

TECHNOLOGY IN THE CANNABIS INDUSTRY

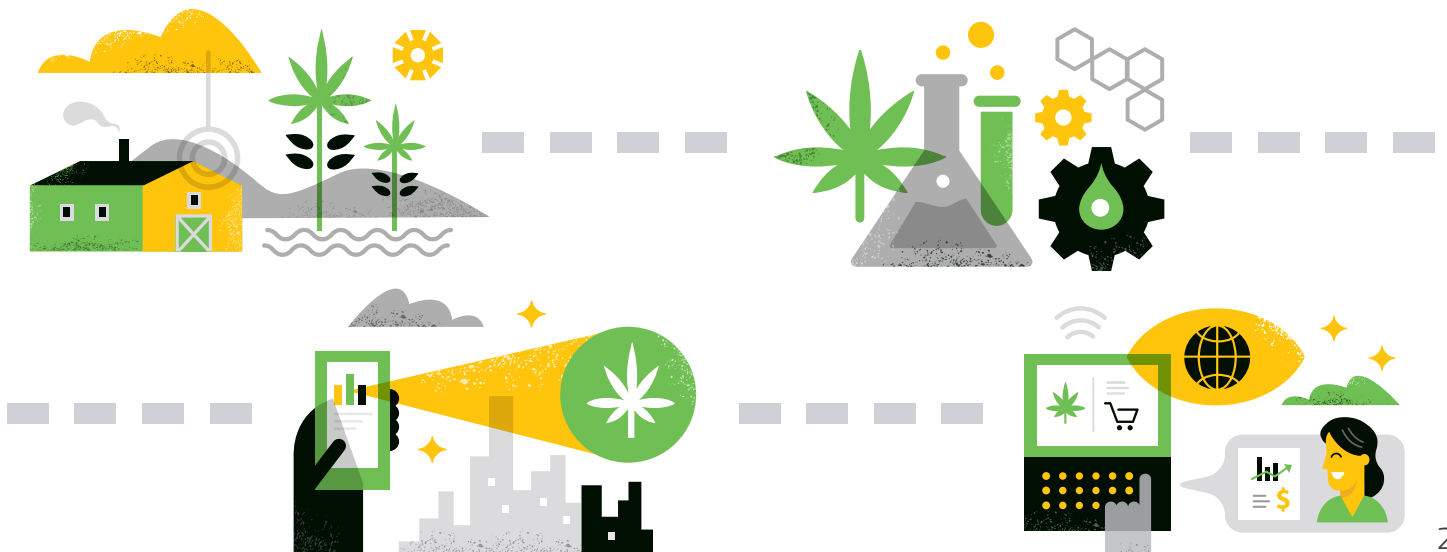


THE CANNABIS INDUSTRY GROWS UP



The cannabis industry is in the early stages of maturation — growth accompanied by consolidation — as more states in the US and countries around the world move to legalization. The release of licenses within a state or territory often results in a mad land grab for position with well-funded individuals and businesses with and without any historic roots to the industry jockeying for economic position. Licenses can be very expensive, for instance, vertically integrated licenses were awarded to multi-state operators (MSOs) in Texas cost \$450,000. Those entering into the legal industry must demonstrate significant financial resources and detailed operating plans in order to compete.

The result has been a marked decline in the number of small but established individual operators and the growth of large multi-state MSOs and entrepreneurial operators that acquire both existing businesses and scale new ones across an integrated seed-to-sale supply chain. These well-funded ventures bring significant business experience and a demand for management rigor from other industries ranging from beverages to technology. They often look to obtain important and unique cannabis industry experience and strategic insights through acquisitions of both established companies and experienced cannabis talent.



Because they often come from more mature industries, the new cannabis operators bring their expectations for more advanced technology and finance infrastructure. What they face as a result is the rollup of multiple acquisitions of cultures, operating, and management systems with varying levels of sophistication ranging from literal back of the envelope calculations to hand-crafted Excel spreadsheets to the attempted adoption of ERP platforms designed for other industries. For those starting with a blank slate, they face the challenge of establishing systems that not only help them operate a newly formed cannabis business, but also take into account the complex set of requirements around the ever-changing world of compliance and regulation.

The diverse and dynamic regulatory requirements and tracking systems of each state and country, and the unique supply chain demands of the cannabis industry now require that the software used to run operations dramatically evolve from the hacked-together systems of the past to robust enterprise grade business solutions that are highly integrated, accurate, and efficient. Without these kinds of systems, the ability to track COGS is lost, and unintended compliance errors can result in a business being shut down or even losing its valuable and hard won license to operate.

The adoption of increasingly sophisticated software technology has become a must-have for the industry for optimizing operations, financial management, profitability, and compliance.

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THE ROLE OF SOFTWARE TECHNOLOGY IN THE CANNABIS INDUSTRY



The unique and complex nature of the cannabis industry has an impact on the requirements of the software needed to run a successful operation whether within or across multiple verticals in the industry. While there are workflows similar to those in other agriculture or consumer products industries (e.g. harvest statistics, inventory management, customer information), there are workflows, metrics, and integrations unique to the cannabis industry that software created for other industries fails to track – from compliant packaging to transfer manifests to track-and-trace system integration. Technology built specifically for the industry also needs to play an important role in managing the complex world of compliance for both operators and state regulators.

As is true for all enterprise companies, software for the fast growing cannabis operation must have enterprise grade security, reliability (up-time is critical for profitable operations), and rapid scalability across the entire supply chain to accommodate new locations and licenses. While those looking for operational efficiency and simplicity may desire the most stand-alone system possible, no single piece of software can address all of the needs of a modern cannabis enterprise.

