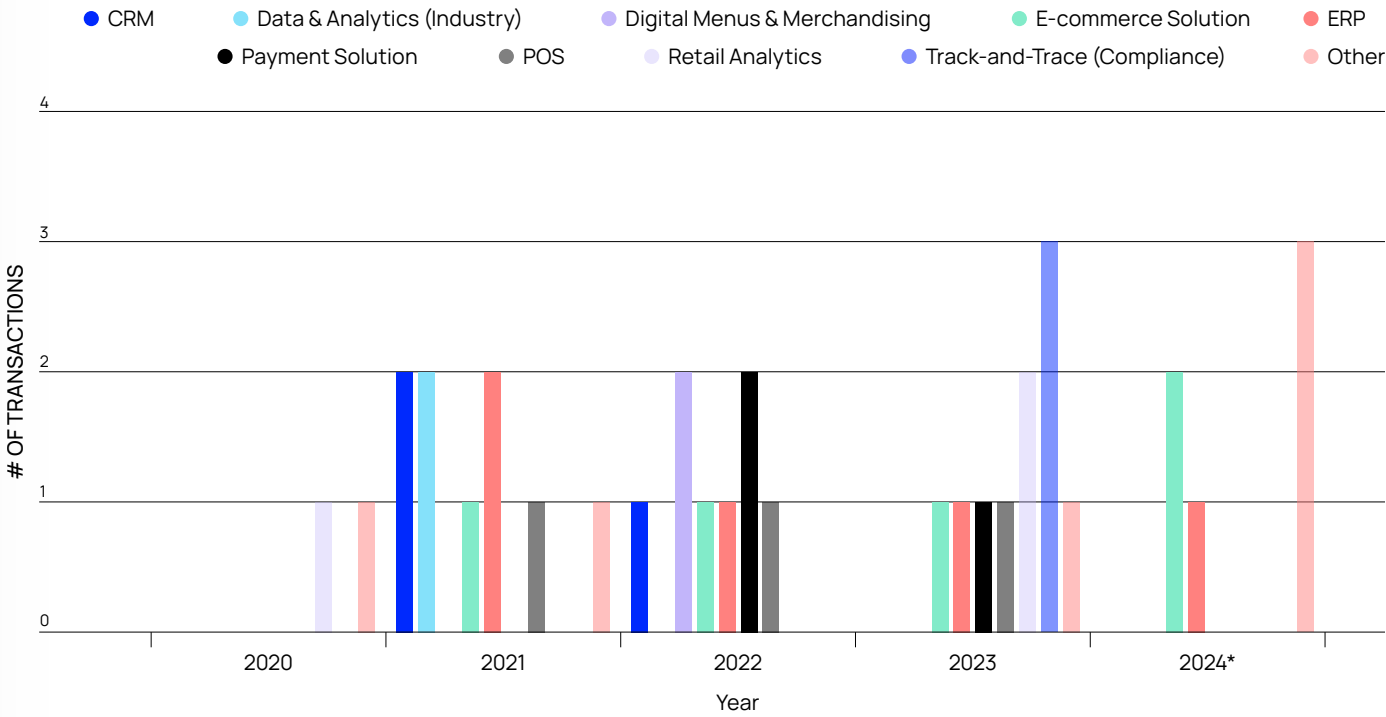
Source: Prohibition Partners 2024

Number of US Digital Cannabis M&A Transactions (2020–2024*)



*As of 1 October 2024
Source: Prohibition Partners

Number of US M&A Transactions by Digital Cannabis Technology Category (2020–2024*)



*As of 1 October 2024
Source: Prohibition Partners

Build, Buy, or Integrate?



With consolidation of the landscape ongoing, the large cannabis tech players are looking to be able to offer an all-in-one tech solution to operators, whatever their state or operation type. There are currently none able to do so. This is due to the complexity and variation in the services required by different operators in different places, as well as the fact that regulation limits activity and competition in specific areas.

The decision large players face is whether to build out the additional services themselves from the ground up, acquire existing players that offer those services, or establish integrations between those players and their own service offering. Building new technological services from scratch may take a significant amount of resources and time, and is not guaranteed to result in a service that can effectively compete with rivals in that category. At the same time, building tools allows customisation of those tools to suit their own business needs or those of clients perfectly, and if those tools can eventually be packaged and sold elsewhere to offset development costs, then the upside can be huge.

Acquiring existing players is complex and takes capital investment capacity. It brings challenges in integration – for example, if a large POS provider wants to acquire an ERP solution, but the player they choose also offers POS services, what happens to those POS services? The users of those services are familiar with the product, and it has its own set of integrations with other services, so switching those users to the POS services of the large provider may be problematic. An example of this is the situation with Alleaves, Biotrack and MJ Freeway, which are all under the 'Alleaves' ownership umbrella, yet offer different POS services in parallel.

Integrating with other services is something that every player in the tech landscape currently has to engage in to a greater or lesser degree. At a minimum, core services have to be compatible with the chosen track-and-trace service of each state. In an environment where there is such a wide selection of services on offer

in each category in every state, the current logic seems to be that more integrations means more value. Dutchie currently boasts integrations with 96 different service providers on its website, with everything from rival POS software and to digital menu solutions, to last-mile delivery services provided by its integration partners. Likewise, Flowhub lists 71 integrated partner services across a similarly wide range of categories. This does not represent the full extent of the market – a 2024 report by Cannabiz counted 71 providers of POS services alone in the US over the past year.

