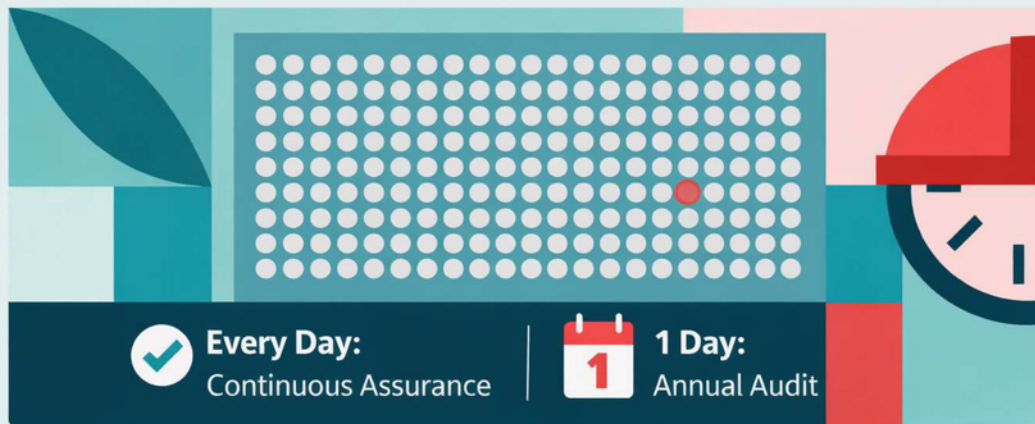
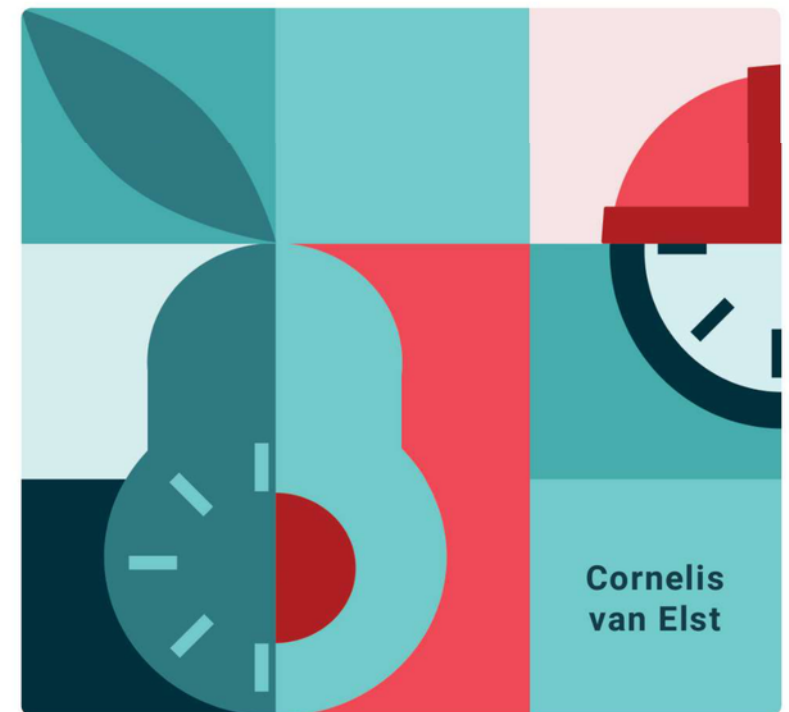