The ability to integrate on-demand via APIs with other world-class software solutions, along with customization within specific verticals, is essential. This is particularly true in areas such as regulatory compliance, finance and accounting, and authentication systems that require their own level of industry expertise.

Examples of operational success in the marketplace are showing that:

In order for entrepreneurs and MSOs to professionally manage, scale, and optimize a more competitive (profitable, productive, and transparent) business at any point in, or across, the entire legal cannabis supply chain, technology is needed to provide visibility to real-time data and actionable analytics relating to the most important workflows from all aspects of operations and compliance across the entire supply chain.

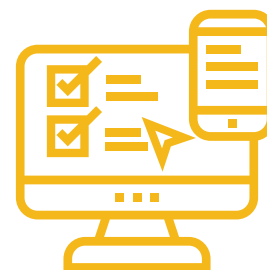
This is what MJ Platform was designed to deliver.

“WE ARE BUILDING TECHNOLOGY THAT USES ROBUST DATA TRACKING AND ACCOUNTABILITY ACROSS THE ENTIRE SUPPLY CHAIN TO BRING AN UNPRECEDENTED LEVEL OF TRANSPARENCY AND VISIBILITY TO BUSINESSES AND CONSUMERS. THE KIND OF TRANSPARENCY AND VISIBILITY CONSUMERS ARE DEMANDING MORE AND MORE FROM THE PRODUCTS THEY CONSUME. AND THE KIND OF ACCOUNTABILITY AND VISIBILITY THAT DRIVES BETTER COMPLIANCE AND PUBLIC SAFETY FOR GOVERNMENTS.”

**– JESSICA BILLINGSLEY
CEO, AKERNA**



MJ PLATFORM – DELIVERING ON THE TECHNOLOGY PLATFORM CHECKLIST FOR THE CANNABIS INDUSTRY



MJ Platform enables cannabis business owners — from single location to MSOs — to manage, scale, and optimize more competitive operations, receive a return on their investment, and stay compliant across the entire legal cannabis supply chain, including cultivation, manufacturing, distribution, and retail.

Software developed for the cannabis industry must deliver on the following areas:

- 1** Cannabis industry workflows
- 2** Compliance tracking for multi-verticals and states
- 3** Integration with 3rd party software and state systems
- 4** High data integrity and relevant analytics
- 5** System-wide user experience for use by technical and non-technical people, as well as those from outside the industry
- 6** Scalability of technology and processes
- 7** Reliability system-wide
- 8** Security

1 Cannabis Industry Workflows

While the cannabis industry has workflows similar to those in other industries such as agriculture and consumer packaged goods (CPG), there are tasks that are important both legally and operationally that are truly unique. These range from tracking the movement of seeds and clones from propagation to harvest to managing the chain of custody during fleet transportation to dealing with the many legal requirements and reporting of payment tracking. Designing these workflows into software that helps operators maximize efficiencies and productivity at scale requires individuals who understand the daily operational nuances and KPIs of the industry.

2 Compliance

Compliance is essential to running a cannabis business. Regulations are constantly changing and those geographic-specific laws dictate the compliance needs of an operation. For MSOs, regulatory requirements can have important differences between the multiple states in which they operate.

Operators must keep up with this ever-changing world of regulations. That can be a daunting task if left to purely manual means. MJ Platform continues to evolve in terms of providing greater efficiency and accuracy in maintaining multiple compliance items. Built-in compliance safeguards and integrations into state systems for operators enable tracking and tracing the course of product throughout the entire supply chain. By having a single point where all compliance integrations occur, there is a more automated connection to state compliance systems as regulations change and knowledge is updated by cannabis industry experts at MJ Freeway.

“COMPLIANCE WITHIN THE CANNABIS INDUSTRY MAINTAINS PUBLIC SAFETY AND BUSINESS INTEGRITY. USING COMPLIANCE TECHNOLOGY IN THE CANNABIS MARKET ENSURES INCREASED EFFICIENCY, REDUCES RISK, IMPROVES PERFORMANCE AND ENHANCES FLEXIBILITY FOR FUTURE REGULATORY CHANGES.”

**– JOHN CALLAHAN III,
COMPLIANCE ANALYST,
LEAF DATA SYSTEMS**

Cannabis Vertical	Items to Track and Report	Information is Reported to:		
		State Tracking System	Regulatory Inspector OnSite	Tax Agency
Cultivation	Plants, harvest weight, packaged weight, various testing results	X	X	
Manufacturing	Inventory quantities and weights, extraction inputs and outputs, infused weights, various testing results	X	X	
Distribution	Inventory quantities and weight, excise tax	X	X	X
Retail	Patients or customers, inventory quantities and weight, sales and taxes	X	X	X

3 Platform Drives Integration

No single piece of software can manage all of the complex operational needs and data flows of a cannabis business. A platform approach to software is needed to integrate technologies and the data from and to multiple vendors. MJ Platform has an API-powered Compliance Service Bus Architecture with pre-built connections that enables the flexible and speedy integration of new workflows and capabilities. Current integrations include accounting systems, online ordering, cashless payments, delivery, compliance, and state required consumer data protection laws. Software from more than 70 companies currently takes advantage of this platform integration via API.