The picture presented is one of a large and unwieldy ecosystem of service providers, tangled in a complex web of integrations and acquisitions. Dutchie is the current market leader; however, it still does not offer a comprehensive suite of tech services across all states. The race to be the all-in-one tech solution for the US cannabis industry is still very much on, but in such a dynamic and shifting landscape, there is still no end in sight.

Track and Trace (Compliance)



Implementing a track-and-trace system is a legal necessity for any cannabis operator in the US. Track-and-trace technology tracks details of a company's operation for the purpose of complying with its legal record-keeping obligations, and for the purpose of tracking products through the supply chain.

The way these systems work is that every plant or group of plants, and every product or batch of products, is marked with a scannable tag. Using this system, any product can be traced back to the batch of products it came from, and that batch back to the plants that were used to manufacture it. Information is also recorded on cultivation, harvest, inventory management, sales, and manufacturing processes.

By mandating the use of track-and-trace systems, authorities aim to achieve a number of primary objectives, including:

1. Ensuring that legal product and illicit market product are not co-mingled, so black-market cannabis does not enter the legal cannabis supply chain and vice-versa
2. Ensuring that tax is collected on cannabis sales
3. Removing contaminated products from the supply chain and identifying the source(s) of contamination.

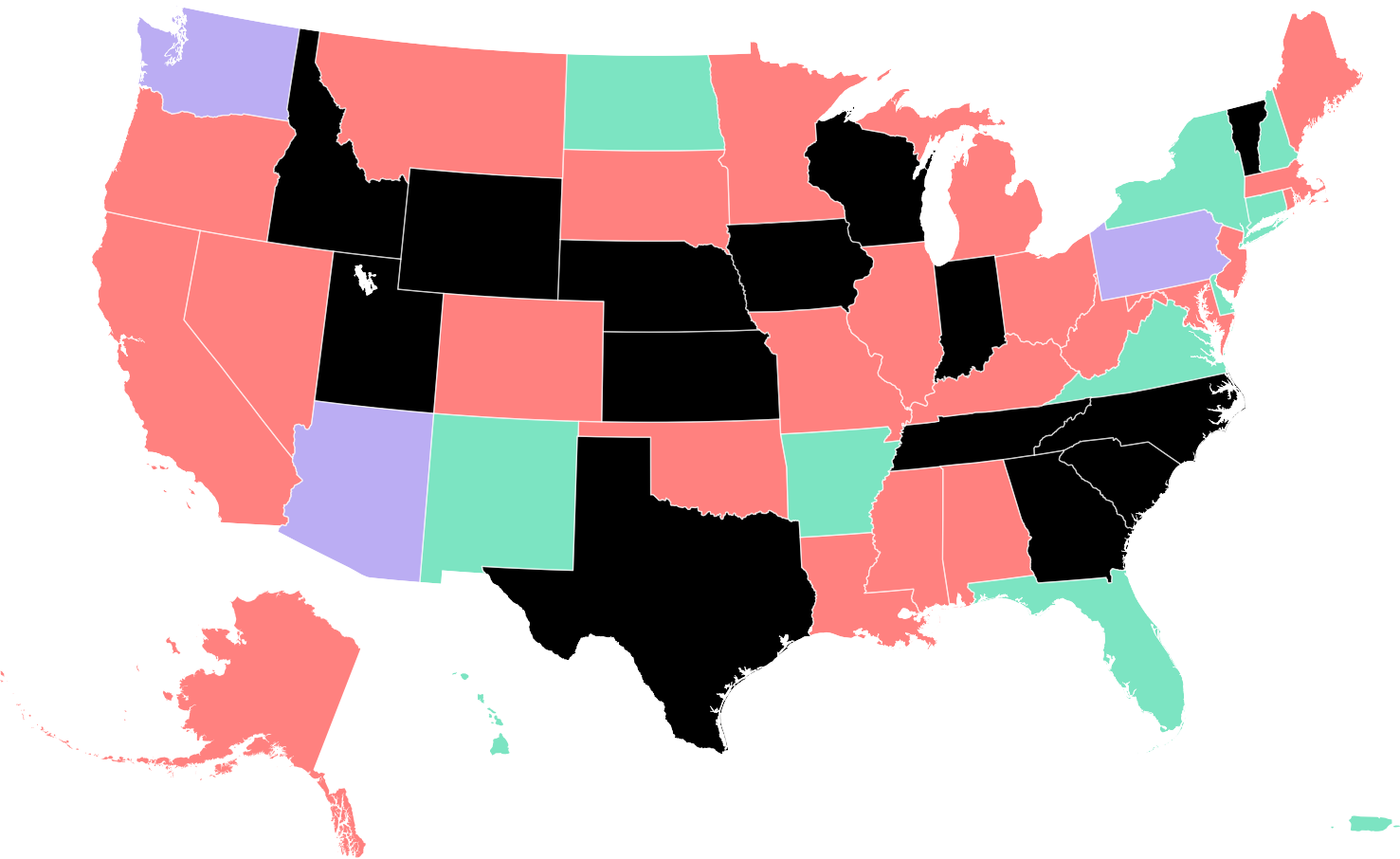
The situation currently is that in most legal markets (states + territories), authorities have designated one track-and-trace service provider to be the legally mandated system for that market (the exception is Arizona, which requires reporting from seed-to-sale software but without specifying a provider). The regulatory requirements differ from state to state, and change regularly, so providers of track-and-trace technology have to keep up with what is required in each case. Each operator in the supply chain of each market, from cultivators to dispensaries, must use the designated system to meet its record-keeping obligations.