365 DAYS OF TRUST



REAL-TIME FOOD SAFETY ASSURANCE

365 Days of Trust —
From Periodic Compliance
to Continuous Learning



REAL-TIME FOOD SAFETY ASSURANCE

CORNELIS VAN ELST

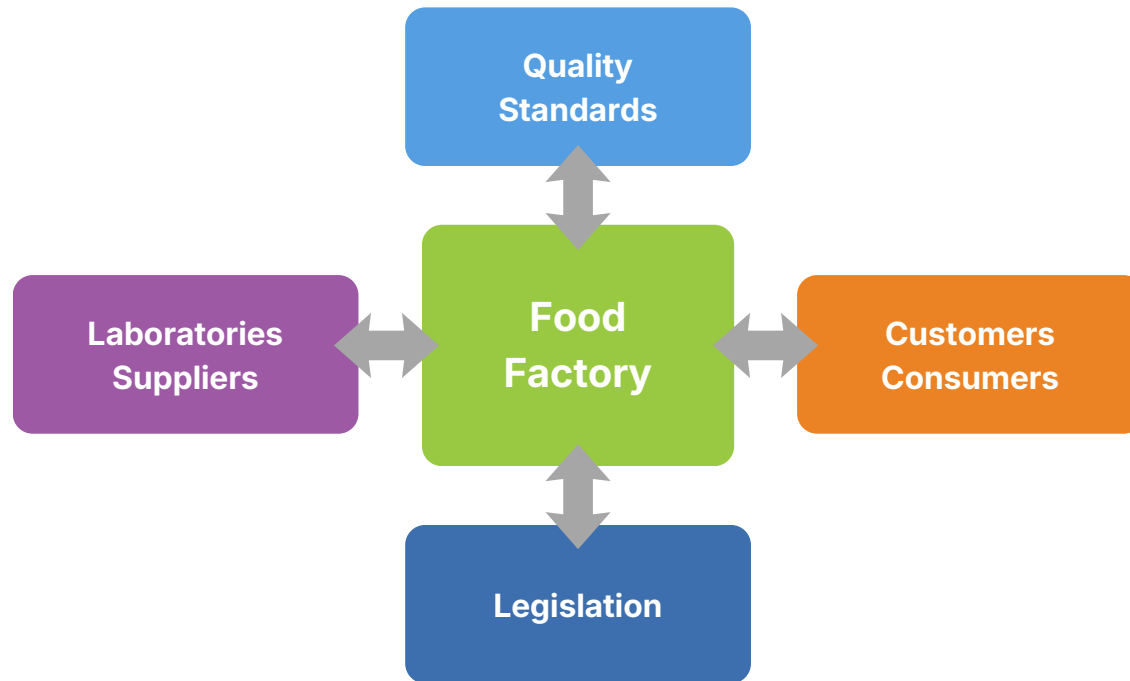
SWP

Introduction to the Food Safety Operating System (OS)

1. Food Safety Compliance
2. Knowledge Management
3. The Certification Model
4. The Food Safety OS
5. Real-Time Food Assurance
6. Building Assurance Trust



The Five Core Knowledge Domains of Food Compliance



- **Dynamic ecosystem:** A food company operations layer must continuously interact with four external compliance forces: legislation, standards, supply chain dynamics, and market expectations.
- **Reactive blind spots:** Without a centralized infrastructure, information travels slowly, forcing companies to rely on retrospective audits rather than real-time awareness.
- **The traditional vulnerability:** In a manual compliance system, these five domains operate in isolation, meaning data is often scattered, outdated, or siloed within specific departments.

Introduction to the Food Safety Operating System (OS)

- **Cross-functional requirements:** Every compliance domain demands separate evidence layers, from legal HACCP prerequisites to shifting raw material specifications and market demands.
- **The administrative burden:** Managing these intersecting parameters manually creates an extensive volume of paperwork, leading to a system optimized for retrospective proof rather than real-time awareness.
- **Data fragmentation:** When specifications, traceability records, and hazard analyses are kept in separate paper folders, the organization remains blind to live operational risks.

Compliance Domain	Standard Requirements	Quality Activities	Operational Framework	Real-Time Assurance
Quality Standards	GFSI standards requirements	Quality management system	Certification audits	Risk and compliance verification
Customers and Consumers	Customer products specifications	Market intelligence and feedback	Finished goods specifications	Customer satisfaction metrics
Food Company	Manufacturing requirements	Prerequisite programs (PRPs)	Material mass balance and traceability	System performance metrics
Suppliers and Laboratories	Raw materials specifications	Suppliers qualification	Chain of custody data	Supplier performance auditing
Legislation	Statutory and regulatory norms	HACCP system implementation	Competent authority oversight	Regulatory compliance audits

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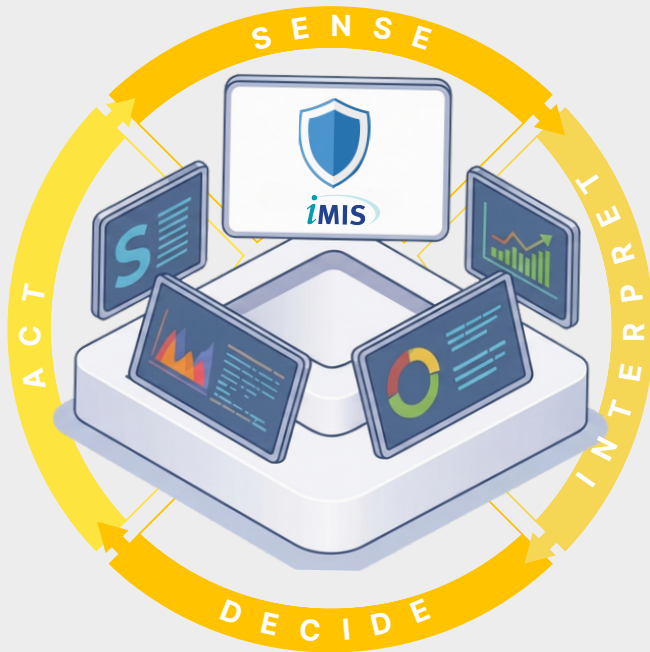
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KNOWLEDGE DOMAINS

The Compliance Intelligence Loop



Food Law

Hazards

Standards

Fraud

Training

Ingredients

- **Sense:** The continuous detection of shifting regulatory inputs, supplier alerts, and emerging sector risks.
- **Interpret:** The methodical translation of raw compliance data into clear operational impact assessments.
- **Decide:** The systemic formulation of preventative protocols, corporate tasks, and mitigation strategies.
- **Act:** The immediate physical execution of updated food safety procedures across the factory floor.



