

The Fresh Index: A Real-Time Shelf Life Indicator

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Abstract

The Fresh Index acts as a new shelf life indicator for food instead of or in addition to the static best-before date. It is based on the manufacturers' hygiene data and the existing storage conditions and is implemented in a cloud application. By this, the Fresh Index helps to reduce food waste in food supply chains.

Keywords: *Food Waste, Sustainability, Transparency, Dynamic Indication, Transparency, Supply Chain*

Introduction

One third of all food in the world is wasted (FAO, 2019). In particular, perishable goods such as fruits, vegetables, fish, meat and dairy products are affected, as fresh and safe storage and transport conditions are a major challenge. Temperature is the key factor here. Depending on the conditions under which the product is stored and transported, this has a significant impact on shelf life. The currently used best-before date provides no information here, but often leads to early disposal of edible and safe food.

The Fresh Index

A new indicator could help to reduce food waste. In addition, the use of energy, water and land for the production and transportation of unused food, fertilizers and pesticides could be reduced. The Fresh Index acts as a new shelf life indicator for food instead of or in addition to the static best-before date and has the following goals:

- Complete monitoring of the storage and transport conditions from the time of production,
- Transparent product hygiene, resolved by batch, pallet or unit,
- Consideration of the quality-relevant data along the supply chain, and
- Build a high-performance cloud for cross-industry exchange of quality data.

The Fresh Index is developed within the German Fresh Index project (FreshIndex, 2019). It is divided into three phases. Initially, a concept is developed to increase supply chain efficiency and improve the shelf life of food items. In a second step, the project partners prepare the implementation of the concept (e.g. by complementing existing standards). Finally, selected companies will implement the Fresh Index as a proof of

concept (GS1 Germany, 2018). Standard models for consumer and consumer-oriented food labelling systems are planned.

The index is based on the manufacturers' hygiene data and the existing storage conditions and is implemented in a cloud application (METRO, 2018). It is not printed as a fixed date, but can be read via the app and displayed digitally, e.g. on digital price tags and in the online grocery store. This keeps the system dynamic: as long as the product is temperature-monitored, the index is updated automatically. Figure 1 visualizes the use of the Fresh Index across the food supply chain.

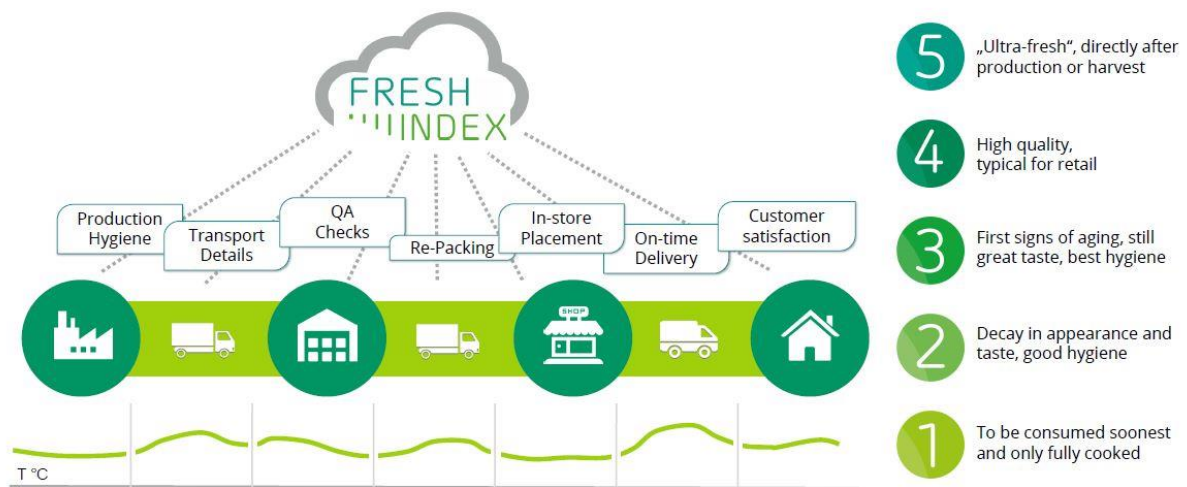


Figure 1: Use of the Fresh Index in the food supply chain

With the implementation of the Fresh Index, it would be possible at any time to assess whether a food is safe and suitable for sale and consumption. The project results support different actors in the food supply chain, such as retail, industry, logistic service providers and consumers, to reduce food waste (TSENSO, 2019).

Summary and Conclusion

The Fresh Index accomplishes to meet the needs of every participant along the fresh products' lifecycle. It is set to define a new frame, embedding real-time data in the processes of manufacturing, packaging, transportation and storage.

In order to guarantee a maximum level of transparency, the project utilizes state-of-the-art technology. As the consumers' trust is the key for further innovation, we believe in gapless communication. In doing so, we enable advance calculations to replace the current static best-before limitations.

Economic loss due to premature disposal is a major concern. Different actors in the market are affected severely, so that a decreasing amount of falsely detracted food contributes to an increasing affluence in absolute terms. Besides, the consortium points to the synergies resulting from the economic context.

In the first instance, enhancements in the provider-customer relation are to be expected. Positive public opinion will arise from the appropriate answer being made to calls for sustainably handling human livelihood. One motivation is taken very seriously: responsibility concerning the resources we deal with in everyday life. With Fresh Index we advocate and promote an initial step towards a multitude of interdependent beneficial optimizations in the industries and services associated with food.

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