AI - How It Can Be Used To Transform Food Safety

Jennifer Lott
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Introduction

- Jennifer Lott, Technical Development Director, Certification & Tailored Solutions – SGS

- Experience
  - Food Safety Lead Auditor – GMP/HACCP, FSSC Food/Packaging, BRCGS Packaging/Storage & Distribution/Agents & Brokers, and Consumer Products
  - Specializes in Food Safety and Product Safety Management including:
    - Training
    - Project Management
    - Problem Solving

Agenda

- Introduction to AI
- Data Analysis and Risk Assessment
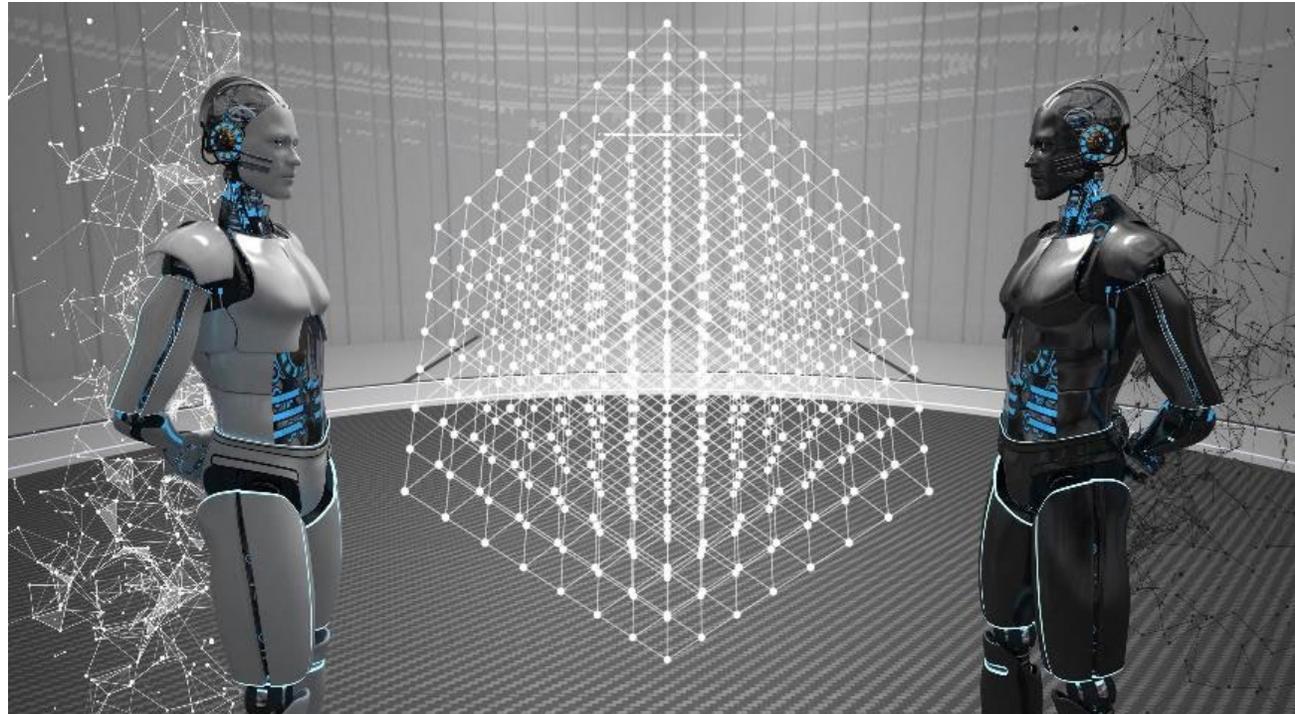- Real-World Applications and Case Studies
- Q&A

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The Latest Advances in AI Applied to Food Safety