This means that all of the other tech services used by an operator in that market must be compatible with the designated track-and-trace system. For example, an operator must use only ERP and POS systems that have an integration capacity with Metrc in Montana because it is the designated track-and-trace system provider in that state.

Two track-and-trace providers currently dominate almost all available markets – Metrc and Biotrack.

Breakdown of States by Track-and-trace Provider

● Metrc ● Biotrack ● Neither ● No track and trace



The three exceptions to this domination are:

Arizona – as already mentioned, the state does not designate a required track-and-trace provider but still requires the implementation of a suitable system

Pennsylvania – MJ Freeway is the designated track-and-trace provider; however, there have been recent reports that the state is seeking alternatives

Washington – the state government provides its own track-and-trace software, which all operators must use

*Illinois is switching to Metrc before the end of 2024
Source: Prohibition Partners 2024



The current track-and-trace infrastructure provided by Metrc and Biotrack poses significant issues for businesses, resulting in high costs and inefficiencies.

First, the cost of purchasing individual tags is a financial burden on companies. The two systems are slightly different – Metrc requires businesses to physically order tags from the company, while Biotrack requires businesses to print their own tags. Metrc’s tags cost \$0.45 per plant tag and \$0.25 per package tag, while each Biotrack tag costs \$0.10. New tags must generally be used every time a plant, product or batch of products is transformed or divided into a new product or package of products. Metrc is integrating a new system in Oregon where up to 100 plants can be grouped under one tag, rather than needing a separate tag for each plant; however, the cost per plant remains the same. For example, a group tag for ten plants would cost \$4.50; and for 100 plants, the cost would be \$45. Businesses operating at scale therefore run up thousands of dollars in monthly costs purely through purchasing tags from track-and-trace providers.

This particular problem is more pronounced for companies in states with Metrc as the designated track-and-trace provider (apart from Missouri, where it is the state that pays for tags rather than the businesses) because its tags are more expensive.

Second, the labour cost associated with implementing and maintaining these systems represents another financial burden on companies. The platforms provided by both Metrc and Biotrack have gaps in functionality that result in a clunky, inefficient user experience. For example, a large amount of data entry on both platforms is heavily manual, requiring users to repetitively update information on an individual tag basis.

Third, users of both platforms encounter technical issues that cannot be solved without support from the providers. This creates bottlenecks, which can severely impact operational efficiency, because in many cases, moving or processing products can take place only once the correct tracking data has been logged into the system.

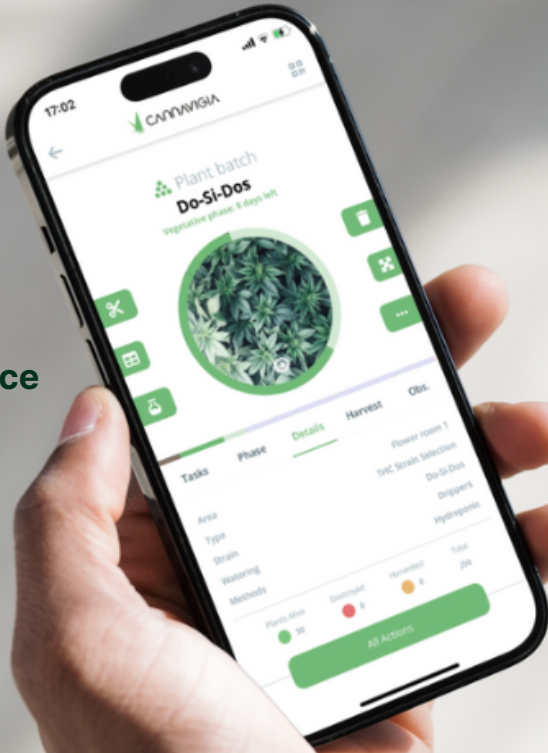
An industry of third-party services and platforms that integrate with Metrc and Biotrack has been created, simplifying and streamlining the user experience. However, multiple record-keeping obligations exist, meaning that data can still only be logged directly in the Metrc and Biotrack platforms. As well as this, most businesses do not use third-party services, using only the platforms provided by Metrc and Biotrack.

Both Metrc and Biotrack record types of data that would be very valuable to the businesses using the platform, for analytics and optimisation purposes, but businesses are not able to access the data on their own activity. Enterprise Resource Planning (ERP) tools are not embedded into these systems, and although it is possible to access this data using third-party tools, it is not provided by the track-and-trace providers themselves.