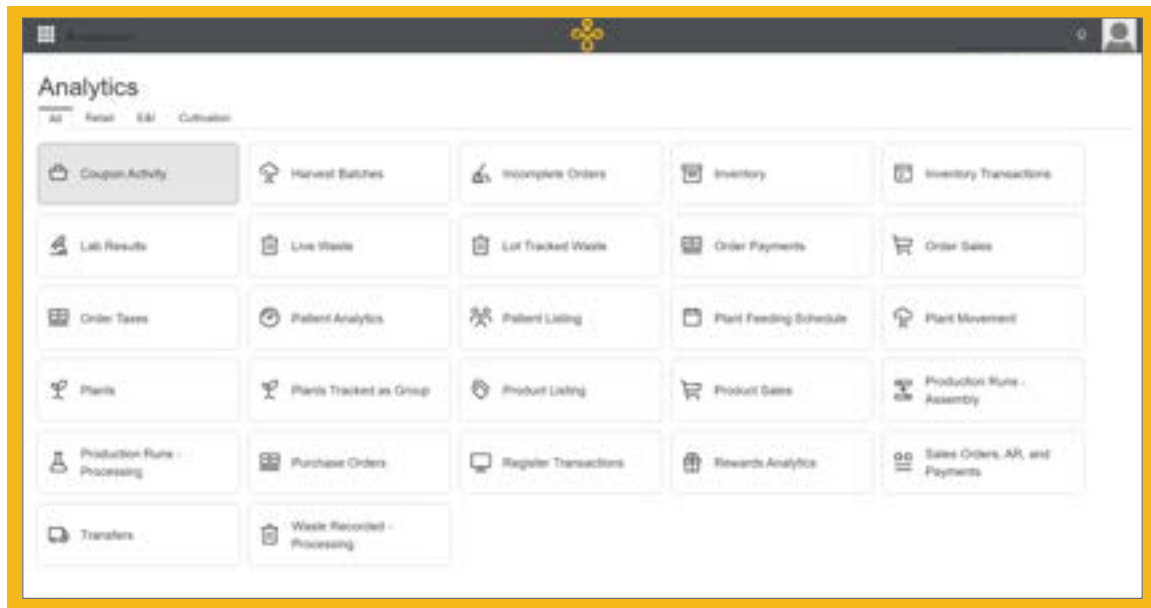
4 Analytics, Data Reliability, and Accessibility

In a competitive and maturing marketplace, better business decisions are made with data – whether those decisions are about growing, manufacturing, distribution, or retail operations. Whether the focus is on maximizing ROI today or planning for growth tomorrow, real time access into statistically relevant data within important workflows enables operators to more professionally manage and optimize their business using data-driven insights instead of guesswork. This kind of powerful information and analytics need to be available to both the most technical data scientist in an MSO as well as the non-technically experienced manager in the trenches.

“THE PLATFORM SEAMLESSLY INTEGRATED WITH THIRD PARTY MENU SOLUTIONS, WHICH IS WHAT THE COMPANY REALLY NEEDED. ADDITIONALLY, THE PLATFORM IS ABLE TO WORK FOR THEIR SPECIFIC NEEDS WHILE KEEPING THEM COMPLIANT WITH BOULDER’S COMPLEX RULES AND REGULATIONS FOR THE CANNABIS INDUSTRY.”

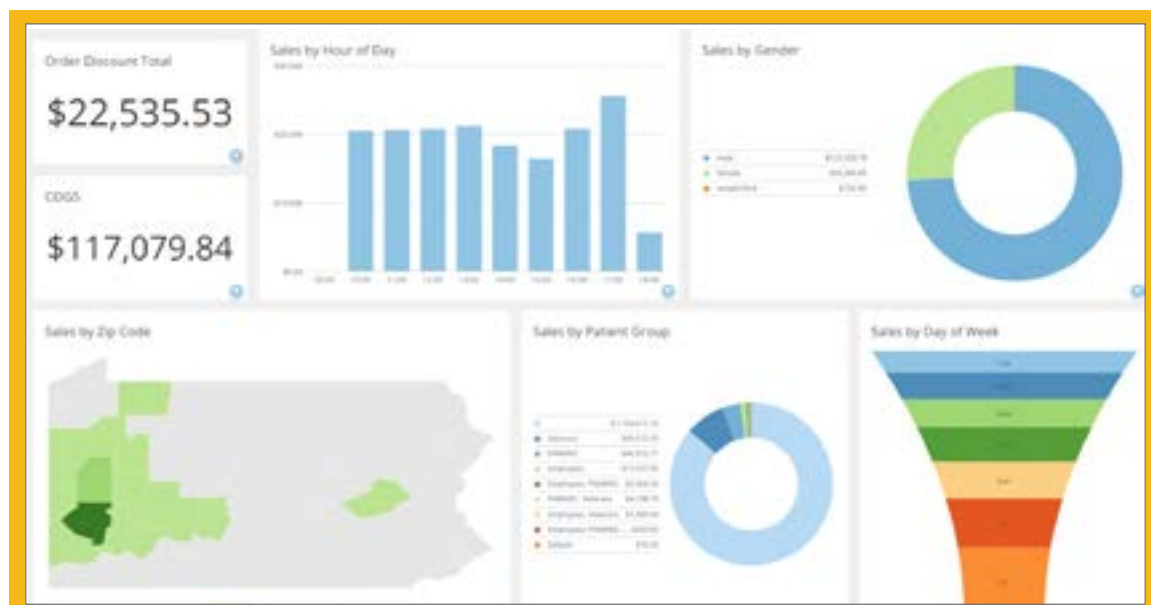
— TONY TARBOX, EDUCATION AND TRAINING DIRECTOR





5 User experience

User experience is traditionally thought of in terms of the front end of a software platform – how intuitive it is to use, the way data and insights are displayed, and how it is designed to maximize productivity in terms of minimizing the number of clicks to complete important and common tasks. There is also a less visible part of the user experience that relates to the back end of the platform – the computational improvements made so data can be processed and displayed faster. An intuitive and efficient front-end and a speedy backend are both necessities in the fast-paced operations of the cannabis industry where simultaneously managing costs while maximizing insights that deliver opportunity is key.



