

FoodTrackTrace™ Overview



FoodTrackTrace is an “AI in a Box” computer which provides an affordable and easy to implement solution for small and medium-size food packagers, processors, and repackers to comply with the Food Safety Modernization Act (FSMA), including the new Rule 21.

While the goals of the FSMA are laudable, namely to enable the CDC and especially state and local health to quickly, track down and recall contaminated produce and products, the tracking and traceability requirements imposed by the FSMA can require hiring additional employees, just to capture and collate the data to ensure compliance.



Even worse, if your products end-up being sold by a major supermarket or restaurant chain, you will not only have to comply with the FSMA but with the requirements established by the chain’s own compliance organization. They often require automatic submission of traceability data in the form of EDI ASNs or EPCIS event files, whether or not you are on the FDA’s critical food list, forcing compliance with Rule 21.

This is because the real enforcement mechanism for the FSMA has been primarily delegated by the FDA to major supermarket and restaurant chains. They did this by making all these chains, which are deep-pocket targets for lawyers, responsible for the safety of their complete food supply chains. Which is why each of these chains has its own compliance teams.

FoodTrackTrace is a plug-and-play appliance that contains all the software needed to comply with the FSMA as well as software that can be tailored by local IT or manufacturing engineering staff to meet the requirements of the compliance teams of major supermarket and restaurant chains. It is the result of over a decade of practical experience in assisting packers and processors of produce such as tomatoes and mushrooms and products such as tacos and cake-icing meet the requirements of the compliance group from chains such as Walmart and McDonalds.

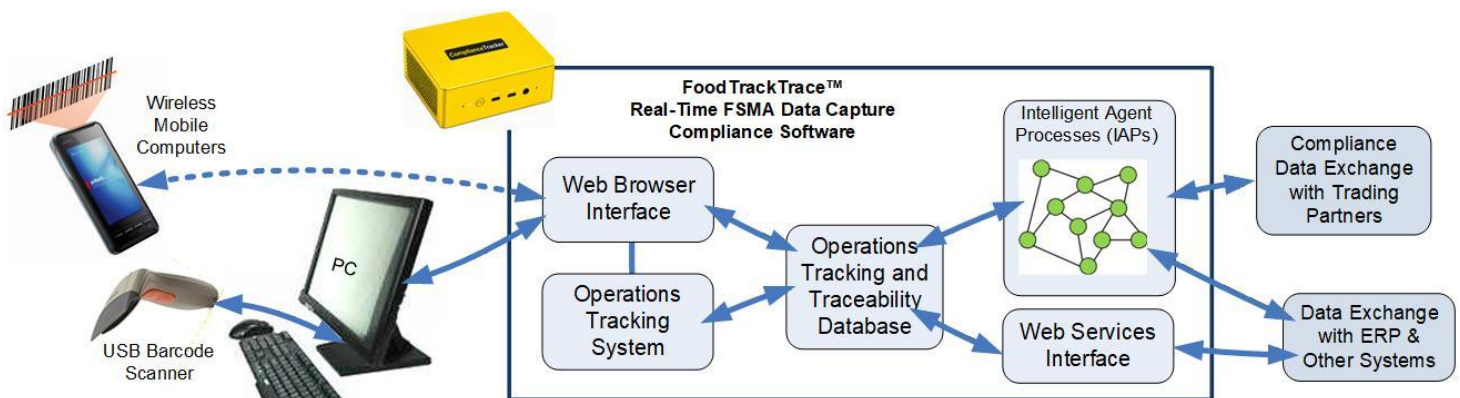
FoodTrackTrace is an application of AI methods originally developed for the US Department of Defense and now applied to a variety of civilian applications such as food, pharmaceutical and medical device harm prevention. In small to mid-sized manufacturing plants these AI methods have been proven to be able to save the compliance labor of between one and six people, at a loaded labor cost of over \$6,000 per month each. In addition, the AI-in-a-Box concept minimizes the need for expensive IT and consulting support as it comes complete with needed software ready to plug-in and start collecting traceability data.