The nature of the track-and-trace environment has created a significant market for third party-tools that integrate with Metrc and Biotrack, streamlining functionality and allowing for data collection and analytics. For more information on this, see the following section 'Enterprise Resource Planning'.



The Digital Twin of Your Cannabis Operations.



**Risk-free and Robust Compliance**

**Seamless Documentation**

**Data Analysis**

**Cost Control**

Ready for Cannabis 2.0?

Embark on a digital revolution with our solutions, empowering you to create a comprehensive digital replica of your facility and workflows. Seamlessly monitor and manage all areas, rooms, equipment, and formulas related to cannabis production, distribution, quality control, and safety.



Enterprise Resource Planning



ERP software is used by cannabis businesses as a hub for their operations. If businesses centralise many of their processes onto one platform, for example, track and trace, accounting, purchases, production, manufacturing, and sales, they can be streamlined and more easily organised, managed and improved.

ERP tools are essential to large-scale cannabis businesses – they are third-party tools that enable businesses to use the track-and-trace services of Metrc and Biotrack in a more streamlined and effective way. They allow for the tracking and analysis of data that is being recorded in order to report to these platforms, which is a facility that the track-and-trace platforms themselves do not provide. They also fill gaps in the functionality of track-and-trace platforms. For example, if a cultivator in a remote location doesn't have reliable network access at their facility, then track-and-trace data cannot be recorded at the cultivation site, because Metrc doesn't allow for certain data to be logged without an internet connection. ERP platforms can log this data, and it is automatically logged to Metrc when an internet connection is established. This integration with track-and-trace services is one of the main features that distinguishes cannabis-specific ERP technology from ERP in other industries.

In contrast to track-and-trace technology, ERP technology tracks a company's operational data so that it can be used internally to optimise operations and make workflows more efficient. Detailed data records are used to identify inefficiencies and are analysed in order to improve systems and business performance. For example, by calculating detailed breakdowns of the costs that go into producing goods, and by comparing projected versus actual costs, it is possible to pinpoint areas where operations could be improved and improve margins. Profit can be calculated per SKU, per gram, per millilitre, or by any other sales unit. This more standard side of ERP systems is common across other industries.

ERP solutions offer different services to different operators. A producer will find high value in the capacity to create label templates dynamically, integrating product tags with tracked Certificate of Analysis (COA) results, as well as harvest and production dates, allowing for a seamless label creation and printing process. Retailers will find high value in being able to automatically upload product data that is tracked in an ERP system, rather than having employees manually upload new product data.

Payments



The issue of payments in the US cannabis tech space currently represents one of the most significant pain points, as well as financial opportunities, in the entire industry. Managing to take a fee from a reasonable proportion of the huge volume of transactions that take place on a daily basis could translate into millions of dollars in annual revenue.

Since the inception of the cannabis industry in the country, operators have had to grapple with the fact that standard payment providers will not process payments for cannabis due to the legal risk involved. Given that cannabis is federally illegal, processing payments for it can potentially result in money laundering charges, no matter how legitimate the parties involved in the transactions are.

Trading primarily in cash poses significant problems for businesses for obvious reasons, but every alternative established thus far has not solved the payments issue for operators. This means that cash is still the standard method of payment in dispensaries across the country, and customers are accustomed to using cash for cannabis purchases. Reportedly, over 80% of dispensaries in the US have a physical in-store ATM for cash withdrawals, often with high fees for the customer.

Workarounds have been established to facilitate cashless transactions in cannabis – primarily the 'cashless ATM' and the 'PIN debit' approaches. Both are deemed to be non-compliant by the operators of the financial networks involved.

The 'cashless ATM' (or 'Point-of-Banking') essentially involves creating an ATM at the dispensary; however, instead of cash being dispensed, it is deposited into the dispensary's bank account. In 2022, Visa and Mastercard, as well as the providers of ATMs such as NCR Atleos and banks, started a crackdown on this practice. In the eyes of financial companies and regulators, these 'cashless ATMs' violate industry standards, and may be federally illegal due to associations with money laundering.

The 'PIN debit' system is a more standard card payment system, which also runs on major financial networks. The primary difference between this method and credit card payment is that the funds are taken instantaneously from the customer's bank account, rather than being paid by the credit card company immediately and funds being taken from the customer at the point of repayment of the credit card debt. In mid-2023, major payment service providers, processing networks and financial institutions, including Mastercard, began to take action to prevent cannabis-related businesses from using this service.

Another solution currently offered by leading cannabis payment service providers uses the Automated Clearing House (ACH) network. This is a direct bank-to-bank payment, run through one intermediary or multiple intermediaries. These services are technically no more compliant for cannabis transactions than the 'cashless ATM' or 'PIN debit' services; however, they do not run on major credit card networks and these transactions are currently permitted by organisations involved in running the networks.

Unlike the two previously mentioned systems, ACH services don't offer a fully seamless experience of card payment. Instead, customers have to enter certain details, for example bank account number, name, address and postcode. Since this is not the usual customer experience when it comes to retail payments, it is not the preferred method of handling cashless payments.