What it can do… and what it won't

From There To Today

From There To Today

From There To Today
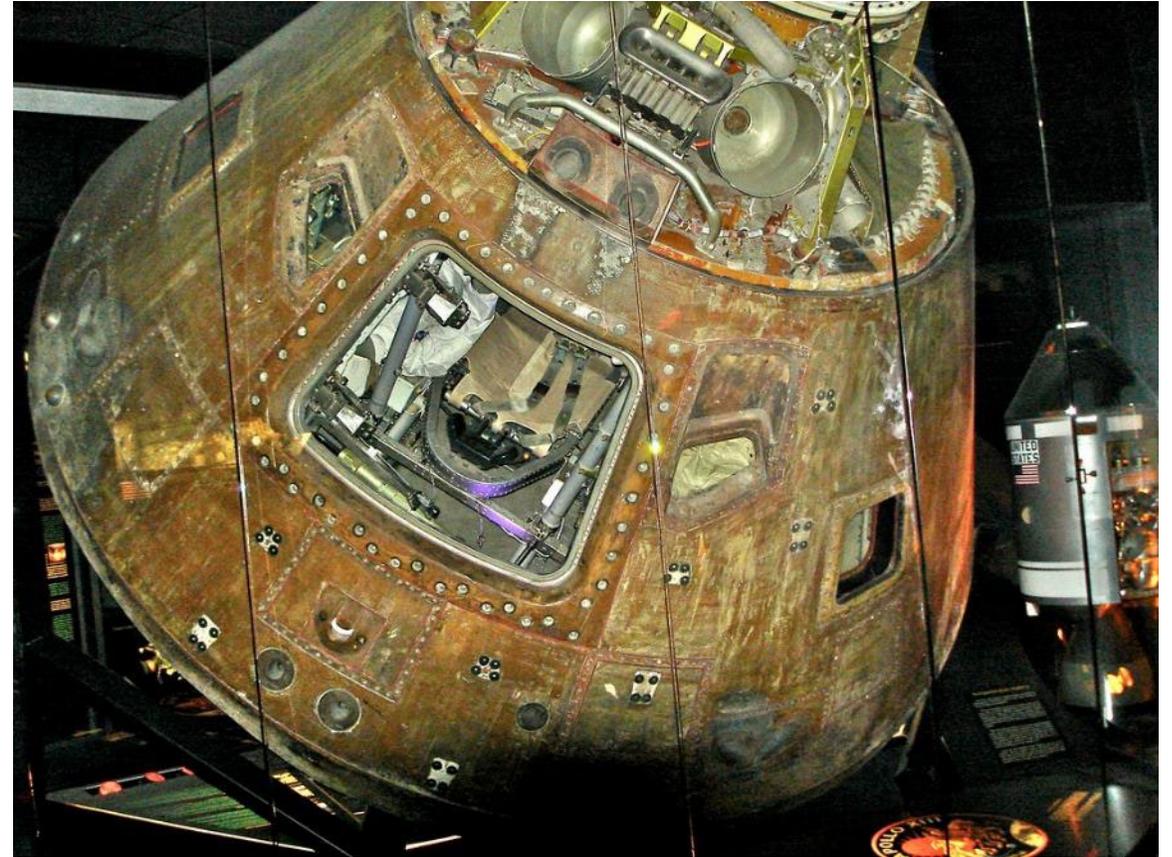
From There To Today

From There To Today

From There To Today

From There To Today

What is AI?

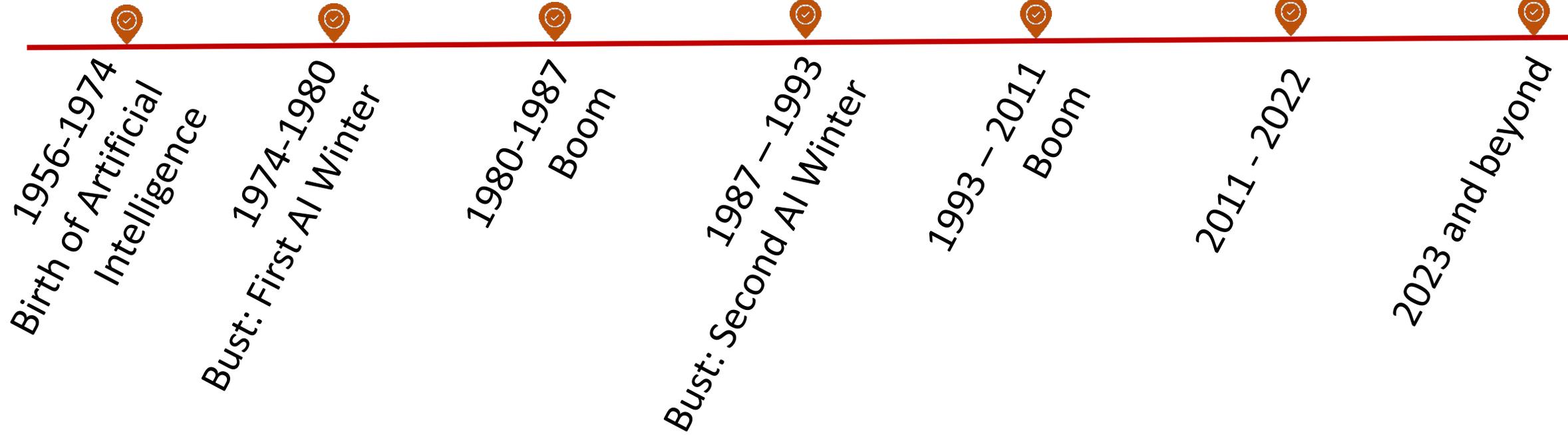Humans are good at analyzing things. Machines are even better. Machines can analyze a set of data and find patterns in it for a multitude of use cases, whether it's food fraud vulnerability or anomalies in manufacturing line.

