

# RICHER TRACK&TRACE INSIGHTS WITH EVENT SOURCING

Learn how event sourcing platforms retain more high-value data for product tracking and traceability initiatives.



(01) 10857674002017  
(17) 141120  
(10) 1234AB  
(21) 10985

# RICHER TRACK&TRACE INSIGHTS WITH EVENT SOURCING

Learn how event sourcing platforms retain more high-value data for product tracking and traceability initiatives.

## EXECUTIVE SUMMARY

Event source architecture is an innovative way of building software solutions that is fundamentally different from the way most IT solutions are built. It was all but unknown 10 years ago and has now become the gold standard for financial databases. Much larger amounts of information can be retained and made usable for analytics in event sourcing systems because all data messages are stored in lieu of a single summary. Event sourcing stores a comprehensive history of every event associated with an item, transaction or interaction, which can be used as a complete audit trail or “reprojected” to answer unforeseen questions. The result is enhanced business intelligence, security and confidence in the series of events that led to the current state of each product.

## USING EVENTS FOR A SMARTER SOLUTION

Event sourcing is a software architecture where the current state of a product or item is determined by capturing a stream of events. The events could be any relevant update or message, such as manufacturing events, aggregation events or business transactions. Event sourcing solutions recall the current state of an item by processing each relevant event up to the present time. Event sourcing can also be used to recreate an object at a past point in time by replaying events during a specific period.

The alternative concept to event sourcing is to rebuild objects from something that saves a current state, then deleting or discarding most of the event data. For example, most ERP systems create a record for an item with a single status such as “manufactured,” plus basic information like a lot number. Later, the ERP might append the record to a new status such as “sold” by replacing the past summary information with updates. The advantage of the current-state model is that it quickly produces a result when the database is searched, as in the case of searching for overviews by product number. The challenge with the current-state model is that updates to an item summary overwrite information on past events, dumping data that can be valuable.

Event sourcing systems can save a current state in addition to the history of events. Some event sourcing systems save a set of “current” states for particular points in time. These are called “snapshots” because they show the state of an object at that point in time, just like a photograph would capture the state of an object at a point in time. Saving snapshots allows event sourcing systems to have the quick response of the current-state model while preserving all the event data.

## CAPTURE MORE DATA, CREATE MORE VALUE

Most systems process huge numbers of events, saving minimal information for a current state. Any data that was not originally saved for reports or summaries is discarded in these systems. Because none of this information is discarded, event sourcing allows for a more complete data set. This lets brand owners find data that answers questions as broad or narrow as they please, such as how many items within the supply chain have unknown product numbers, how many of those items passed through each distributor and which other products are associated by the same lot number, pallet or containers. Plus, event sourcing allows brand owners to target a key point in time and review step-by-step item activity leading up to or directly after it.

Consider the job of a crime scene investigator. While much information can be gained through examining a crime scene, much more can be learned from a security camera that replays the events leading up to the current state. Event sourcing creates that same advantage by allowing brand owners to replay events related to an individual product or item. These events can also be used for richer, more dynamic analytics than a standard architecture could provide.

## LEVERAGE DATA FOR RICH ANALYTICS

The power of an analytics solution is based on the amount of relevant data available plus the ability to leverage that data for insights. Event sourcing solutions provide powerful analytics because the event store retains more high-value data on each item, which can be leveraged through specifically architected IT solutions. Event sourcing is especially powerful for analytics involving timelines or histories of objects. This applies to groups who want a visual representation of the status of an item; for example, the historical changes in the status of an item as it moves from manufacturing through the supply chain to retail sale and back for warranty.

Event sourcing systems can also set parameters on what makes an event relevant, then use this modified set of events to recreate an alternative current state. This can help brand owners view the changes in the status of an item based solely on events from the most trusted supply chain partners, or a pattern in status changes across many items at locations with suspicious operations.

Standard architectures often produce slow response times when they are used to process a large numbers of events, each related to an object and filtered by parameters. This outcome is a side effect of an architecture well built for the sole intention of recalling the current state. All event sourcing architectures are built with the intention of recalling complex sets of events to create a state at a certain point in time, ensuring they produce the quickest response times for this type of analytics. They also quickly and easily create audit trails by recalling event data.

## CREATE COMPLETE AUDIT TRAILS

Sometimes, a complete history of events is more important than the current state. For example, if a counterfeit product is found within the legitimate supply chain, it might be more important to track the item back to the point of insertion than it would be to know which organization currently has custody. In these cases, a comprehensive history of any associated event is critical. A complete history and secure audit trail can be provided by event sourcing systems because every event to impact an object is saved. Similar to the counterfeit traceability example, event sourcing has advantages for brand owners looking to track product diversion, theft or warranty and returns fraud. The store of events created with event sourcing is sometimes called a "true history" of the system to portray the depth of information captured and saved.

## THE OUTCOME: HIGH-VALUE TRACK&TRACE INSIGHTS

Event sourcing solutions create a complete history of events, allowing for a clearer understanding of how the current state was reached. It is a powerful tool for brand owners who want to understand the history of individual products, benefit from complete audit trails or leverage large data sets for complex analytics. For these reasons, event sourcing solutions give brand owners additional support and can enhance other IT solutions. This ultimately helps companies drive more successful Track&Trace initiatives by capturing and storing 100 percent of event data used for richer analytics, clearer product insights and a complete audit trail.

## RICHER TRACK&TRACE INSIGHTS WITH EVENT SOURCING

Learn how event sourcing platforms retain more high-value data for product tracking and traceability initiatives.