For many dispensaries and cannabis business operators, handling cashless payments is often a matter of finding loopholes enabling the use of 'cashless ATM' or 'PIN debit' services, and using them until they are closed down, or of finding institutions that are willing to tolerate the risk of processing electronic payments for cannabis, and using their services until they are no longer willing to process those payments. ACH payments are a reliable, if awkward, backup option for processing cashless payments. Until there is a change in federal regulation, the cannabis industry in the US will remain cash-heavy.



Point of Sale



"This year's US Cannabis Tech Handbook highlights the growing need for dispensaries to have technology that goes beyond processing transactions. As competition increases, integrated solutions are key to streamlining operations, ensuring compliance, and improving the customer experience. The insights from Prohibition Partners help operators stay ahead by understanding how technology drives growth across the industry."

Spencer Scott, Chief Revenue Officer at Dutchie

As the cannabis industry continues to evolve, technology remains the most critical component of operational success and customer satisfaction in dispensaries. Dutchie is proud to sponsor the point of sale category in this year's Cannabis Technology Report, recognising its role in shaping the future of cannabis retail.

Today's dispensary operators face a set of challenges that traditional retail technology cannot address. From complex compliance requirements to inventory management and the demand for seamless customer experiences across all touchpoints, cannabis retailers require solutions that are built with the necessary expertise to solve these unique challenges.

Point of sale systems have evolved beyond simple transaction processing and now must integrate with other essential technology like e-commerce solutions and loyalty systems. These integrated systems bring all necessary tasks into one place, automating time-consuming work like inventory management and compliance reporting.

Dispensaries leveraging integrated POS solutions are better positioned to understand their customers, optimise inventory, and maintain compliance while simplifying operational needs. This technological foundation enables operators to focus on what matters most: serving their customers and growing their businesses.

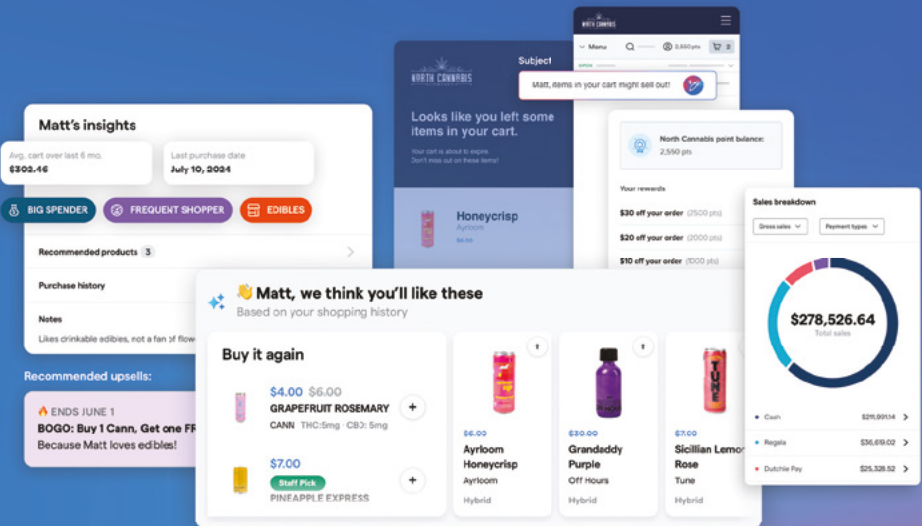
The cannabis retail landscape continues to change, with new markets opening and existing markets maturing. Operators are seeking solutions that can scale with their business while maintaining the flexibility to adapt to changing regulations and consumer preferences. The ability to automate routine tasks like inventory stocking, product discounting, and compliance reporting, access actionable insights, and maintain compliance has become not just a convenience, but a necessity for growth.

The insights provided by Prohibition Partners will continue to help operators navigate the changing landscape of cannabis retail technology. As markets mature and competition increases, the role of technology in driving efficiency and customer satisfaction becomes increasingly important. This report serves as a resource for understanding how technology can drive growth across the industry.



Dutchie 2.0

The cannabis operating system, reimagined.





Seamless shopping

Unified technology across POS, Ecomm, Marketing & Loyalty for seamless shopping online or in-store.



Optimize performance

Actionable insights to optimize product offerings, pricing, marketing, and in-store sales.



Streamlined operations

Automated, compliant inventory and discount management tools to streamline operations.



Faster checkout

Faster, compliant transactions with Pay by Bank cashless payments and an enhanced checkout experience.