History of AI

1956-1974
Birth of Artificial
Intelligence

1974-1980
Bust: First AI Winter

1980-1987
Boom

1987 – 1993
Bust: Second AI Winter

1993 – 2011
Boom

2011 - 2022

2023 and beyond

More and more, applications won't be limited to one data type (text only, images only, etc.), but the same application will be able to research a problem, design food safety plans, create videos to explain control measures to other team members, etc...
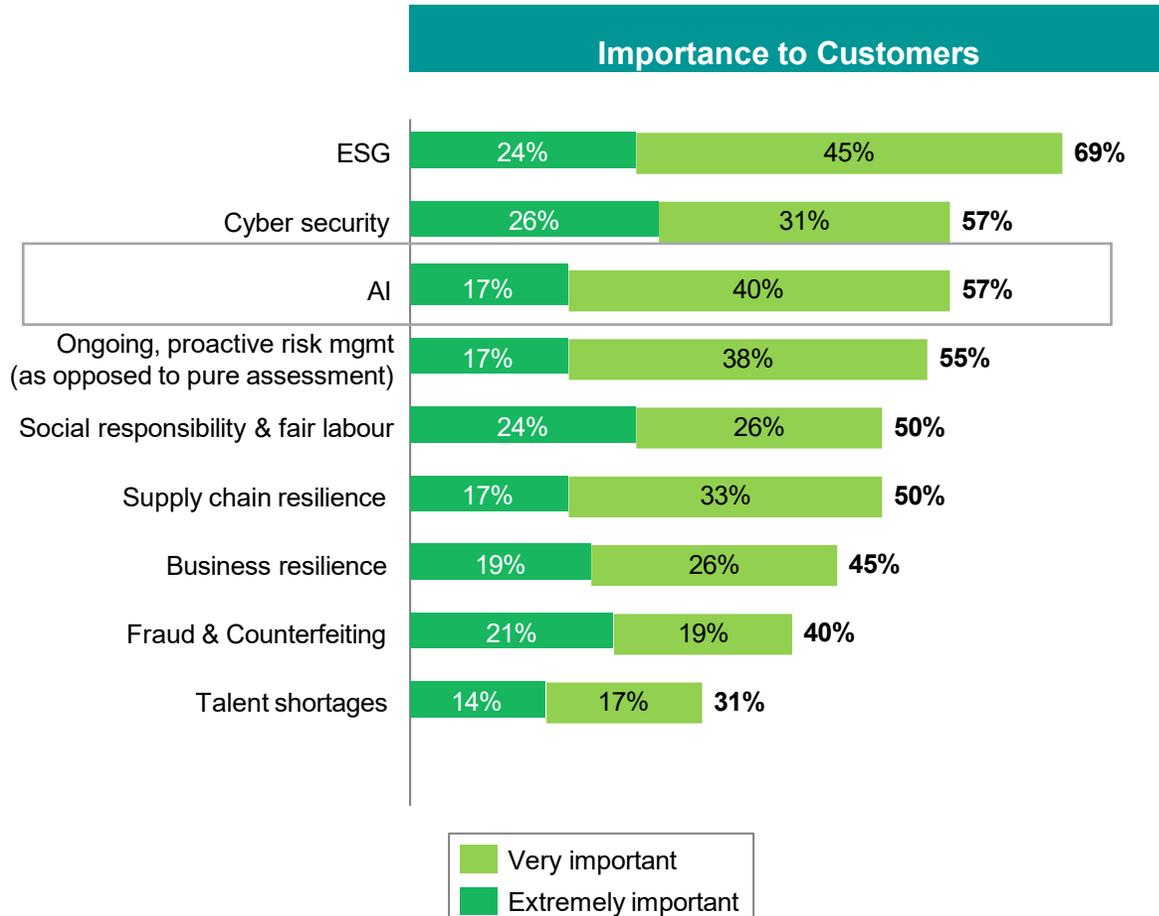
The implications here are gigantic - vastly beyond most people's imaginations.

