IEEE SmartAg Initiative: Technology Applied to the Food Supply Chain

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Food safety and security are among the most significant challenges facing the planet, with an expected nine billion people placing pressure on energy and water resources necessary for food production in an increasingly constrained environment by the year 2050. Furthermore, food waste is between 30-40% in both developed and developing nations, for different reasons. Cutting edge technologies, applied to the food supply chain from soil to table, can increase yields, reduce waste, and reduce water, energy, fertilizer, and pesticide usage, and provide real time monitoring of food quality and safety. SmartAg encompasses soil preparation, food production in agriculture and aquaculture, harvest, aggregation, processing, packaging, transport, wholesale/retail, and consumption. Sensing and tracking, deployed throughout the food supply chain, adds value by securely recording custody and handling, with real-time secure monitoring of food safety and quality. Variants of key technologies already exist in the IEEE portfolio, and can be specialized to this important new application, while others are ripe for new development. SmartAg can be viewed as an ecosystem of fog and cloud connected systems and devices interoperating to provide local and regional data for improved sensing, decision-making, and action. Connectivity throughout this ecosystem is crucial to its efficacy. The goal of the IEEE SmartAg initiative is to support and convene a community of technologists and subject matter experts from across the food supply chain, and facilitate and sustain the convergence of these areas via conferences, publications, educational courses and videos, and entrepreneurship opportunities.

This presentation outlines the IEEE SmartAg initiative, describes the partnerships with non-IEEE societies, and describes examples of technologies that can significantly impact food safety and security. The presentation will emphasize opportunities for networking and related transmission technologies for a variety of applications in challenging environments within the SmartAg ecosystem.