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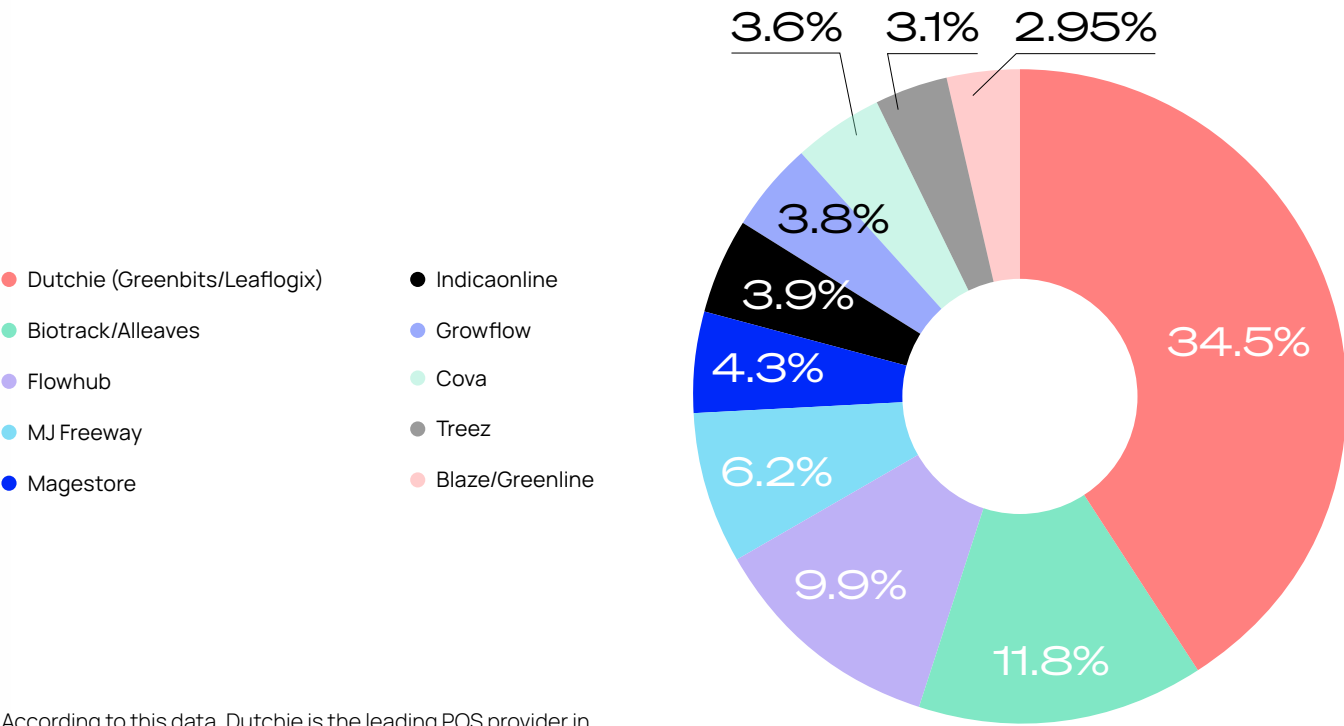
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The Point-of-Sale (POS) system is the foundation of the tech stack for dispensaries. It is necessary for compliance, recording inventory and sales data, and essential in a functional sense as it facilitates sales. More broadly, it simplifies the operation of a dispensary, as the POS system provider stays on top of regulations regarding record-keeping and tax obligations and integrates/updates their systems accordingly, which eases the burden for dispensary owners by allowing them to maintain their legal and taxation obligations simply by keeping their POS software up to date and implementing it correctly.

As in non-cannabis industries, the value of a POS system in cannabis is defined by its sophistication of functionality, its integration across different locations and channels (online, different state markets, etc.), its cost, and its reliability across software and hardware. In cannabis, particular emphasis is placed on the integration capabilities of POS systems – with track-and-trace software, payment solutions, ERP systems, and various other components of the tech stack.

The following chart shows data from a 2024 report published by Cannabiz Media, which obtained data from 4,235 of the 12,742 active dispensaries, retailers and delivery licence holders in the US (approximately 33% of the market). Using this as a representative sample, the market share of each of the leading POS providers in the US is estimated.

US POS Leaderboard 2024*



According to this data, Dutchie is the leading POS provider in the US cannabis industry by a significant margin. The company captured this market share via the acquisition of Greenbits and LeafLogix in 2021, having not previously offered POS services.

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* Dutchie claims to be the POS system in at least 6,500 of the 12,742 active dispensaries, retailers, and delivery licence holders in the US, so their market share may be higher than indicated by the representative sample

Telemedicine



Telemedicine US Landscape

Telehealth Providers

State Operator	MSO
  	  
  	 
  	 
  	  
 	  

Telemedicine Software Providers



Plug-ins



In recent years there has been an overall spike in the number of platforms offering telehealth services globally. The COVID-19 pandemic predominantly fuelled this growth, as stay-at-home orders and social distancing rules made it extremely difficult for patients to visit doctors and purchase medicines at pharmacies. Therefore regulators, authorities, healthcare providers and clinics

had to adapt by implementing telehealth services to ensure patients received adequate care quickly and securely. Following the COVID-19 pandemic, the use of these platforms has continued to rise as patients have become accustomed to their use and flexibility, allowing them to access healthcare from the comfort of their own home, no matter how remote they are. Additionally,

hospitals, pharmacies, clinics and doctors are implementing telehealth solutions into their practice to reach more patients and potentially gain access to a larger revenue pool.

In the cannabis industry, telehealth services play a significant part in many medical cannabis markets, as they act as the main facilitator for patient access. As there continues to be an underlying stigma in society and the professional medical community surrounding the use of cannabis for medicinal purposes, it can be a painstaking task for a patient to ask their GP for medical cannabis treatments or find a physician willing to prescribe cannabis. Additionally, these tasks are even more difficult for patients living in remote areas and for those who have severe debilitating medical conditions. Thus, the implementation of digital telehealth software and services by medical cannabis practitioners, clinics and pharmacies/dispensaries has significantly eased the burden for patients as well as increased the accessibility of medical cannabis treatment, fuelling overall industry growth.