AI is emerging as a big opportunity in the food industry

Perceived Importance to Customers[1] (% Respondents)
N = 38

Importance to Customers

Category	Extremely important	Very important	Total
ESG	24%	45%	**69%**
Cyber security	26%	31%	**57%**
AI	17%	40%	**57%**
Ongoing, proactive risk mgmt (as opposed to pure assessment)	17%	38%	**55%**
Social responsibility & fair labour	24%	26%	**50%**
Supply chain resilience	17%	33%	**50%**
Business resilience	19%	26%	**45%**
Fraud & Counterfeiting	21%	19%	**40%**
Talent shortages	14%	17%	**31%**

AI

Legend:
- Very important
- Extremely important

1. Survey Q16: "How important are the following topics for your Business? (Rank on a scale of 1-5 from 1=not important to 5=extremely important)"

Source: OC&C & TIC Council Joint Survey November 2023, OC&C analysis

AI is however also perceived as a broad-ranging risk… alongside many other geopolitical, security, and macro-economic risks to contend with

Legend: Extremely | Moderately | Somewhat | Slightly | Not at all

Decreasing % of Extreme / Moderate

Risk	Extremely	Moderately	Somewhat	Slightly	Not at all	% Concerned
Impact of AI	8%	50%	29%	8%	5%	95%
Cyber security	29%	26%	32%	8%	5%	92%
Inflation & ability to pass on price rises	13%	42%	29%	11%	5%	90%
Geopolitical situation in China	21%	32%	21%	16%	11%	90%
Talent shortage	21%	29%	24%	18%	8%	71%
Emerging Market Competitive Disruption	11%	34%	21%	26%	8%	95%
A global recession	13%	32%	39%		16%	84%
Geopolitical situation in Russia / Ukraine	18%	24%	21%	26%	11%	92%
Climate change	11%	32%	29%	16%	13%	87%
Another wave of COVID-19	16%	13%	26%	16%	29%	95%
The resilience of your supply chain	5%	24%	34%	13%	24%	76%

Interview Verbatim

*"**Cyber security is the greatest challenge** of this age"*

*"There is the **risk of new entrants** taking share or building digital twins"*

*"The **biggest threat of AI** is that the technology can reduce digital trust"*

*"We are worr**ied about industrial espionage** and target that by increasing **data protections**"*

*"**Geopolitical instability** that is outside the control of the company is a **great concern** to our business"*

Over half of respondents suggest the risk of AI is moderate or extreme; other challenges (e.g., China, talent) are seen as a more extreme risk

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Horizon Scanning

- Spotting Potential Causes of Uncertainty
- Ensuring Adequate Preparation
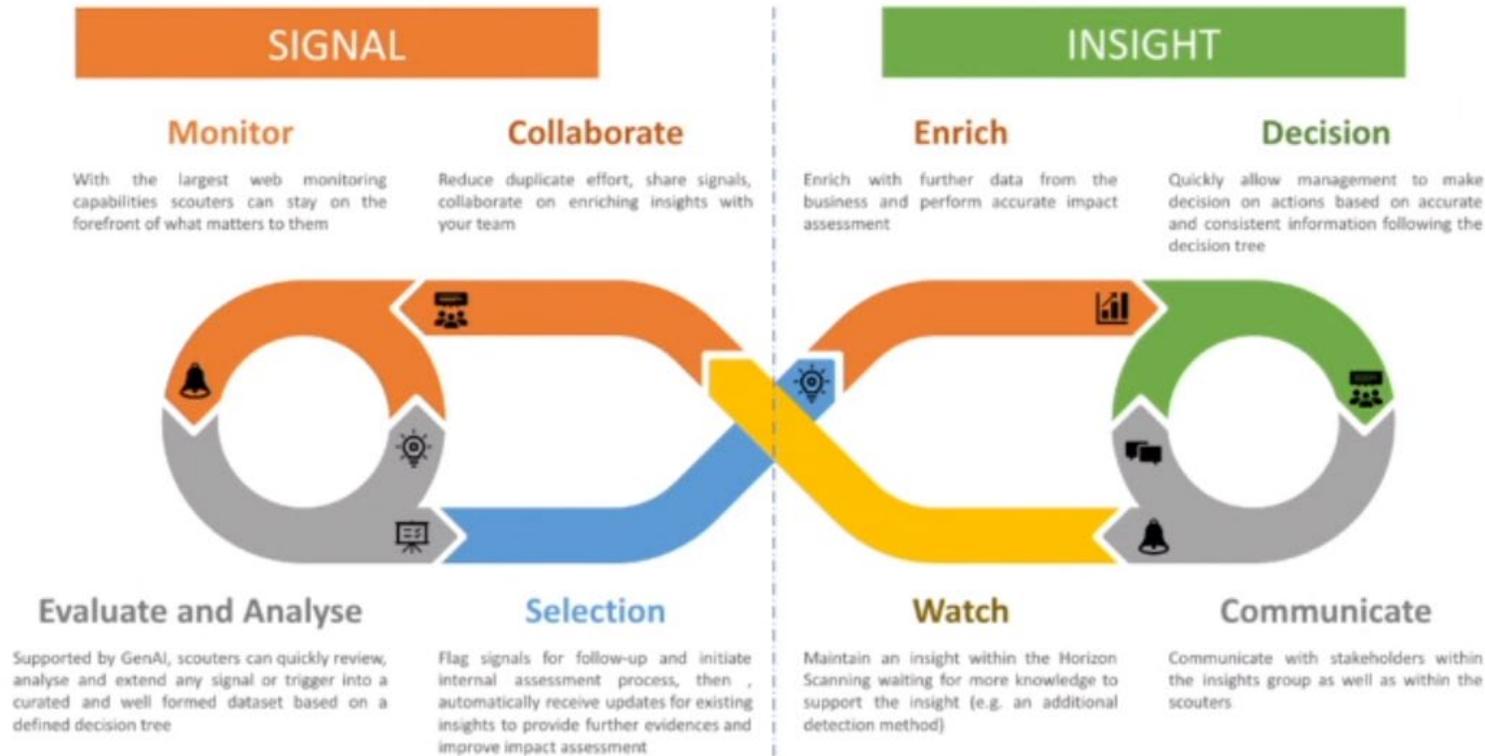- Taking Advantage of Opportunities
- Surviving Threats