The Compliance Intelligence Loop



HACCP

Documents

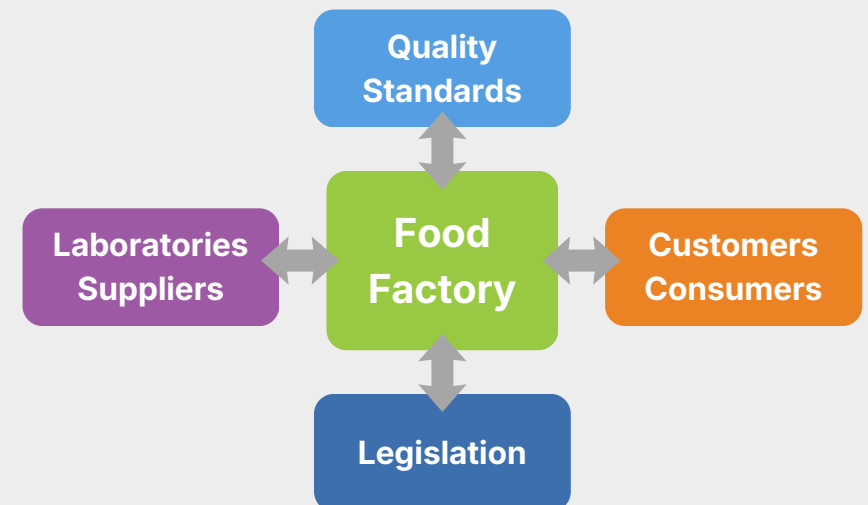
Handbook

Audit

Action List

SpecCheck

- **Plan:** The strategic design of corporate frameworks, product specifications, and hazard analysis boundaries.
- **Do:** The physical implementation of prerequisite programs, hygiene routines, and daily manufacturing tasks.
- **Check:** The rigorous evaluation of system performance through automated monitoring and validation criteria.
- **Act:** The immediate formulation of systemic corrections, task assignments, and process improvements.

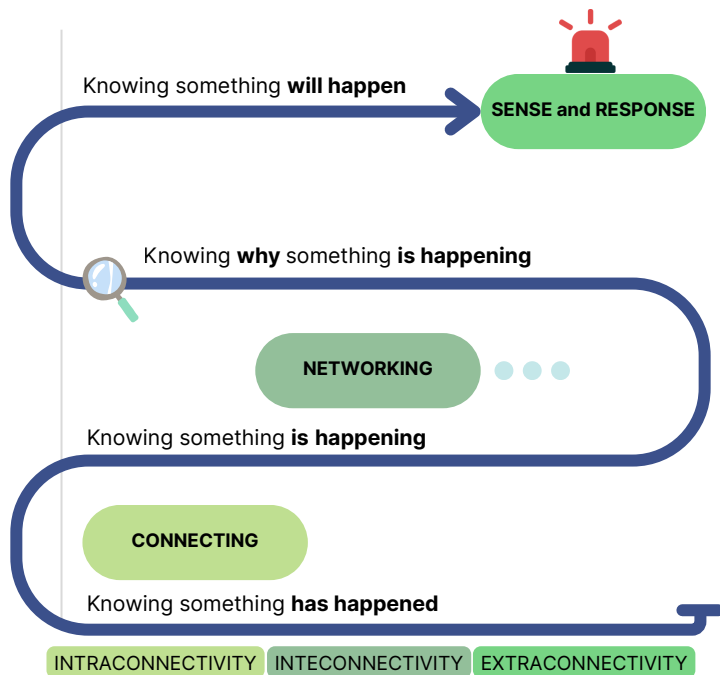


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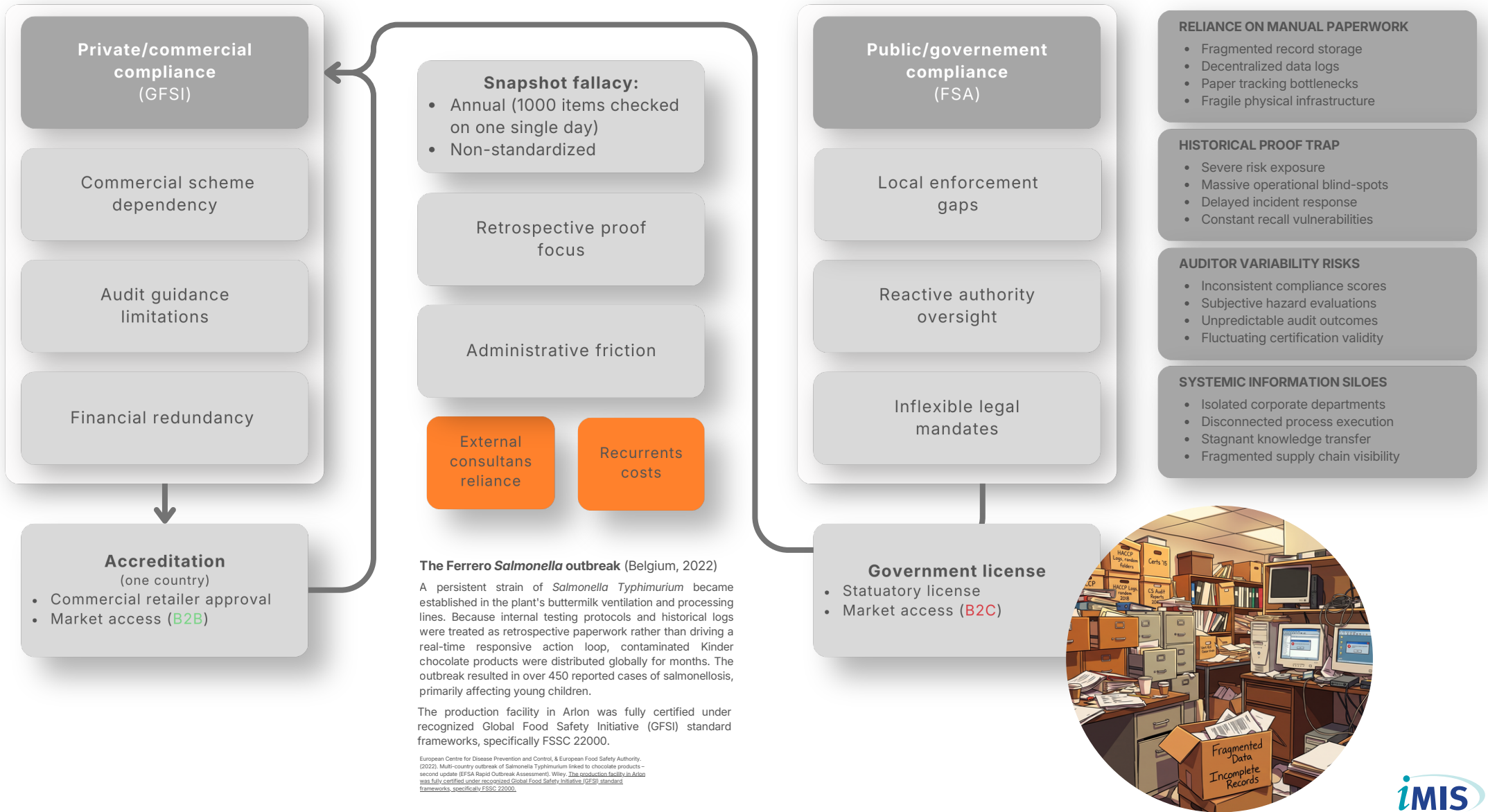


