V E T TECH Empowering Livestock Health

Empowering Livestock Economies
Through Health Innovation and Technology

Modernizing Livestock Movement Intelligence for National Resilience

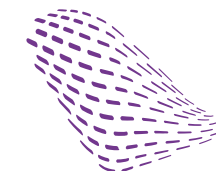Riyadh, Kingdom of Saudi Arabia — December 2025

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Who We Are: Practical Experience in National Livestock Systems

Canadian Sheep Federation (CSF)

CSF leads Canada's national traceability and livestock information systems across farms, auctions, processors, and cross-border corridors. Our programs aren't theoretical—they operate inside real production environments and support frontline response during disease events.

We work directly with veterinary authorities on policy, emergency preparedness, and outbreak management. Every recommendation we make has been tested under real-world pressure, including harsh climates and live supply-chain workflows.

PrüvIT Technologies

PrüvIT builds digital tools for automated animal identification and health intelligence that operate within Canada's regulatory framework. In addition to regulated and disease-related data, our systems integrate production, performance, and operational information, bringing these streams together into a single, cohesive livestock data environment.

We design technologies that reduce manual burden while dramatically improving data quality. Our solutions are deployed in demanding operational environments where traditional systems consistently fail.

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The Three Pillars of Traceability

Effective national traceability depends on three interconnected elements that work together. Each pillar supports the others, but one stands out as the key to operational speed.

1	2	3
Animal & Location Identification	**Surveillance Data**	**Monitoring Animal Movements**
Unique animal and premises ID form the foundation of all tracking. Without reliable identification, movement records cannot be trusted or verified during emergencies.	Laboratory testing, clinical observations, and health records provide the biological context needed to understand disease status and risk levels across populations.	Movement data transforms the system from static information into real-time operational intelligence. It is the key to rapid contact tracing, targeted zoning, and fast containment.

🗋 This third pillar determines how quickly a country can respond when a disease emerges.

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Why Movement Intelligence Matters

Animal movement data is the operational core of modern livestock health systems. It reveals how animals interact, where risk travels, and how quickly a disease can spread across regions and borders.

Early Risk Detection

Most high-consequence diseases spread through animal movements long before clinical signs appear. Mapping these pathways enables earlier intervention and significantly shorter outbreak timelines.

Accurate Outbreak Assessment

Accurate movement histories show how far a disease may have travelled and which regions are truly at risk. Movement intelligence helps map exposure pathways and connected risks, enabling targeted, data-driven control measures.

National Resilience

Knowing who moved where, when, and under what conditions allows targeted, defensible decisions that protect safeguard national food security and maintain stable domestic supply.

Movement intelligence becomes decisive during events like FMD, PPR, Rift Valley Fever, brucellosis, and Lumpy Skin Disease.

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Why Traditional Movement Reporting Fails

Many countries have invested heavily in RFID tags and reporting rules yet still face critical gaps during real emergencies. The problem isn't technology adoption—it's fundamentally structural.

RFID Without Automatic Movement Capture

Tags identify animals but do not report movements without human scanning. The tag itself is passive—someone must take action.

Infrastructure Gaps

Most movements happen in locations with no scanning equipment—farm-to-farm sales, informal markets, remote grazing areas, and small-scale operations.

Manual Reporting Breakdowns

Paperwork and manual entry lead to delays, inconsistencies, and partial compliance. Global compliance rates of 30–50% are common even in well-regulated systems.

Fragmented Value Chains

Different stakeholders use different systems. Data doesn't connect across farm management software, auction systems, and government databases, creating delays and blind spots.

Compliance Models Don't Scale

Enforcement is costly and often ineffective. Even strict regulations struggle when the underlying architecture depends entirely on manual action.

Mandating better reporting cannot fix structural failures in data capture.

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Canada's Experience: The Data Fragmentation Barrier

Despite advanced RFID systems and strong regulatory frameworks, Canada faced persistent challenges rooted in fragmented data flows. The technology worked—but the architecture didn't.

RFID Didn't Solve the Capture Problem

RFID still required manual scanning. When movements involve hundreds of animals—and intermediate sites handle thousands per day—capturing individual IDs became operationally impossible.