Data Analytics and Risk Assessment

Enable clients to perform the horizon scanning and early warning based on dynamic risk assessment

The Horizon Scanning as an infinite loop

SIGNAL

INSIGHT

Monitor
With the largest web monitoring capabilities scouters can stay on the forefront of what matters to them

Collaborate
Reduce duplicate effort, share signals, collaborate on enriching insights with your team

Enrich
Enrich with further data from the business and perform accurate impact assessment

Decision
Quickly allow management to make decision on actions based on accurate and consistent information following the decision tree

Evaluate and Analyse
Supported by GenAI, scouters can quickly review, analyse and extend any signal or trigger into a curated and well formed dataset based on a defined decision tree

Selection
Flag signals for follow-up and initiate internal assessment process, then , automatically receive updates for existing insights to provide further evidences and improve impact assessment

Watch
Maintain an insight within the Horizon Scanning waiting for more knowledge to support the insight (e.g. an additional detection method)

Communicate
Communicate with stakeholders within the insights group as well as within the scouters

Data Types

Scanning & analysis of millions of sources

Regulations
More than 150'000 regulations from over 150 countries, all translated in English.

Incidents
Alerts and recalls from over 70 governmental bodies, insights from news journals and industry associations.

Scientific Articles
Over 2 million documents come from scientific, government, and industry-leading sources.