The Compliance Intelligence Loop

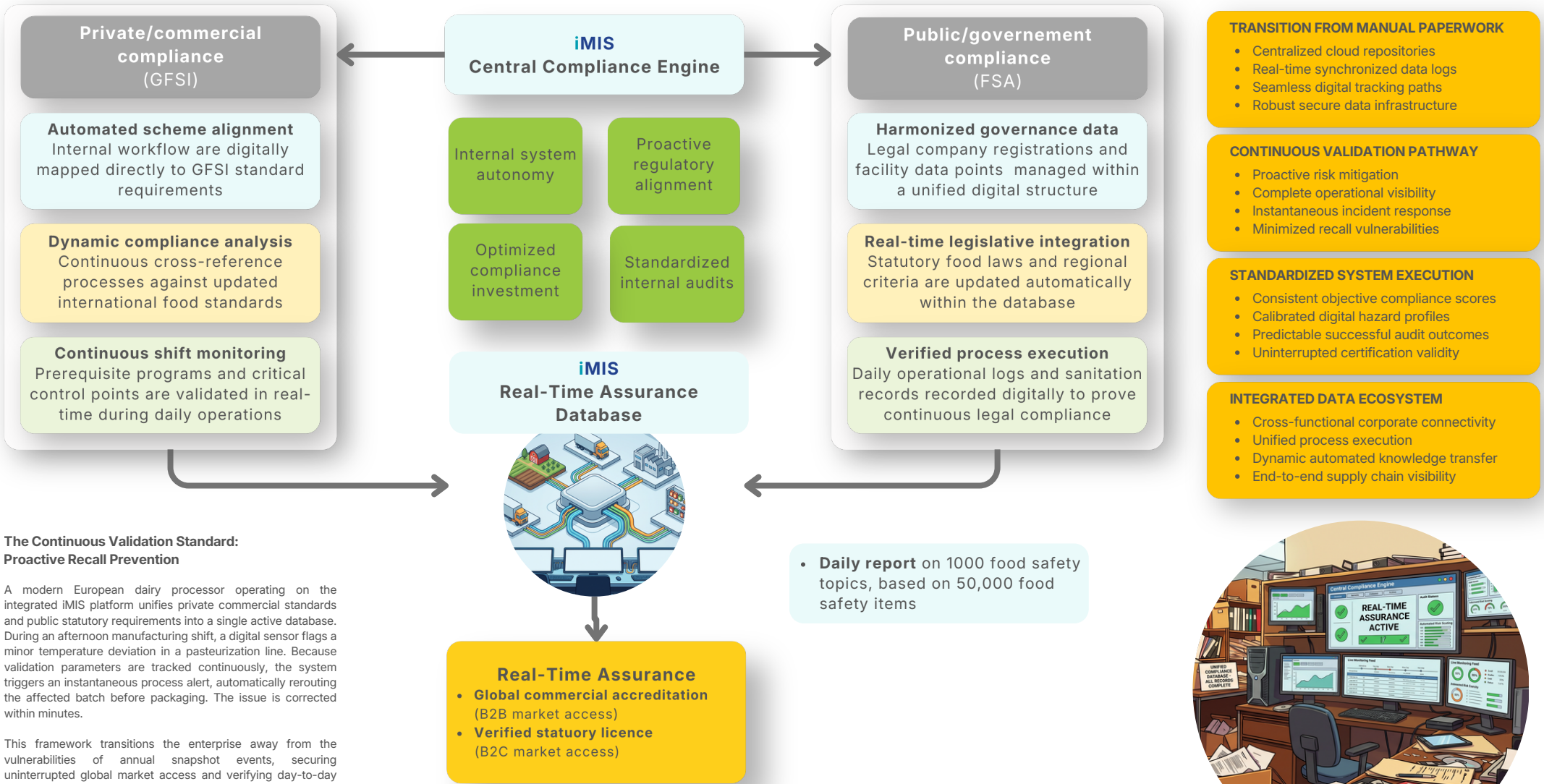


- **Reactive awareness:** Knowing something has happened; a traditional reliance on historic logs, paper compliance, and **retrospective proof**.
- **Operational Awareness:** Knowing something is happening; **real-time visibility** of active factory-floor shifts, workflows, and live processes.
- **Analytical Understanding:** Knowing why something happens; the systemic ability to cross-reference data domains and **isolate root causes**.
- **Predictive Intelligence:** Knowing something will happen; utilizing continuous verification loops to **mitigate risks** before an incident occurs.

