

## Case Study: Tetra Pak Improves Product Development Process with Top-to-Bottom Requirements Traceability

Tetra Pak ([www.tetrapak.com](http://www.tetrapak.com)) is one of the world's leading food processing and packaging solutions companies. The company selected Cognition Cockpit ([www.cognition.us](http://www.cognition.us)) when it decided to invest in a requirements management software system as part of an effort to improve its product creation process. The requirements management software dynamically links the company's product requirements together with all associated information such as customer voice and needs, risks, test protocols, team meeting minutes and notes. "The new software helps us provide those involved in the product development process with complete and accurate requirements information," said Hans Peter Karlelid, Global Expert Advisor at Tetra Pak. "Ensuring that everyone is working from the same requirements helps avoid costly mistakes in downstream processes with the result that we are able to reduce engineering costs and bring products to market faster."

When Tetra Pak pioneered the use of aseptic technology back in the 1960s, it changed the liquid food industry forever. Unlike other methods of food processing and packaging, such as canning and bottling, aseptic technology keeps food safe, fresh and flavorful for at least six months—without refrigeration or preservatives. It allows food to retain more color, texture, taste and nutrition. In addition to improved product quality, aseptic packaging offers a variety of package shapes, consumer convenience and economies in energy and packaging materials. Tetra Pak has 9114 packaging filling machines, 63,753 processing and 17,318 distribution machines in operation. The company has 22,000 employees and in 2010, the company supplied over 158 billion packages in more than 170 countries around the world. Requirements play a critical role in the product development process by ensuring that new products meet the needs and expectation of customers and other stakeholders.

## Previous Requirements Management Methods

Before making the investment in a new system, product requirements were managed using forms and documents stored in a central database in Tetra Pak. The many different groups and disciplines involved in the product development process typically developed their own tools with their own view of project's requirements. These tools were not always linked together so a change made in one area might not be immediately communicated to other parts of the organization.

For example, an engineer designing a filling machine in Tetra Pak might need to get a better understanding of the origin of the requirement for a carton package to have a 2.5 cm (1 inch) opening. Or the requirement for a filling machine under development might change from producing 10,000 to 12,000 packages per hour. The engineers designing the machine then need to know quickly which other requirements have to be updated that are related to the capacity of the machine. In many cases, development projects share technology and components with other projects so a change in one can affect multiple projects. The tendency for requirements to cross project boundaries greatly increases the difficulty of the communications challenge.



## Requirements Management Software Selection

In 2009, Tetra Pak launched an initiative to re-design and formalize their systems engineering process. A key part of the initiative was to centralize requirements management. The team identified the functionality that was needed to support the systems engineering process. They surveyed a wide range of tools with requirements management functionalities and narrowed the search to four tools that provide a comprehensive approach. The selection team evaluated each of these tools and rated them in terms of their ability to meet the company's needs as well as their usability and value. Cockpit obtained the highest score from a functionality and usability perspective primarily because of its intuitive Web 2.0 interface.

Cockpit provides a single unified model for capturing and tracing product development data. The product requirements are

dynamically linked with all associated information. Dynamic documents with embedded process steps, called templates, guide users through product development deliverables. Product data flows from one template to the next producing standardized deliverables from project to project. Everything in Cockpit is automatically crawled and indexed so that a supplied Google Appliance enables users on the company network to retrieve information in less than a second.

## Implementation Process

Tetra Pak installed the web based software on servers in Sweden. Each user is assigned one or more roles that provide permission to access, enter and modify data in the system. “We appreciated the skill and responsiveness of the Cognition support team in helping us get up and running with a minimum of difficulties,” Karlelid said.

Since its installation, the implementation of Cockpit has been gaining momentum at Tetra Pak. “The initial stage of our implementation was to simply use Cockpit as a repository of requirements that could be accessed by the entire organization,” Karlelid said. “We accomplished this by using the software basically out of the box with very little customization. Setting the software to this level was quite simple and offered the major advantage of providing our entire organization with immediate access to the most current requirements information. People immediately recognized the benefits of having all of our requirements information in one place on the web rather than scattered across the organization. They can now be sure that the requirements they are working to are accurate and the latest version. It’s also easy for users to download the information to their own tools for further analysis.”

More recently Tetra Pak has been developing a template structure that manages the flow of information through the requirements management software in accordance with the company’s product development system. When finished, the template structure will track the complete value chain including the package itself and the machinery that forms, fills, seals and wraps the packages in film or cardboard for shipment. Focusing on the entire value chain has major advantages because requirements often flow from one area of the value chain to another, from the package to the filling machinery, for example.

## Benefits

One of the key benefits provided by Cockpit is traceability of the requirements all the way from general requirements down to detailed design specifications. “With spreadsheets it’s very difficult to trace requirements except for in very small projects,” Karlelid said. “Cockpit, on the other hand, gives us the complete story with hardly any effort at all. A key advantage of requirements traceability comes when determining the impact of a change. With the requirements arranged in a hierarchy, with their relationships clearly defined it becomes easy to determine the impact of a change at any level.”

## About the Author

Jerry Fireman has been a writer of technical and trade journal articles for over 30 years. He has a Bachelor of Arts degree in Journalism from Wayne State University and a Masters of Business Administration from University of Michigan. He worked four years as Engineering Editor for



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