

## ***Traceability—Do It Yourself At Your Own Peril***

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Saturday morning usually finds me in a Home Depot queue with other home repair weekend warriors. I hate calling the plumber, electrician, or carpenter for minor repairs and improvements. I'd rather do it myself. But I also know my limits. Over the years I've learned the hard way that for big jobs, the first call should be the professional, not Home Depot. Tackling these big jobs myself has almost always cost me lots more time and money than if I'd brought the professional onsite at the onset.

Few corporate IT managers we know would allocate personnel, time and money to write their own word processor, much less their own ERP or accounting system. In their professional world, these are the big jobs. Typically, they will use third-party vendors to supply the base product, and will adapt that product to work within their company's environment. For smaller jobs, or for jobs where no off-the-shelf solution exists, they'll use their in-house IT resources.

Is traceability a small job? No. Traceability is not a do-it-yourself, in-house project. We have performed hundreds of implementations for companies of all sizes, and there are a large number of potential "gotcha's" in every traceability implementation. These 'gotchas' can pile on the costs, time, headaches and distractions for companies that try to assign their traceability project to an in-house IT group and otherwise skilled group.

On the surface, traceability looks simple. At its core, traceability is nothing more than breaking a continuous flow manufacturing process into discrete production units, collecting information about each production unit at each production stage and maintaining identity of production units across product transformations. Simple? Not exactly. This illusion is the mirage that deludes IT managers into thinking traceability is a minor effortless project..

The truth is that designing and implementing traceability systems that deliver corporate benefits, and generate the expected return on investment is a lot harder than it looks.

### **Traceability Projects are More Work than Is Immediately Apparent:**

Isn't traceability just about putting a unique identifier (barcode, RFID, memory button or other unique auto-ID technology) on an incoming raw material and tracking it to the finished goods? Unfortunately, it's rarely that simple. Without the right tools and experience, we've seen many companies begin traceability projects that became IT "black holes" into which huge resources were invested, often with poor or no tangible results. Why are traceability projects usually more work than they first appear? One word-uncertainty. Uncertainty because you don't know what you don't know and what you see is not what you get. Let me explain.

- **Traceability Standards are still Very Fluid.** At both a hardware and software level the traceability technical landscape is rapidly changing. Selecting effective hardware and software components for a traceability system requires that one keep up with the very latest, both on the hardware side and on the software and data standards side. Keeping up to date requires substantial energy and time, and few in-house IT groups have the ability to invest this effort on a one-off project. Given that a traceability project usually involves hardware from five or more different companies along with consumables from other suppliers (RFID devices, barcode labels, etc.), and software from another group of suppliers, there are usually a large number of procurement decisions to make for each traceability project. A dedicated traceability company is in the best position to make these decisions and to know the latest standard trends.

- Unit Tests Don't Guarantee A Successful System Test.** Even if an in-house IT group thinks they have the latest hardware information, and the hardware is from reputable companies, there's no guarantee the individual hardware and software components will work together successfully as a system. We've seen many traceability situations where all of the hardware pieces worked perfectly by themselves, but didn't inter-operate. Today, one doesn't have this inter-operability problem when connecting different pieces of equipment from different vendors to build an office solution. Laptops, desktops, printers, routers, etc. from different companies all work together in the office. Most traceability projects are implemented in the farm field, in the packing shed, or in the processing plant, not in the office. These are much harsher environments (higher radio frequency interference from large motors, a more difficult environmental operating range for temperature, humidity, moisture, dust, etc.) and the types of equipment are often the same type of equipment you find in the office. Traceability projects often require RFID readers (of various different frequencies, different communication protocols, etc.), barcode readers (of various different barcode symbologies, and data connection types), PLC-devices, and other industrial control devices. In-house IT departments for manufacturing environment usually have the PLC and other control device expertise but often don't have the automatic identification expertise, and it takes quite a bit of time to gain this auto-ID expertise and to select the correct hardware and software components that will work together as a system.
- Lots of Transformations.** The simplified traceability explanation above is partially correct. One does associate a unique identifier with a production unit at a specific stage of production and track it through that production stage. The complications come from the fact that even the most simple agri-food process involves a large number of transformations. We have a number of fresh fruit customers that have more than twenty such transformations from the raw material receiving dock to the finished goods shipment to customers and these customers are taking in raw fruit at the receiving dock and shipping out raw fruit at the finished goods shipping dock. Between the raw goods receiving dock and the finished goods shipping dock are a number of sorting steps (electronic or manual), intermediate accumulation binning and other handling/processing that cause intermingling of raw material receipt lots in a single out-bound, finished goods shipment. Each transformation adds system complexity, and trained traceability experts can quickly determine how best to handle each transition. Few internal IT shops have this expertise.
- Lots of Inter-Connections.** To reap the most benefit from a traceability system, a company will want to connect a large number of different data systems, both within the company, and among the company and its suppliers and customers. Each one of these data on-ramps and data off-ramps requires an effort to create it, and, more importantly, requires substantial effort to keep it current. A typical agri-food company usually requires off-ramps to a traceability system from four to eight internal systems, from five to 100 upstream suppliers, and from 10 to 50 downstream customers. This total effort, if done by the in-house IT staff, will mean the creation of nearly 200 or more data off-ramps from these data systems. Without the tools to rapidly build, monitor and maintain these data off-ramps, an internal IT group can spend a huge amount of time building the system, and then another large amount of time maintaining it. When a company contracts with a traceability company, they typically have little work to do. A reputable traceability company will take the data "as-is, where-is" and use their tools to build, monitor and maintain those data ramps.

**And An In-House Effort May Still Fall Short.** Even if a company does commit to an in-house traceability project, the effort may fall short of what's required by government agencies or downstream trading partners. In the highly fluid environment, the only certainty is that data exchange standards for traceability will change, and any changes will require the system operator to meet the new requirements. If a traceability system has not been built using a highly flexible traceability system architecture, then accommodating these new requirements can be a huge new burden for the in-house IT team. This burden also usually comes when the team thought they had completed the project and were on to the next corporate project.

This argument is not saying that a corporation has no role to play in implementing traceability methodology within the corporation. Quite the contrary. The IT group has a huge role to play. Just as with other major IT endeavors, the IT group will help select the vendor to be used, and will work with that vendor to adapt the vendor's solution to meet the corporate reality in which it will operate. A good traceability vendor will also take into consideration the IT pieces and parts that are already in place, and will leverage these existing resources. However, the IT group will be partnering with a practiced professional, not flying solo.

Nor is this argument saying that an in-house IT group can't tackle an in-house development of a traceability project. They can. The argument is only saying that the in-house IT shop has better ways to deploy their limited resources that will be more central to the company's central goal. Just as an in-house IT resource typically is not dispatched to build a company-specific word processing software package, they should not be tasked to build an in-house traceability system. It's much better to leverage the capabilities of an expert, traceability solutions company.

Further information can be found at [www.qimconsulting.com](http://www.qimconsulting.com), [www.sjhandco.com](http://www.sjhandco.com), and [www.aginfoink.com](http://www.aginfoink.com).