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# IIoT Applications: Food Industry

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# IoT and Food Industry

- Sensing layer
  - Networked sensors monitor food quality along the supply chain
  - WSNs monitor environmental conditions
- Communication layer
  - Stakeholders access supply chain data
- Application layer
  - Applications for farmers, retailers, government, analysts, and consumers

# IoT and Food Industry: The Future

- Sensors monitor humidity, temperature, and composition of food products
- Real-time data analysis
- Easier process control and increased food safety
- A rice packet can be traced back to the paddy field

# Impacts of IoT in Food Industry

- Efficient production line
  - IoT monitors equipment performance
  - Detects anomaly in production line
  - Real-time solutions by predictive maintenance
- Food safety
  - Temperature tacking sensors
  - Automated Hazard Analysis and Critical Control Points (HACCP) checklists

# Impacts of IoT in Food Industry

- Transparency of the supply chain
  - Availability of real-time data about products
  - Easier to find inefficiencies
  - Easier to meet food safety regulations
- Less wastage
  - Analysis of real-time information of food products reduce food wastage

# Applications of IoT in Food Industry: On the Farm

- Sensors monitor weather, crop maturity, and presence of insects
- Soil moisture sensors optimize irrigation and fertilization

# Applications of IoT in Food Industry: In the Livestock Barns

- Sensors monitor health parameters of animals
- Automated feeding cycles
- Diet control
- Automated temperature control in brooding barns and hatchery

# Applications of IoT in Food Industry: On Equipment

- GPS tracking
- Drone-assisted field monitoring



# Applications of IoT in Food Industry: For Maintenance

- Embedded sensors monitor machine performance
- Early detection of warning signs
- Smart maintenance extends equipment lifetime

# Applications of IoT in Food Industry: To Improve Margins

- Predictive analysis
- Spotting early warning signs
- Well informed decisions
- Profit maximization

# Applications of IoT in Food Industry: For the Consumer

## ➤ SmartLabel

- An initiative by the Grocery Manufacturers Associations (GMA)
- Uses QR code to provide product related information to consumers
- Provides ingredient details, allergens exposure, nutrition value, and many more

# Applications of IoT in Food Industry: About the Product

- Consumers scan QR code to access product information
- Product information includes nutrition, ingredients, allergens, third-party certifications, social compliance programs, usage instructions, advisories & safe handling instructions, etc.

# Applications of IoT in Food Industry: In the Factory

- Connected processes and workers
- Insights gained from IoT technology help to improve quality
- Reduction in time to market (TTM)

# Applications of IoT in Food Industry: About Compliance and Safety

- IoT insights help to identify and isolate unsafe food
- Timely action for food quality and safety issues
- Increases confidence of food manufacturers

# Applications of IoT in Food Industry: For Empowering the Workers

- Safety glasses and other wearables
- Increases productivity and efficiency

# IoT Solutions for Food Industry: CityCrop – Intelligent Indoor Garden

- Provides intelligent indoor garden to grow fruits, herbs, vegetables, greens, and edible flowers
- Climate control
- Live monitoring
- Smart notifications
- Plant doctor



# IoT Solutions for Food Industry: Diagenetix - BioRanger

- Detects the presence of microbial disease in food
- BioRanger
  - A small handheld device
  - Connects with android app
  - Instantly detects pathogens in food

# IoT Solutions for Food Industry: Eskesso – The Cooking Sorcery

- Wifi-connected smart cooking device
- Easy monitoring of cooking status via smartphone app
- Smart cooking
  - By placing food packet and Eskesso device in a pot of water, selecting the recipe and starting via smartphone app

# IoT Solutions for Food Industry: Culinary Science Industries – Flavor Matrix

- Infuses foods and beverages with unique flavors
- Collects data on food ingredients
- Collects user data
- Uses machine learning and data analysis to enhance flavor of dishes and provide user specific food and beverage pairing

# IoT Solutions for Food Industry: Intellicup – Smart Cups

- Smart beverage vending
- Reduces waiting time and increases profit at beverage shops
- IoT-enabled cups
  - Integrated NFC chip at the cup base
  - Connects cups to mobile banking platform and IntelliHead – a modular dispensing unit
  - NFC chips connects each user to a cup
  - Cups are reusable and made with biodegradable material

# IoT Solutions for Food Industry: Intellicup – Smart Cups

- How the smart cups work
  - Separate apps for merchants and customers
  - Customers create Intellicup accounts using the app
  - Transferring fund to e-wallets
  - Linking cup to the e-wallet by scanning a QR code via the app
  - Docking the cup on the dispensing unit (Intellihead)
  - Customers enjoy the beverage

# Some Other IoT Solutions for Food Industry

- Spinn Inc.: smart coffee brewing machines
  - Connects coffee brewing machines with Amazon Echo
  - Auto-order feature
- FarmShelf: smart indoor farming
  - IoT-enabled climate control for growing crops
  - Automatic notification regarding crop status

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# Thank You!!