Social news
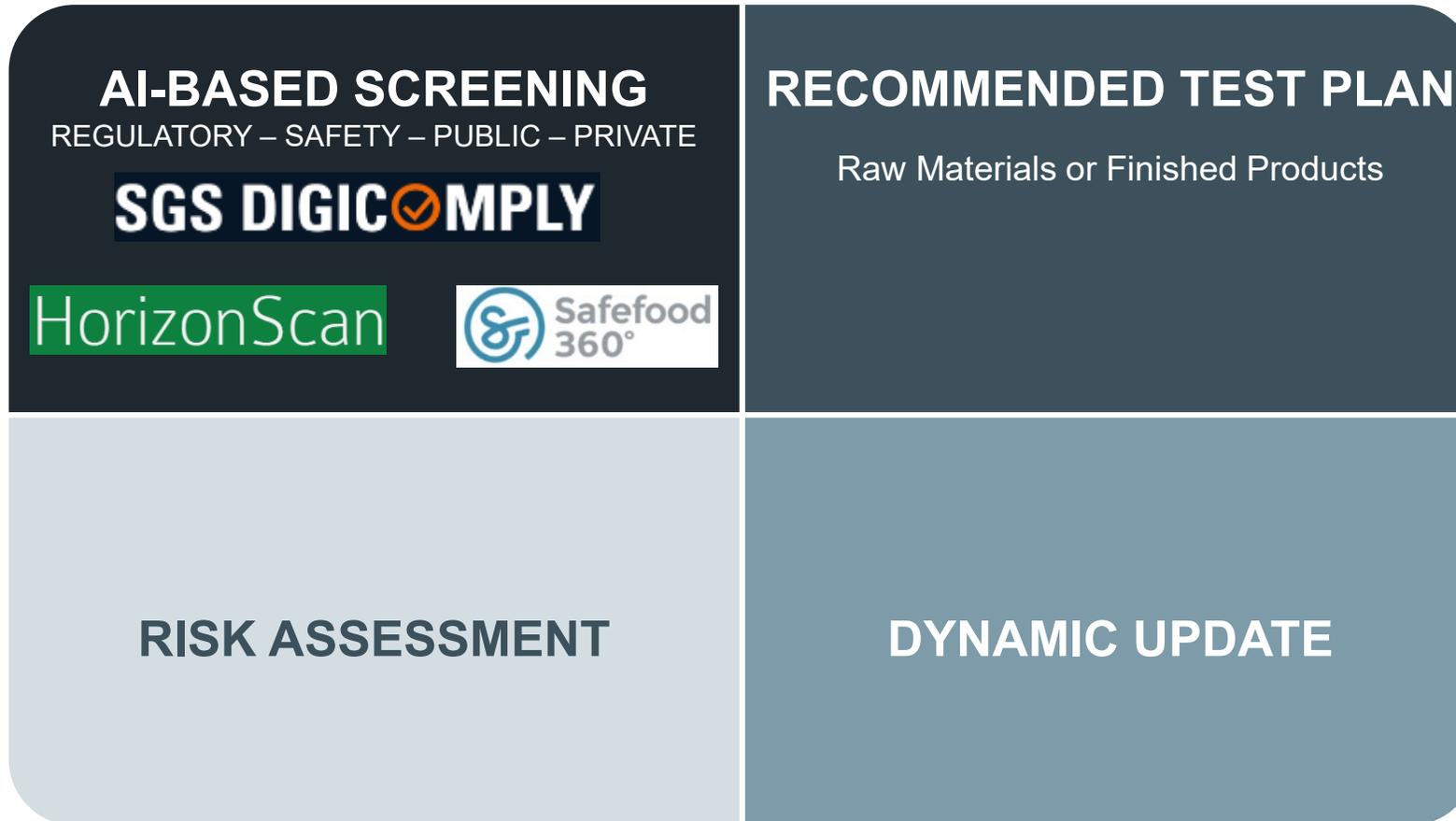We track what is being discussed in the media, on social networks like Twitter, and by NGO influencers.

SGS Labs insights
Billions of data points to give you real-time laboratory analysis insights & predictions

Data Analytics and Risk Assessment

AI-BASED SCREENING
REGULATORY – SAFETY – PUBLIC – PRIVATE

SGS DIGIC✓MPLY

HorizonScan

Safefood 360°

RECOMMENDED TEST PLAN

Raw Materials or Finished Products

RISK ASSESSMENT

DYNAMIC UPDATE

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Early Warning Trigger

A new trigger is a **hazard** that appears **for the first time** in connection with a commodity or product class. Identifying such triggers starts **long before these hazards are regulated (and thus monitored)**, and the triggers are usually tracked for years. Early warning monitoring puts companies in the best possible position to **be proactive** rather than reactive.