The Traditional Manual Auditing Ecosystem



The Unified Compliance Operating System



The Scalability Limitations of the TIC Consultancy Model



The core risks of outsourcing food safety workflows:

When a food business relies on an external consultant to build and maintain its HACCP, TACCP, or VACCP models, the knowledge **remains with the contractor** rather than the factory floor.

→ Frontline employees and internal management treat food safety as an external administrative chore to be resolved during the consultant's allocated days (such as the 2 days for internal audits or 0.25 days for Food Fraud) **rather than an intrinsic, hour-by-hour operational habit**.

The paper compliance paradox:

External consultants are naturally incentivized to provide standardized, pre-packaged documentation templates to maximize their own efficiency across multiple clients.

→ Generic, static quality manuals that look perfect during an annual snapshot audit but fail to reflect the actual, live operational realities or specific machinery risks of the factory. The company achieves paper compliance while remaining highly vulnerable to unnoticed process drift.



Yearly Food Safety Consultancy Benchmark

Code	Activity	Days / Year
2.1	Internal audit	2.0
2.12	Food Defense analysis TACCP	0.25
2.12	Food Fraud analysis VACCP	0.25
2.13	Emergency plan	0.25
2.16	Supplier Assessment	0.5
2.17	Microbiological scheme	0.25
2.20	Verification Report	1.5
2.30	Management review	0.5
2.40	Recall test	0.25
2.50	Tracking test	0.25
2.60	Cross table according to the standard	1.0
2.80	Audit guidance	2.0
✓ Total Yearly Consultancy Effort		10.0 days / year

Food Safety TIC Market in the Netherlands (2024)

	Headquarters	Consultancy (2019)	Consultants
 Merieux NutriSciences	France	KTBA	150
 Eurofins	France	WFC, Eurofins NL	20
 Normec	France	Kroonenburg, BK, N&S	50

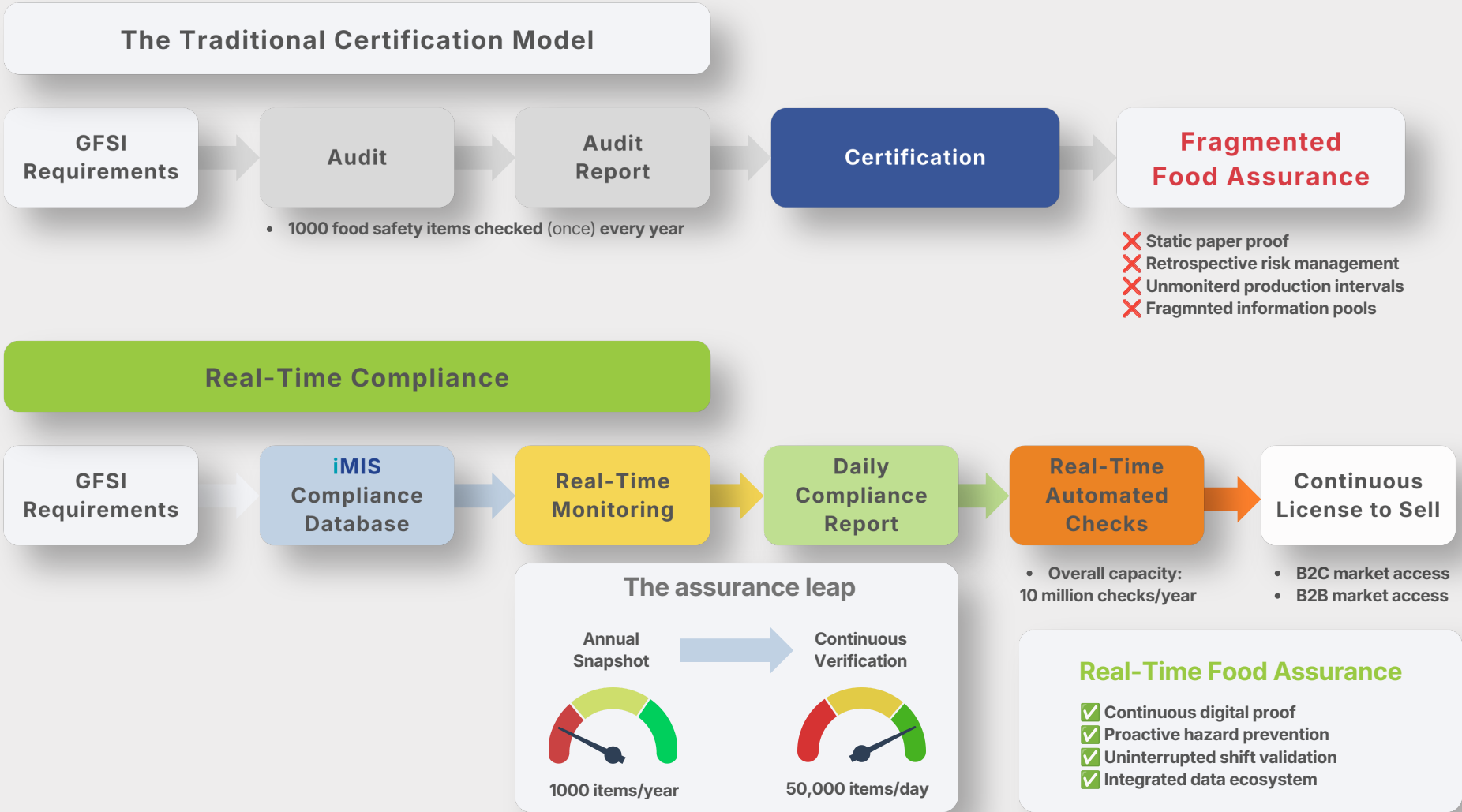
Article: [The Shifting Landscape of the European TICCS Market: A Focus on the Netherlands](#)