6 Scalability

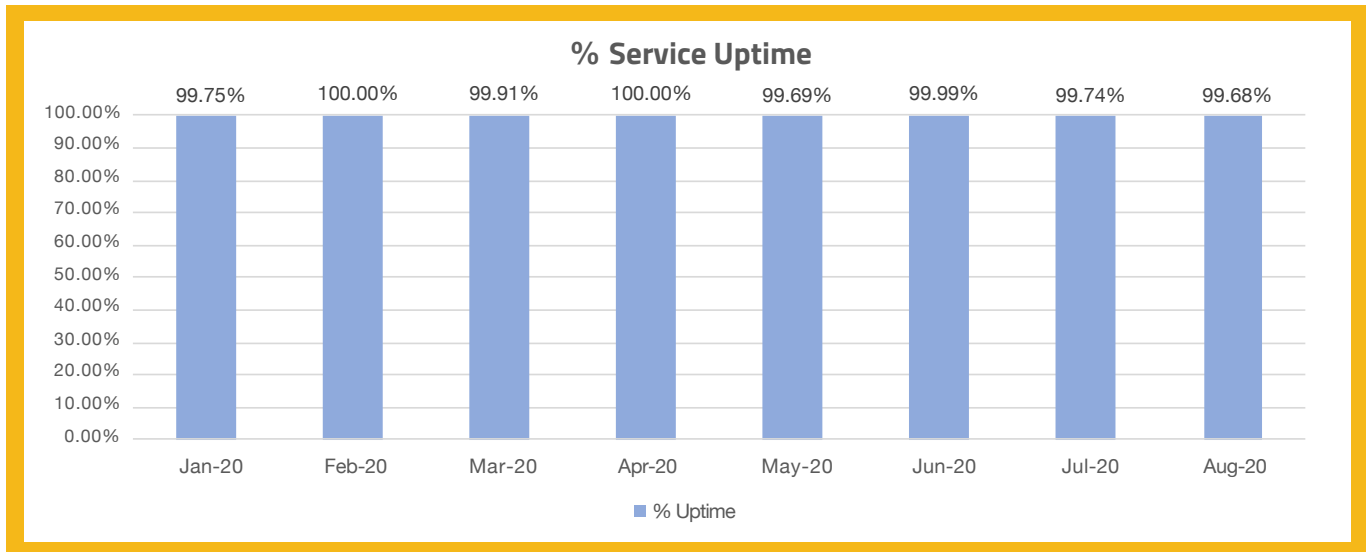
As both operational consolidation and geographic expansion continue in the industry, new demands are placed on technology to respond to the rollup and land grab. Technology must be able to scale rapidly, efficiently, and accurately as a business transforms from a single location to dozens, if not more physical locations with specific operational and compliance needs. This kind of unforgiving rate of change and expansion in a complex market space is exactly what on-demand deployment of cloud-based technology was designed for. MJ Platform uses AWS cloud hosting which is considered the gold standard in the industry for performance and security.

7 Reliability

Software platform reliability has human, data, and technology systems components. The expectations from the cannabis industry with increasingly large operators is for a technology company to consistently deliver both highly experienced and responsive customer service, along with data reliability and software platform excellence that meets Silicon Valley enterprise standards.

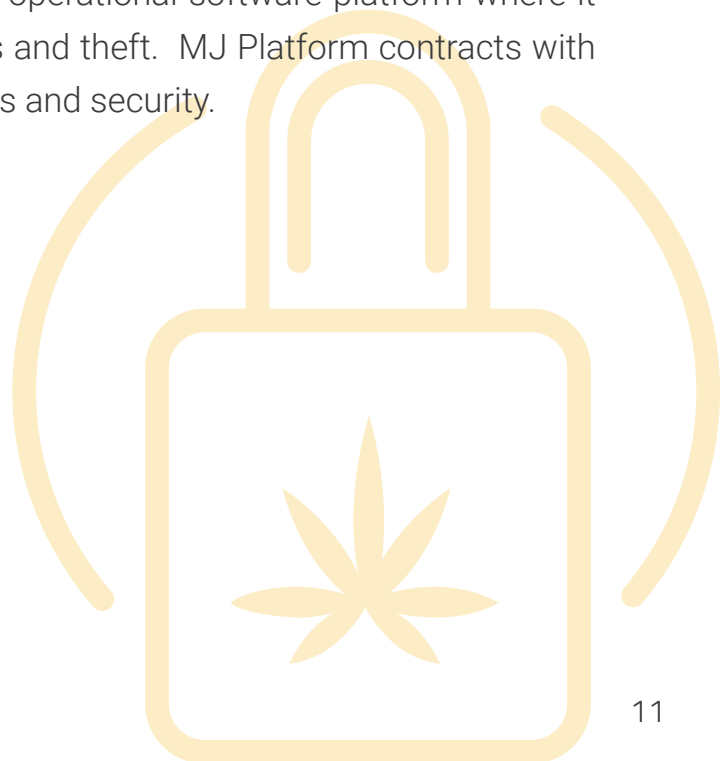
For MJ Platform, reliability is delivered in three ways:

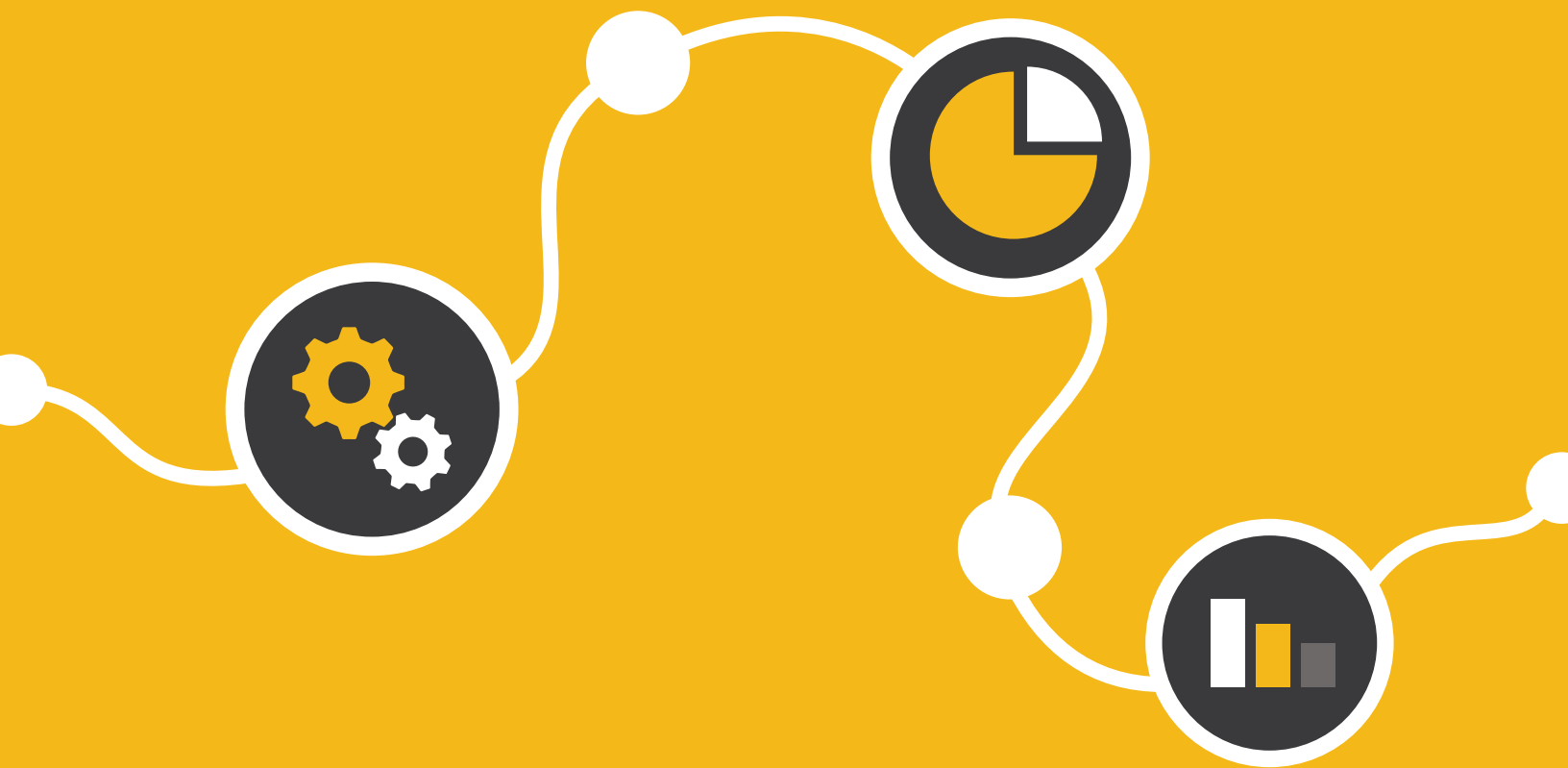
- **Systems reliability** – Over the past 12 months, MJ Platform has delivered 99.99% uptime. This exceeds the SLA performance for most major technology companies, including Google, Amazon, and Microsoft.
- **Data reliability** – In the cannabis industry in particular, it is critical to be able to track important data, such as inventory, back to its source. This is known as track-and-trace. MJ Platform enables operators to track their products seamlessly from seed to sale, from the initial point of origin and all the touch points before its final destination.
- **Customer support reliability** – When a system does go down or there is a need to implement and roll out a new integration, speed of response and resolution of issues simultaneously for hundreds or thousands of customers is needed.



8 Security

Security is a continuously evolving challenge for any enterprise with the need to constantly evaluate processes and data access, identify the newest vulnerabilities, and the ways they can be mitigated, and quickly implement prioritized improvements into the technology roadmap. For any enterprise, cybersecurity has a close relationship with both operational uptime (reliability) and data security, ownership, and privacy. Cannabis companies have the additional need to protect what they consider their 'secret sauce' particularly around efficiencies in production and processes as well as recipes. All of this intellectual property needs to exist as workflows and data inside the operational software platform where it needs to be protected from unauthorized access and theft. MJ Platform contracts with outside firms for information about attack vectors and security.