Could the Ethylene Oxide issues within the supply chain be alerted earlier or helped to mitigate
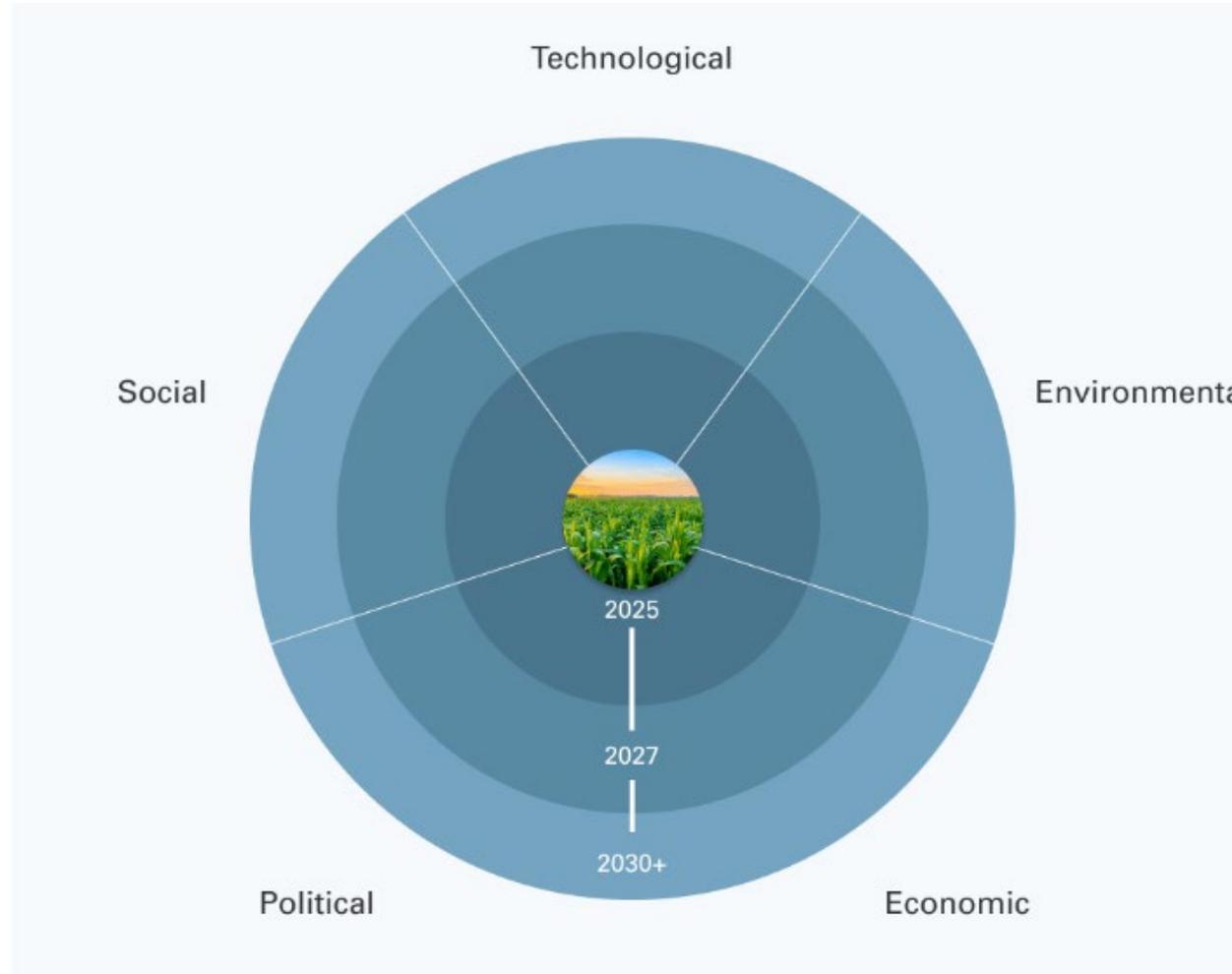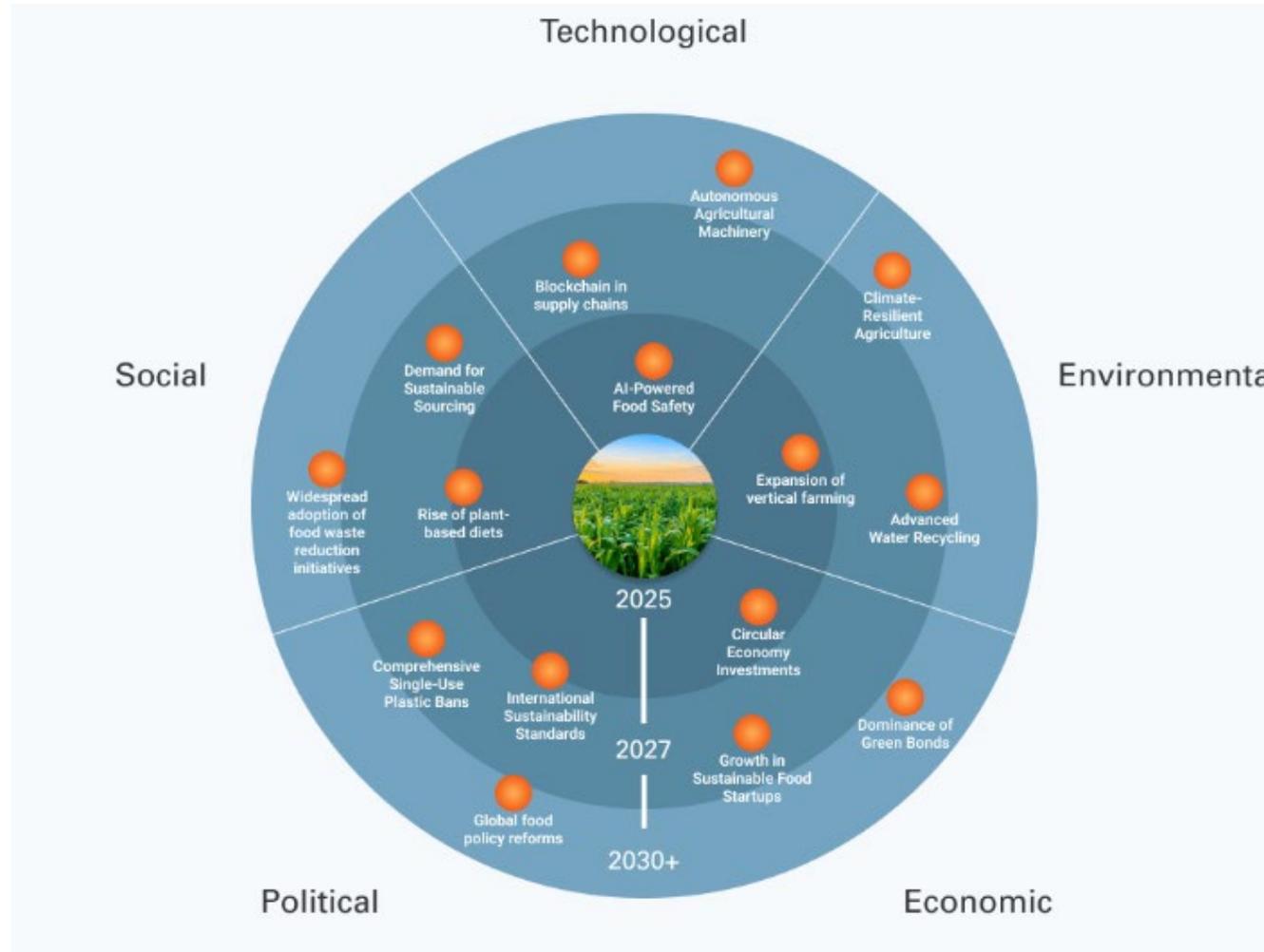the issues if they were known earlier?