The risks of aggressive TIC market consolidation:

Major players (such as Mérieux, Eurofins, and Normec) are actively acquiring established local boutique agencies (like KTBA and Kroonenburg). This consolidation creates several macroeconomic and operational risks for food businesses:

- **Loss of specialization:** Highly specialized, niche knowledge regarding local product categories (e.g., specific dairy processing or complex bakery microbiology) is replaced by standardized corporate consulting routines.
- **The scalability efficiency illusion:** While corporate holding companies expand financially through mergers, their operational model fails to scale digitally, remaining entirely dependent on a linear, resource-heavy bottleneck of human billable hours.
- **Monopolistic price inflation:** Aggressive market consolidation reduces competitive options for food manufacturers, driving up recurring annual auditing and advisory fees without delivering any corresponding increase in real-time operational protection.
- **Increased vulnerability to regulatory shifts:** Large, consolidated corporate structures adapt slowly to rapid legislative changes, meaning manual updates to outsourced client quality manuals consistently lag behind live European and national statutory updates.

From Snapshot to Real-Time Assurance



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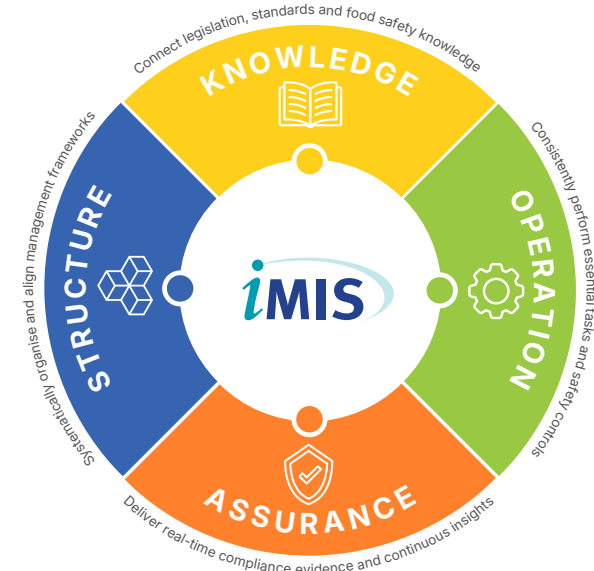


Defining a Continuous Digital Infrastructure for Food Safety Management

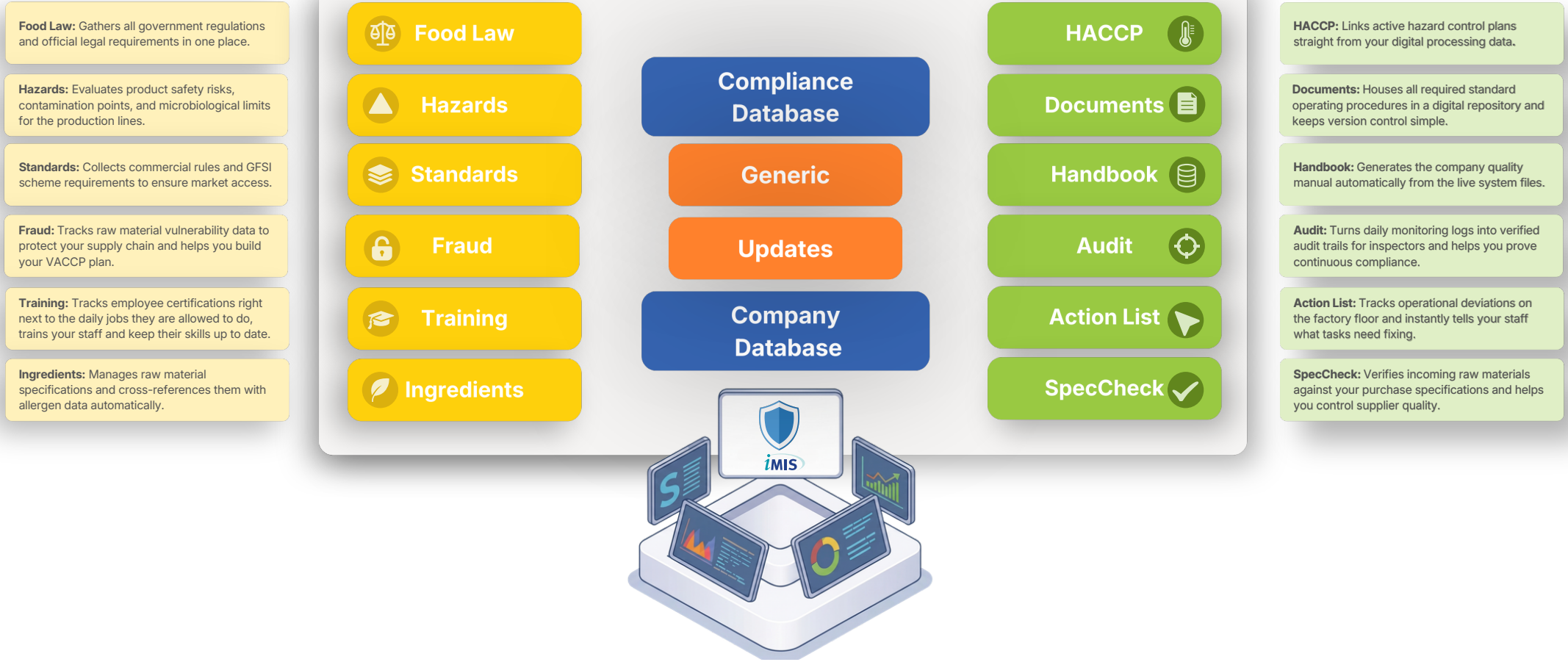
A **food safety compliance operating system** functions as a unified digital infrastructure that integrates corporate structure, regulatory knowledge, facility operations, and continuous assurance into a single, permanent compliance environment.