It can be tempting for small and mid-sized organizations to think that they can simply outsource their materials tracking and traceability data collection to a server in the “Cloud”, reached over the internet. This, however, proves to be a fallacy as soon as the internet goes down and the plant

or warehouse has to resort to using paper forms and subsequent manual data entry to capture the mandated data in electronic format.

The internet going down does not simply have to be due to someone (or generative AI) mis-applying a patch to a server, such as took down 3 plants running 24x7 for three days for one client of ours. It can also be much simpler. We recently had an incident where a cement truck snagged and tore out 800 feet of fiber optic internet cable when they came round the corner too fast, resulting in a 24-hour internet outage. FoodTrackTrace avoids these problems by running on-premises, without needing the internet working. Yet it can automatically exchange data with supply chain trading partners and other Cloud-based assets such as ERP systems, when the internet becomes available again.

The SmartOps24x7 software platform of which FoodTrackTrace is part, also supports disconnected data collection, such as may be needed during harvesting in addition to data capture at time of initial packaging. This is becoming increasingly important with the need to capture data such as which field the crops were picked from, the source and test data for irrigation water and wash water, as well as what sanitary facilities for hand washing are provided for pickers. This data can then be automatically uploaded to the FoodTrackTrace box when the mobile computer, used for in-field data collection, comes within wireless range of the box.



FoodTrackTrace consists of several major components:

1. A barcode data collection system for tracking the receipt and put-away of ingredients, the conversion of these into intermediate and finished products, and the picking, packing and shipping of finished products to distributor or end customers.
2. An operations tracking database, in which the current status and history of material flow is stored, including all the needed materials tracking and traceability data for FSMA compliance.
3. Intelligent agents which convert the materials tracking and traceability data collected in the operations tracking database into the required critical tracking events (CTEs), along with input and output Critical Data Elements (CDEs).
4. An integral website through which defective or contaminated ingredients can be traced forward to all affected products and who they were shipped to. This website can also be

used to trace-back from potentially defective or contaminated products to the ingredient lots that went into them. As well as meeting FSMA requirements, this is also great for unexpected audits by state and federal agencies, to demonstrate compliance.

5. Intelligent agents to automatically send materials tracking and traceability data to trading partner compliance groups in a variety of file formats including EDI and GS1 EPSIS.
6. Ability for ERP and other systems, either hosted on premises or in the Cloud, to send purchase, receiving, manufacturing/processing, picking, packing and shipping orders to the FoodTrackTrace system via a secure web-services interface or intelligent agent interaction.
7. Ability for ERP and other systems, either hosted on premises or in the Cloud, to remotely retrieve data from the operations tracking database, via a secure web-services interface or intelligent agent interaction.

Through its web-browser interface, FoodTrackTrace supports data capture using a wide variety of barcode data collection devices ranging from PCs equipped with corded barcode scanners to wireless mobile computers with internal barcode scanners. Add-on IOT (Internet of Things) devices are available for supporting RFID data collection, interfaces to process control equipment such as weighing scales, and on-demand printing of GS1 compliant barcode labels, including those for PTI (Produce Traceability Initiative) compliance.

To support its FSMA compliance mission, FoodTrackTrace tracks individual containers of material, including the lot number, quality control status, country and place of origin of the contents of each container. It also keeps track of all quality control inspections performed on each container and the outcome of each, which can be critical in proving that all possible food safety steps were correctly performed.

FoodTrackTrace can also track harvesting data, such as field of origin, when picked, and test data on the wash water used. This is typically entered into FoodTrackTrace by the packer that receives the produce in bulk and packs it into individual containers but can also be entered by a harvester in their own system. These individual containers are then tracked during the manufacturing and distribution process such that contaminated produce can be traced forward into the resultant contaminated products and who they were shipped to without additional bookkeeping.

A FoodTrackTrace system is typically shipped to each site complete with a Windows Enterprise IOT based computer and all needed software ready to plug-into your local area network and start collecting data. Larger organizations can also obtain copies of the same software for installation on their own Windows server computers.

Each FoodTrackTrace system can be easily configured for its specific application by local IT people or industrial engineers setting rules through a web-browser interface. These same people, even if they have only limited programming skills, can modify existing Intelligent agents or write new ones as they are all coded in Python. Alternately professional services organizations, such as KnarrTek, are available to assist with this process.