Early Triggers for Ethylene Oxide

1981

Ban of ETO in Food (Germany)

2019

Implementation of regulation (EU) 2019/1793

First positive findings by SGS DIGICOMPLY of ETO in black pepper

2018

In August first positive findings of ETO in sesame

2020
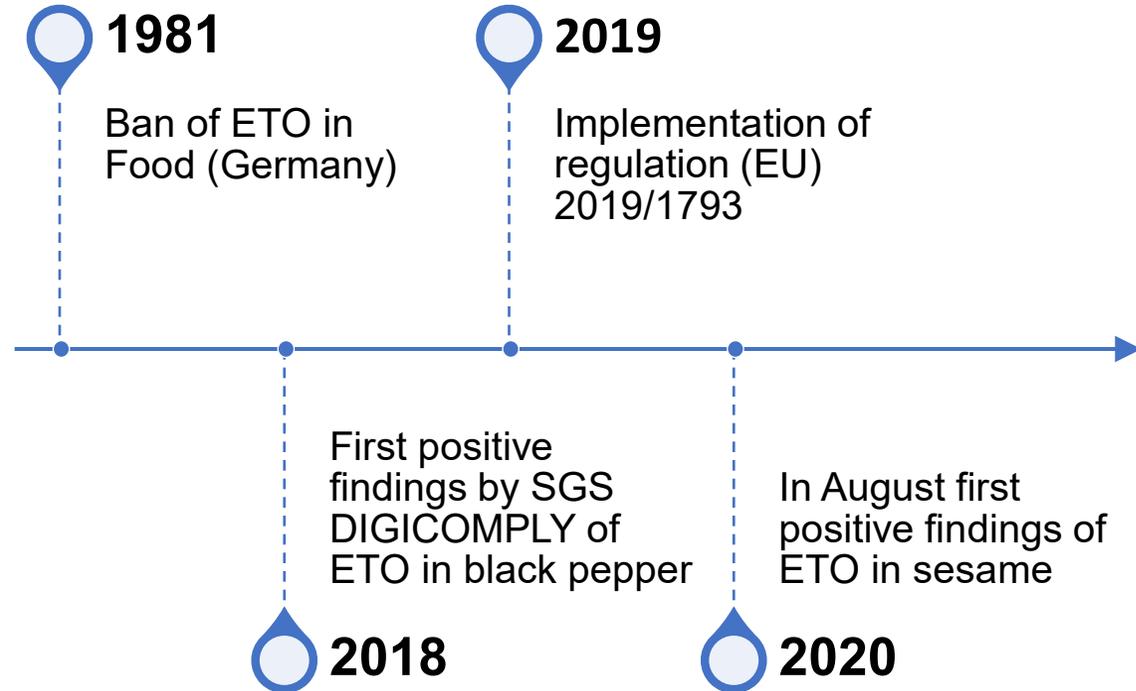
Vanilla Bean Farm

Sustainability Trends in 2030

Sustainability Trends in 2030

Horizon Scanning

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Q&A

Further Questions? Contact Us!

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https://www.sgs.com/foodsafety