The operational shift: Rather than dedicating resource-heavy blocks of time to prepare retrospectively for periodic annual audits, a compliance operating system establishes real-time assurance by embedding food safety legislation, dynamic operational controls, and automated verification loops directly into daily manufacturing shifts.

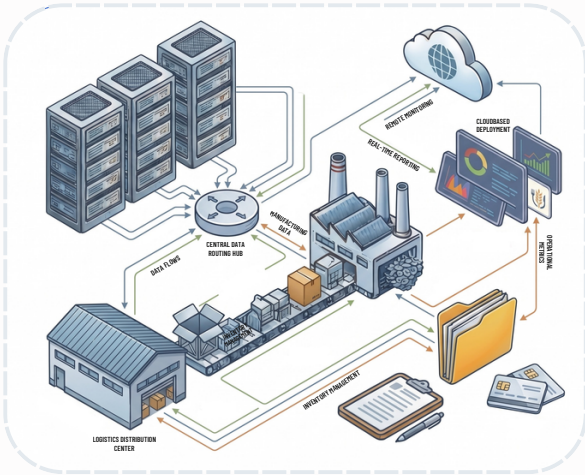
- **Structure:** Centralizes organizational hierarchy to fill core databases and eliminate fragmented shadow systems.
- **Knowledge:** Maps quality protocols directly to live legislation and hazard libraries for active compliance.
- **Operation:** Digitizes HACCP plans and operational audits via mobile apps for real-time production checks.
- **Assurance:** Generates autonomous evidence and continuous logs to keep the facility audit-ready at any moment.



