

Title: Efficient development and management of product specifications  
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## INTRODUCTION

TNO as an organisation of applied scientific research aims at translating scientific research for application in the industry. The division of Agrotechnology of TNO Nutrition and Food Research performs research focussed on technology for the Food Industry.

From different branches of the food producing industry TNO received signals that the increase of quantity and quality of the amount of product information started to lead to uncontrollable situations. This led to time consuming alterations and a higher increase of mistakes in the current way of working within the company's. Apparently there was no solution available on the commercial market in terms of information technology systems.

Research into the current way of working of several company's showed that the major bottleneck was an unsatisfactory information structure and management with regard to product specifications. An inventory of existing logistic and administrative software systems confirmed that no standard solutions for this type of problem were available.

In developing information technology tools TNO translates basic knowledge from Universities and in a multidisciplinary approach, using specialists on the field involved in order to define possible solutions. These options are put before a number of industries in order to check the limiting conditions and to formulate promising approaches to the problem.

In the field of information technology and quality systems TNO already had developed a tool (FIST-HACCP) for handling information related to the use of HACCP systems in the Food Industry. This system was developed in close cooperation of food technologists, information technologists and food producing company's.

The aim of the research undertaken was to develop a tool for the Food Industry to manage the information related to product specifications. The system should be applicable to a broad range of production systems and products. It must be able to structure information of product aspects, such as chemical compounds up to user defined properties and the bill of materials.

## Materials and Methods

A specification exists of all properties which describe the product complete and unambiguously. Here products includes not only the end-product but also raw materials, semi-manufactured articles and packaging materials. Properties for example exist of chemical, physical and organoleptic qualities, but also allergenic, labeling information and criteria demanded by law can be described as properties.

Although generally there is a clear general pattern in specifications two main problems in developing a generic specification system for the Food industry are that:

- specifications are specific for a company. Not all properties (chemical etc.) have a value for a individual company. Moreover, almost every company uses different characteristics of a product.
- even within a company the use of specifications is depending on the department using them. For instance sales is using different characteristics of the product then the production department. This leads to different specifications of the same product depending on the use of the department.

To arrive at a practical solution for this problem of the Food industry two conditions must be met. One condition is that general methodological knowledge must be combined with practical expertise in the field of use of specifications.

Secondly, because of the dynamic characteristics of the Food industry the time to market of a particular system must be very short. Besides this the solution of this problem in the form of an information technology system will have a limited market. A long "time to market" will obstruct a speedy solution for the given problem and also lead to an increase in cost, which in turn might lead to an unacceptable price level of the product.

With the Information Technology product FIST-HACCP TNO has developed a strategy to tackle a problem as described above. It is based on developing first a speedy and relatively cheap rudimentary solution. Then this solution is further developed with a pilot company into a so-called  $\beta$ -version that completely tackles the problem.

## Results

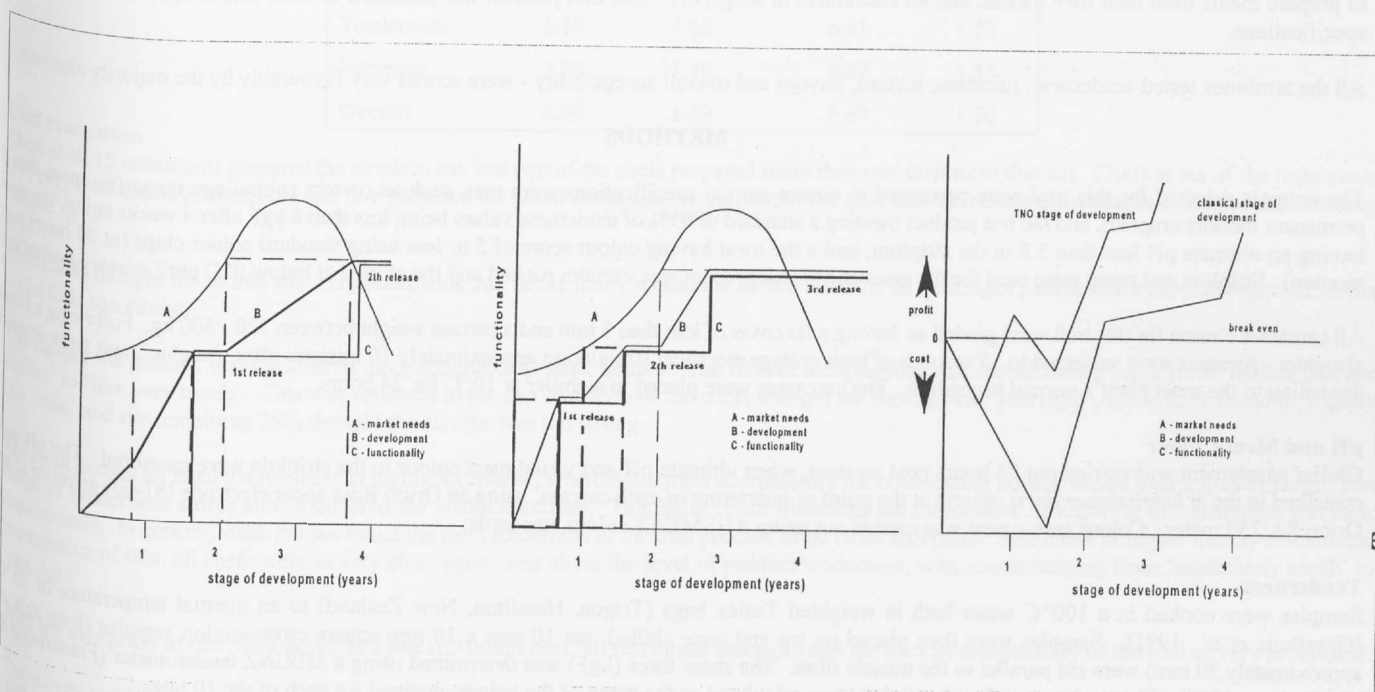
TNO Nutrition and Food Research has ample experience on general methodological knowledge. It also has expertise in the field of Food manufacturing and the technological problems facing the Food industry. Besides their own expertise TNO has several ways of cooperation with universities in the Netherlands and abroad. The expertise of these universities is also available for solving specific problems.

In developing the Information Technology tool Nutricia has participated as pilot company. This has resulted in a system that could be used generically by other companies.

A number of companies, one of which was Unilever, has further tested the system on its generic merits. These tests have led to a validation not only of the system but also of the method to develop such a system with a short period of "time to market".

From the general starting point the users were able to define flexible structures of properties, while the system was still able to relate the different properties with each other and between related specifications. It also was able to calculate specific specifications based on the user defined related properties..

The user was also able to define templates in order to generate specifications for different purposes (for example for the sales department, production etc.). The templates could also be used for reporting purposes, for example to generate buyer specific reports based on the same specification. With this type of template a report can be printed which is an amalgam of the template and the basic properties of the product which are defined in the base specifications.



## Conclusion

The development model for a specific Information Technology product has proven to be useful in situations where a short "time to market" is needed and a low development budget is paramount.

The Information Technology tool which is developed, FIST-Specifications, has proven to be a system which is generally applicable in practically all company structures.

The development of the tool is still going on. At least once a year an upgraded version is marketed. The upgrades are developed on the basis of questions from the industry using the system.

In the Netherlands these tools developed within the FIST concept are even being used as a benchmark to judge other types of information software for the Food industry.