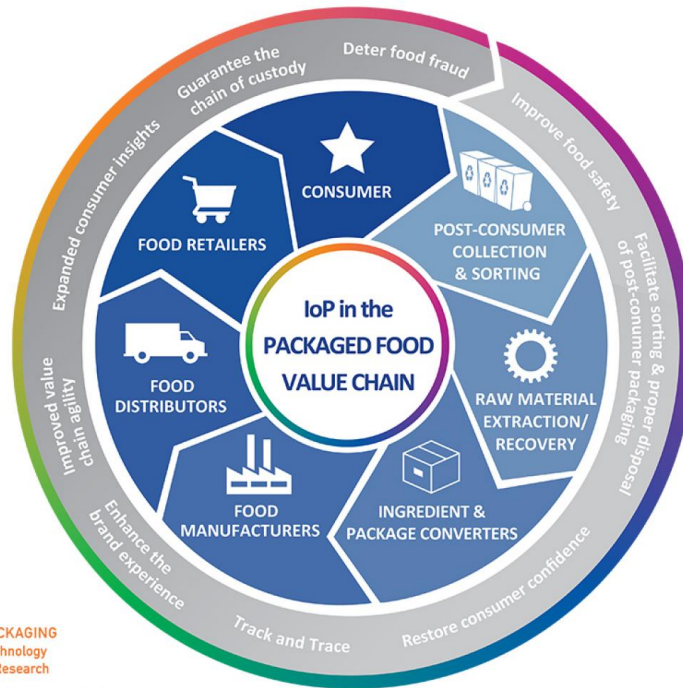


PACKAGING DIGEST

FOOD SAFETY



Michela of emmerichdesigns@gmail.com

Packaging Technology and Research

Internet of Packaging Will Energize Food Packaging

Blockchain and other Internet of Packaging technologies can deter food fraud, rapidly resolve food safety infractions, and provide consumers with product-related details.

Claire Sand | Jan 19, 2021

Packaging is part of the 4th industrial Revolution — linking physical, biological, and digital sciences — in many ways including applications that leverage the technology of the Internet of Packaging (IoP) for food industry intelligence.

What is IoP? It...

- Is a type of intelligent packaging that has enhanced communication via the internet;
- Facilitates autonomous data capture, event transfer, network connectivity, and interoperability;
- Has already enhanced consumer, retailer, brand owner, and post-consumer experiences.

There are more than 9 areas shown in the Graphic above in which IoP can add meaningful value to food packaging. Two areas — the ability to sense when food is unsafe and build consumer confidence in food and its packaging — are highlighted below.

Sensing when food is “off”.

Intelligent packaging already communicates complex quality-related factors such as taste, odor, toxicity, or freshness as well as food safety. It's most commonly seen in the form of time and temperature integrators (including Evigence , TimeStrip VSP, and Vitsab) and an abundance of indicators. Specific sensors with detection limits for oxygen, hydrogen sulfide, and other by-products of microbial growth are in use and an area of much innovation.



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“There are packaging sensors that sense the end of shelf life, communicate this, and then act to release agents to extend the shelf life as needed.”

— Claire Sand, owner, Packaging Technology and Research

What is truly neat is that there are packaging sensors that sense the end of shelf life, communicate this, and then can act to release agents to extend the shelf life as needed. With IoP, we can add-in internet linkage to enable these on-pack sensors to communicate within the supply chain. And this is

viable because it involves using existing RFID and NFC technology for pallet-sized loads and adapting it for primary, secondary, and tertiary packaging. The value of an internet linkage to convey shelf-life information is that it will allow for agility and planning within the supply chain from production to shipping to consumer use.

Restoring consumer confidence in food and its packaging.

Intelligent packaging and now the IoP have been fueled by the Food Safety Modernization Act (FSMA) and more specifically and recently by the FDA proposed rule, “Requirements for Additional Traceability Records for Certain Foods ” slated to be Section 204(d) of the FSMA.

This is designed to answer the consumer questions, “Where is this from?” and “What is this made of?” and to allow sources of deleterious substances to be traced back to their origin.

In the field of IoP, blockchain and other tracing technologies deter food fraud, allow food safety infractions to be rapidly resolved, and provide consumers with product-related details. Tracing the source of food safety outbreaks saves lives and money since the timeframe to trace an outbreak decreases from 6 weeks to 2 seconds using IoP. This means more focused recalls, less confusion and increased consumer confidence in food safety. Using IoP to address packaging is a multifaceted opportunity.

Let’s explore a few analogous to food safety. Because these IoP technologies are on the package, it also makes a lot of sense to address consumer questions of “where is the package from and what is it made of?” One opportunity is to use IoP to restore consumer confidence in packaging by tracking package material sources and converting processes.

Warning: Acronym overload ahead!

This can be done using the Food Safety Modernization Act (FSMA) framework of Key Data Element (KDEs) connected to Critical Tracking Events (CTEs) that will allow for tracking of things such as NonIntentionally Added Substances (NIAS) and IAS (Intentionally Added Substances).

We have seen information restore consumer confidence in packaging. For example, the paperboard packaging industry has made a strong sustainability connection with consumers by sharing sourcing

information. This has taken the form of percent post-consumer recycled (PCR) content, sustainable forest certifications, and power source whether water, solar, wind, or fossil-fuel derived.

Using IoP as a means to convey information and enable a tight chain-of custody would ensure that the “negative alphabet soup” letter combinations PFAS, BPA, etc., of the day connected with packaging would become passé.

Ah, wouldn't that be nice!

Claire Sand, PhD, has 30+ years of experience in industry and academia. She's owner of Packaging Technology and Research and Gazelle Mobile Packaging and is an Adjunct Professor, CalPoly, Michigan State University, and the University of Minnesota. Her email is claire@packagingtechnologyandresearch.com

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