Architectural Overview of the Integrated iMIS Database Modules



Implementing the SKOA Framework Through the iMIS Digital Ecosystem



Food Safety OS: in Practice

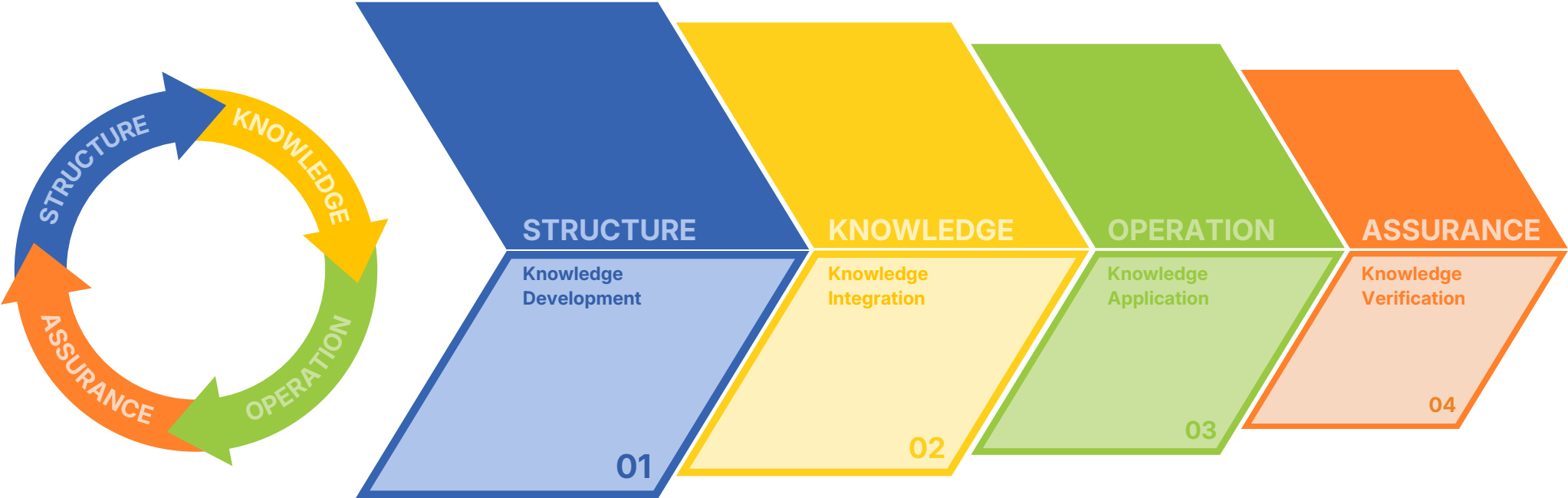
SKOA Model Comparison

SKOA Layer	Traditional Food Company	Food Safety OS Company
 Structure	• QA owns food safety • Docs in folders, siloed	✓ Safety in one platform ✓ Clear roles & docs
 Knowledge	• Scattered & outdated • Updates via consultants	✓ Live, centralized knowledge ✓ Auto-updated
 Operation	• QA manages HACCP & audits • Teams follow instructions	✓ Embedded in daily work ✓ Shared responsibility
 Assurance	• Periodic audits & inspections • Manual & slow	✓ Continuous, data-driven ✓ Real-time compliance

✓ Core Insight

- Traditional systems rely on: **People + Paperwork**
- The Food Safety OS approach builds: **Structure + Knowledge + Operation + Assurance**
→ Digital infrastructure for **real-time food safety assurance**.

Driving Continuous Food Safety Through the SKOA Framework



Turning Live Factory Data into Real-Time Quality Assurance and Market Trust

Food Safety OS Stack



- Hierarchy
- HACCP management
- Production workflows
- Quality activities

- EU Food Legislation
- GFSI Standards (BRCGS, IFS, FSSC 22000)
- Supplier Specifications
- Customer Requirements



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The New Way of Assurance

- Food Safety, ESG
- Digital Product
- Passport G2B Programs
- Emerging Countries
- Leapfrog Certification
- AI Governance



Real-time Food Product Assurance stack



iMIS Food

From Product Data to Real-Time Assurance Infrastructure

Intelligence Layers

- 1

Product Intelligence
 - Ingredients
 - Recipes
 - Labeling
 - Specifications

✓ Always compliant product data
- 2

System Intelligence
 - HACCP
 - Audits
 - Hazards
 - Legislation

✓ Always audit-ready
- 3

Infrastructure Intelligence
 - SpecCheck + Compliance integrated
 - Private server environment
 - Product + system synchronized



Platform Levels

- Level 3

Professional

Full Compliance Infrastructure
- Level 2

Compliance

Real-Time Food Safety Infrastructure
- Level 1

SpecCheck

Product Lifecycle Management (PLM)

From modules to real-time compliance infrastructure

iMIS Food is not a tool. It is a Compliance Operating System.



Food Safety Digital Backbone

PLM manages the product, SKOA manages the compliance system, and together they create **the digital backbone of food safety.**



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How to Achieve Trust?

Certification evolves from auditing documentation to validating the compliance infrastructure itself.

SGS— "When you need to be sure"
BVQI— "Shaping a World of Trust"
DNV— "When trust matters."



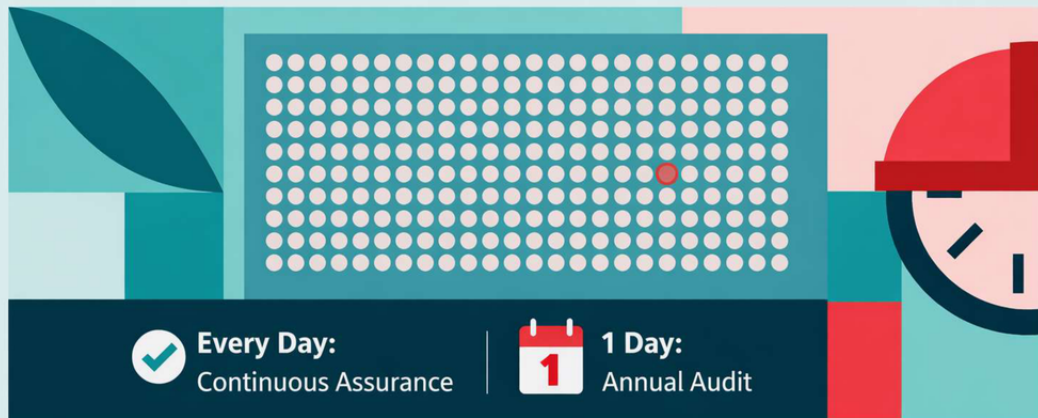
Phase	Model	Verification
 Certification	 Document systems	 Periodic audits
 Digital Compliance	 Structured knowledge	 Manual verification
 Real-Time Assurance 	 Connected compliance OS	 Continuous verification
 AI Governance 	 Autonomous oversight	 Predictive food safety

The Evolving TIC Roles in Digital Compliance

- Digitally enable the “old manual model”
 - AI knowledge domains for ecosystem
- Food Safety Compliance Certification *(no scheme)*
- Food Safety OS Certification *(ESG, DPP)*
- Facilitate verified real-time food assurance
 - Real-time validation layer
- Infrastructure owner
 - B2B: for real-time food assurance
 - B2C: real-time food product assurance
- Compliance OS: other Industries?



365 DAYS OF TRUST



Live Assurance with iMIS Food, validated in 1000 GFSI audits

REAL-TIME FOOD SAFETY ASSURANCE Made Simple

WHY Knowledge

HOW Operations

WHAT Performance

Live Assurance **with iMIS Food**,
validated in 1000 GFSI audits