In the US, amid the COVID-19 pandemic in 2020, over 20 US states temporarily implemented measures that allowed patients to use telemedicine to receive or renew doctor recommendations to access medical cannabis and to be registered in state-wide medical cannabis programmes. During this period (2020–22) there was an overall 33% increase in US medical cannabis patients according to a study published by the Annals of Internal Medicine, which was conducted by researchers from Centers for Disease Control and Prevention (CDC) and the University of Michigan. This growth can be attributed to more medical cannabis access schemes coming online within US states, as well as the fact that access to medical cannabis was made easier during this period through telemedicine services.

Following the COVID-19 pandemic, there has been strong adoption of telehealth services with many states allowing the use of telemedicine for the certification/recommendation or renewal of medical cannabis cards/prescriptions within their regulations, as seen in Florida, or extending COVID-19 measures, as seen in Massachusetts and Illinois. However, some states, such as Colorado, have revoked temporary orders on telemedicine, thereby discontinuing its use in regards to medical cannabis access.

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Types of Services

In general, US medical cannabis-specific telemedicine providers offer patients services related to accessing a state's medical cannabis scheme or programme. Depending on the state and regulations, doctors can provide either medical cannabis certifications/recommendations or renewals or both, which are necessary when applying for a medical cannabis card. The medical cannabis telehealth landscape can be framed similarly to the current state of the US cannabis environment, with some digital health providers acting as multi-state operators (MSO) and offering medical cannabis telehealth services throughout several states, linking patients with state-approved clinicians. Whereas, on a state level, private clinics and clinic groups have adopted telehealth services to provide patients with certification/recommendation, renewal and additional care-related services in regard to medical cannabis treatment.

Medical Cannabis Certifications/Recommendations:

- A medical cannabis certification or recommendation is a document/certificate filled by a licensed physician that proves a patient's eligibility for the use of medical cannabis by having a qualifying medical condition. This document is necessary for an application to a state medical cannabis registry and for a card.

Renewals:

- As medical cannabis medical cannabis cards are valid only for a limited period (period depending on state), patients are required to renew their cards and applications to remain a registered medical cannabis patient in their given state.

**General US Medical Cannabis
Telemedicine Process**

As there are state differences in how medical cannabis is regulated and accessed in the US, so the process of accessing medical cannabis through telemedicine varies. In general, however, the process is as follows:

1. The patient registers online with a medical cannabis telemedicine provider, books an appointment and speaks to a licensed physician via video call.
2. If qualifying conditions are met, the patient pays for the appointment, with a licensed physician filling out a certification/recommendation for medical cannabis and sending the document electronically or by mail to the patient.
3. The patient fills out a medical cannabis state registry application, which includes the physician's certification/recommendation. The patient then sends their application online or through mail (depending on state). Additionally, the patient pays the registration and card fee to the state. Depending on the state, patients may be required to apply for the state registry before or during their appointment with the physician.
4. If the application is approved by the state, the patient will receive a medical cannabis ID card. In some cases, states will send patients a temporary or electronic copy.
5. Once a patient has received their medical cannabis card ID, they can purchase medical cannabis in state-licensed dispensaries.
6. Patients are required to renew their recommendations (after a selected period determined by the state) with a doctor via online consultation, update their medical state registry application and pay any associated fees.



Telemedicine Software

Physicians and clinics prescribing medical cannabis via telehealth tend to use electronic medical record (EMR) and clinical management software to conduct video appointments and manage patients and their records efficiently and securely. Many of these solutions can support a range of plug-ins such as Zoom, Stripe, PayPal, Calendly and HubSpot to handle payments and to schedule appointments and calls.

Although ordinary telehealth software solutions may be used by clinics and physicians, white-label products specifically designed for medical cannabis clinics and physicians are being offered by a handful of companies. These tend to provide a range of clinic management as well as medical cannabis-specific software solutions, including:

EMR Systems

- Features:** Health Insurance Portability and Accountability Act (HIPPA) Compliant – As the patient information exchanged through telemedicine is extremely sensitive, the software must be HIPPA-compliant and have all the necessary privacy and safeguards to secure patient information and data.
- Benefits:** Manages patient information, files, invoices, and so on efficiently and securely.

Telehealth

- Features:** Cloud-based online video conferencing/consultation, mobile applications, appointment scheduling, e-signatures, automated email & SMS alerts.
- Benefits:** Provides more flexibility for patients and physicians with regard to accessing and conducting consultations, as well as efficient reminders of upcoming appointments and renewals.

Automated Reporting

- Features:** Automated generator for sales, expense, staff, customers, net profit reports, etc.
- Benefits:** Allows clinics and doctors to have an overview of their key performance indicators (KPIs) to manage their practice efficiently and generate more growth.

Marketing Solutions

- Features:** Coupon generators, referral systems, automated marketing email schedules, remarketing, etc.
- Benefits:** Promotes the clinic as well as aiming to retain and gain new patients.

Recommendation Form Builder

- Features:** Cannabis-specific recommendation form generator for the medical cannabis application process in a given state for patients, caregivers and growers.
- Benefits:** Streamlines the application/recommendation process for medical cannabis.