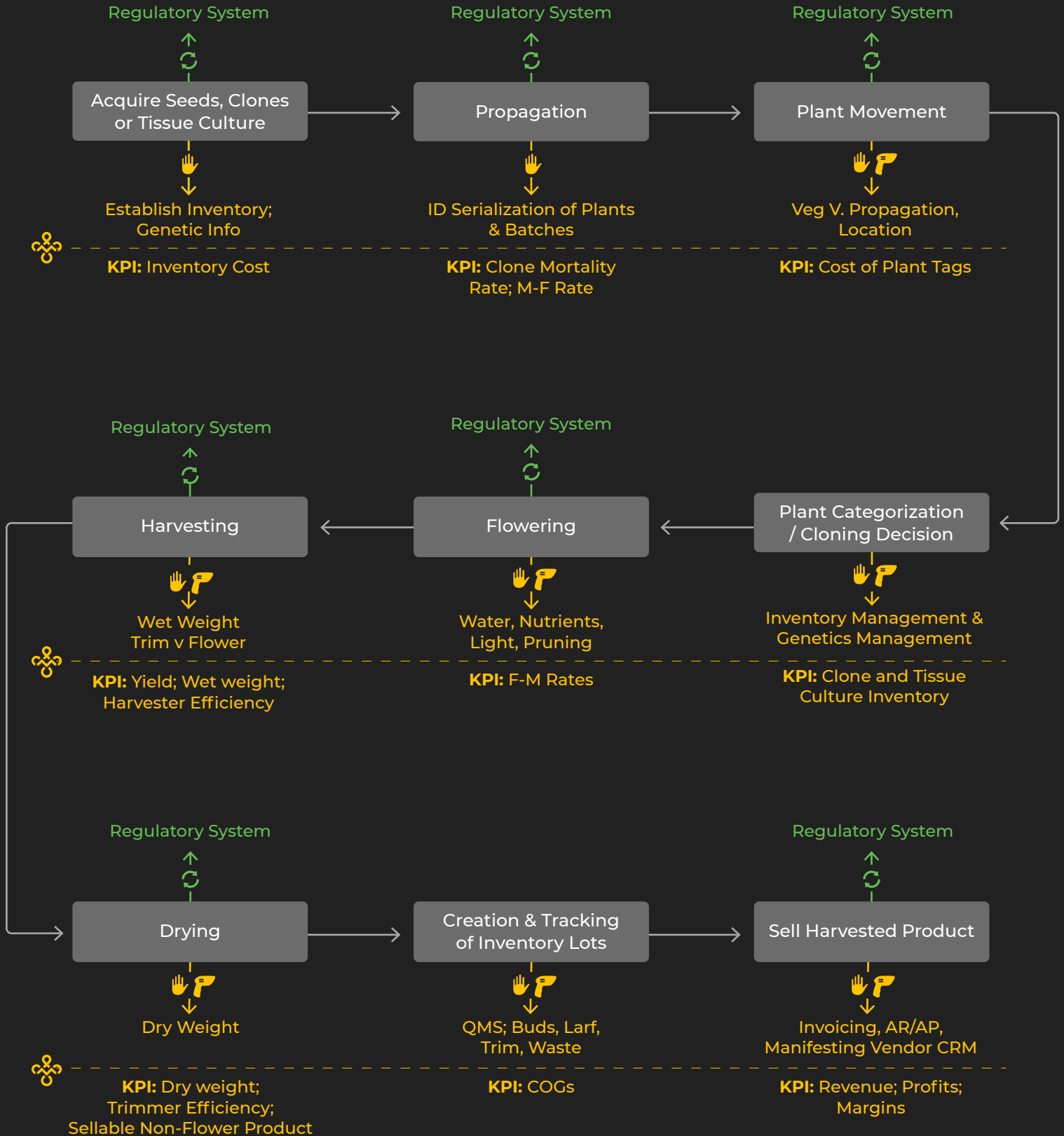




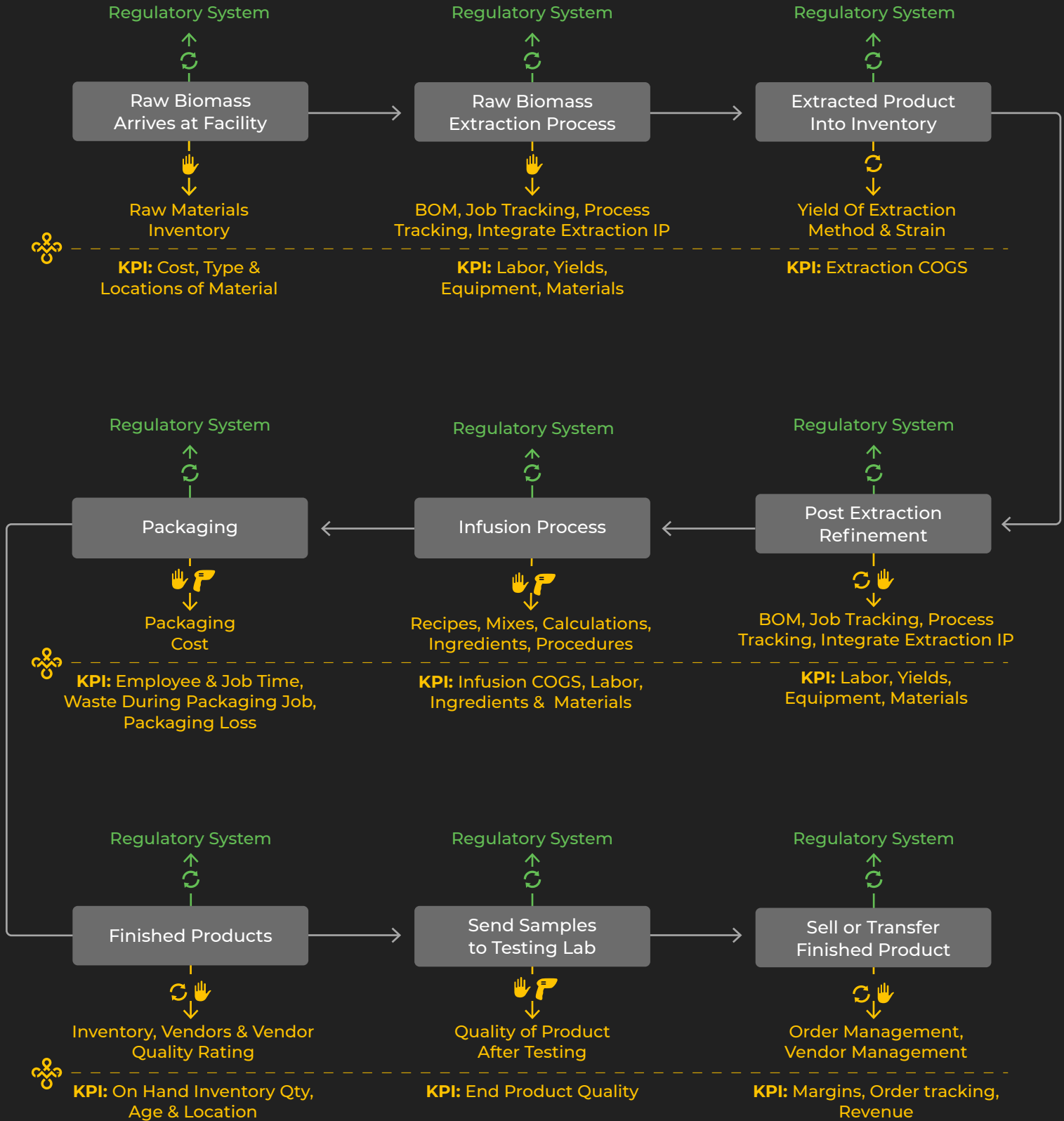
MJ PLATFORM AND THE CANNABIS INDUSTRY DATA FLOW