Medical Cannabis Patient Verification

- Features:** Verifies medical cannabis patients through custom QR codes, phone or online verification services.
- Benefits:** Ensures reliable patient verification as well as streamlining the process for consultations.

Dosage Forms

- Features:** Creates dosage recommendations for patients based on cannabinoid level (THC, CBD, CBG, etc.) and format.
- Benefits:** Informs patients with professional recommendation on the administration of medical cannabis.

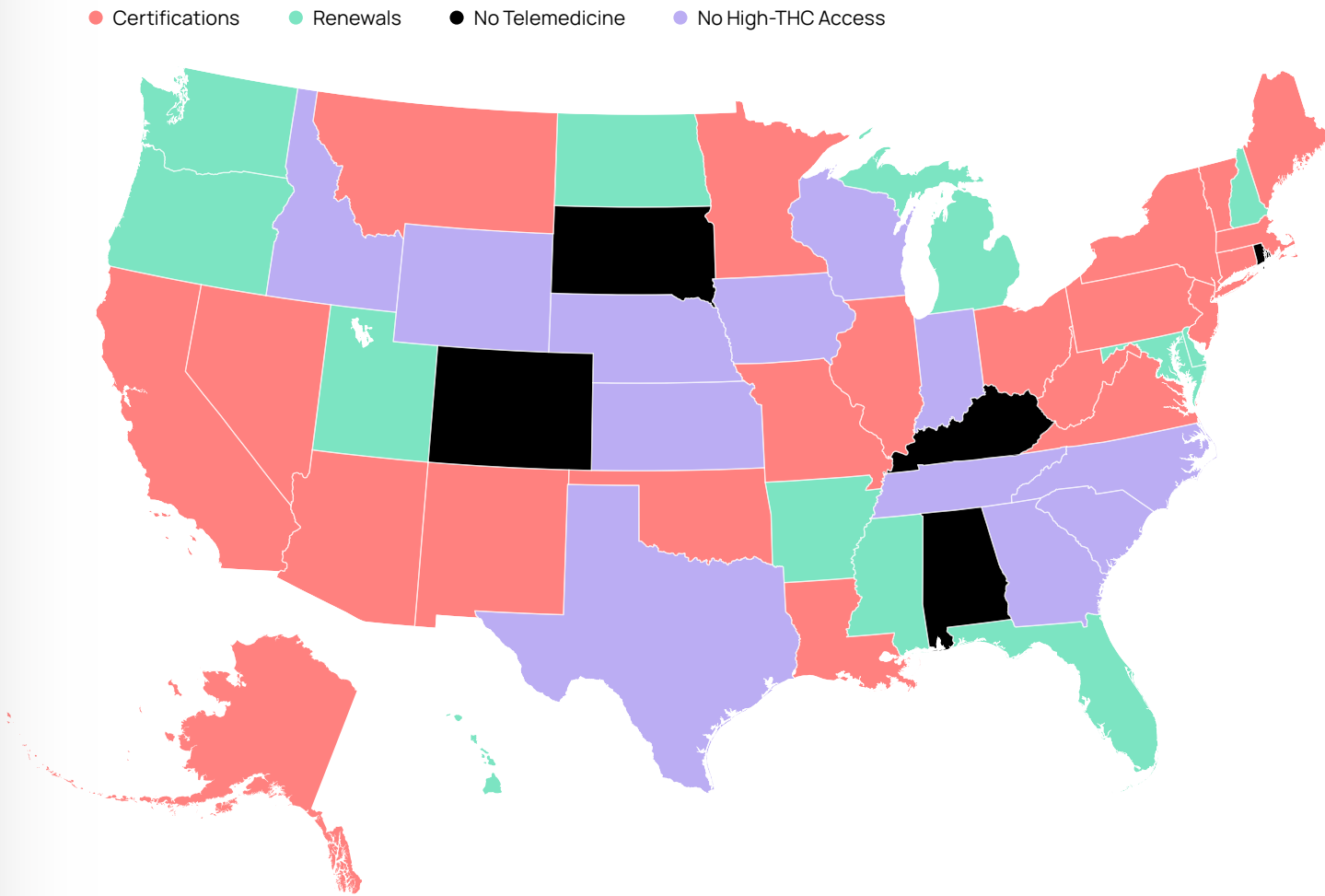
State Differences

As medical cannabis access schemes and regulations in the US differ on a state-by-state basis, the legality and level of online telehealth services provided by clinics and practitioners also vary by state.

As of September 2024, 39 states in the US were scheduled to legalise or had legalised access to medical cannabis (excluding states that only allow low-THC medicine, e.g. Georgia and Texas). Of these, 34 states allow the use of telemedicine to access medi-

cal cannabis treatments. The extent to which health practitioners can provide services over telehealth also differs by state regulation; in 21 states, including Alaska, California and Massachusetts, medical practitioners are allowed to use telehealth services to provide medical cannabis certifications/recommendations, whereas in 13 states, including Arkansas, Florida and Oregon, certifications/recommendations can only be conducted through in-person examination; though renewals can be conducted via telehealth platforms.

Telemedicine Operations by US State



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