MJ Platform enables operators to make better business decisions with data at any point in their operations' workflows by tracking seed-to-sale data, surfacing internal KPIs, and providing integrations with other important systems such as automation, accounting, and state compliance.

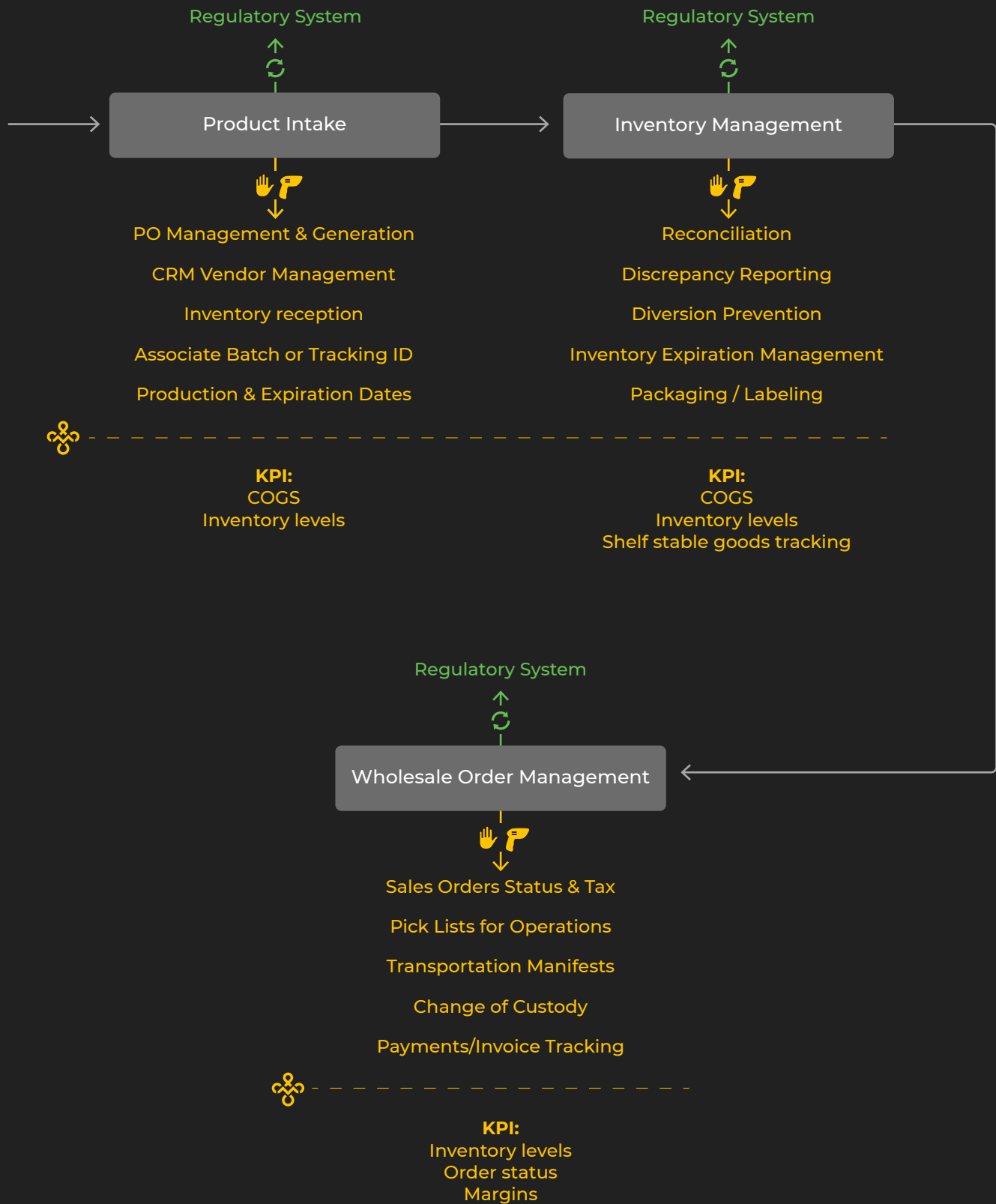
Cannabis Cultivation Data Flow



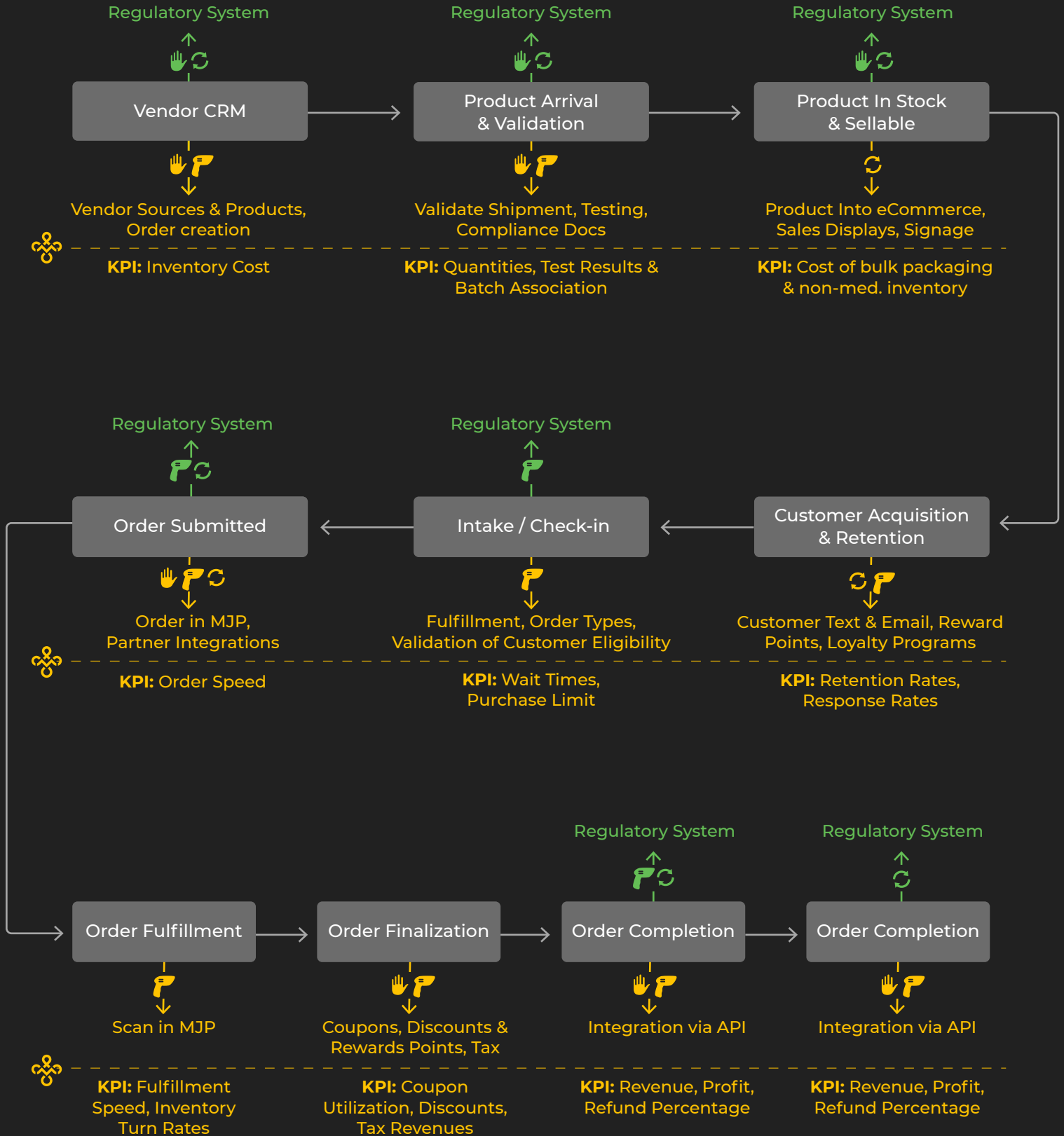
Cannabis Manufacturing Data Flow



Cannabis Distribution Data Flow



Cannabis Retail Data Flow



MJ FREEWAY, A LEADING CLOUD-BASED SEED-TO-SALE SOFTWARE PLATFORM



MJ Freeway's software, MJ Platform, enables entrepreneurs and multi-state operators to manage, scale, and optimize more competitive operations at any point, or across, the entire legal cannabis supply chain, which includes cultivation, manufacturing, distribution, and retail. By using visual dashboards to access and present real-time data, analytics, and business intelligence relating to the most important industry workflows, operators can make more informed decisions about running their business. MJ Platform's API-driven Compliance Service Bus Architecture allows for unified integration with compliance and other operational software, such as accounting systems.

With enterprise-grade operational software, technology-automated compliance safeguards for track-and-trace throughout the entire supply chain, and access to a highly experienced consulting and support team at MJ Freeway, cannabis operators have the tools to maximize ROI today and plan for growth tomorrow.

[Visit MJFreeway.com to Learn More >](https://MJFreeway.com)

“A unique liminal moment — an opportunity for important change — has arrived and is vibrantly alive in the cannabis industry. Forward-thinking operators are embracing the opportunities that technology provides in accelerating maturation in their supply chains and operations. The result will be unprecedented levels of resilience, transparency, and accessibility for this important industry.”

— Nina Simosko, Chief Revenue Officer, Akerna





www.mjfreeway.com