Regulations Outpaced the Technology

Since 2013, Canada has consulted on shifting from simple animal ID to full movement reporting. Progress stalled because existing tools couldn't capture large-volume data accurately or efficiently.

Strategic Insight

We accepted the issue wasn't compliance or education—it was architecture. Instead of weakening regulations to fit limited technology, we focused on building technology that closed the gaps.

This insight fundamentally reshaped our national strategy and approach to livestock intelligence.

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The Strategic Pivot: Automate the Data, Reduce the Burden

The breakthrough came when we shifted from *"enforce better reporting"* to *"capture the data automatically."* This wasn't just a technical change—it was a philosophical transformation.

Reduced Manual Burden

Removing paperwork and manual data entry eliminates the friction that slows adoption and creates resistance.

Greater Accuracy

Automation removes human error and reporting delays, ensuring data integrity at every step.

Real-Time Availability

Movement events become instantly visible during disease investigations, not days later through manual reconstruction.

Seamless Integration

Automated data flows across the value chain in standardized formats, enabling consistent, high-quality intelligence.

A digital-first design improves both compliance and data integrity—without putting the burden on producers.

Modernizing Movement Intelligence: A Two-Part Architecture

Our approach brings together autonomous identification and integrated data management to create a complete movement intelligence ecosystem that operates continuously and automatically.

AgroLedger – Integrated Movement & Health Intelligence

- Consolidates identity, movement and surveillance data
- Standardizes inputs across the entire value chain
- Creates a real-time digital twin of each animal
- Enables instant traceability during emergencies
- Provides authorities with full situational awareness

FaceIT — Autonomous Identification & Event Detection

- AI-driven biometric recognition of individual animals
- Functions continuously without handling or chokepoints
- Ideal for flock/herd environments with multiple animals
- Detects arrivals, departures, and presence events automatically
- Operates under variable weather and lighting conditions

This dual-system design closes the movement-data gap while unifying fragmented datasets into operational intelligence that authorities can act on immediately.

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How Integration Transforms National Response

Integrated movement intelligence fundamentally changes what is possible during a disease emergency. The differences are stark and measurable.

1 — Fragmented Systems: Days to Reconstruct History

Authorities rely on calls, emails, and site visits. It takes 3–7 days to assemble movement histories—allowing time for further spread and secondary cases.

2 — Integrated Systems: Hours to Trace All Contacts

A single query retrieves complete histories instantly, allowing immediate deployment of veterinary resources to high-risk locations.

3 — Fragmented Systems: Large Precautionary Zones

Uncertain data forces broad restrictions, limiting movement for thousands of unaffected animals and disrupting entire regions.

4 — Integrated Systems: Targeted, Defensible Control Zones

Precise data supports focused restrictions, safeguarding business continuity while protecting animal health.

5 — Fragmented Systems: Higher Economic Losses

Longer events, delayed eradication, and shaken export confidence amplify economic damage across the sector.

6 — Integrated Systems: Protected National Economy

Rapid containment maintains market confidence and reduces national-level disruption to trade and production.

Integration is the difference between a controlled response and a cascading crisis.

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Movement Data: The Engine of the Digital Twin

A digital twin is a complete, real-time record of each animal's history. Movement events are the structure that makes this record dynamic and operational—transforming static data into actionable intelligence.

01

Identity Context

Accurate link between the animal and its physical location at any point in time.

02

Health History

Associates tests results, treatments, and clinical signs with specific time periods and environments.

03

Exposure Pathways

Maps potential disease transmission through contact networks and shared environments.

04

Geospatial Positioning

Supports spatial analysis for zoning and regional management decisions.

05

Risk Classification

Enables dynamic risk scoring based on movement patterns and health status.

> Movement intelligence turns a static database into a living system authorities can act on.

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Value Chain Intelligence Built on Movement Data

Once movement intelligence is integrated, it becomes the backbone of national livestock information systems—supporting both emergency response and everyday operational efficiency.

Real-Time Dashboards

Authorities gain full visibility into animal populations and emerging risks across all regions.

Dynamic Zoning

Control zones adjust in real time as new data flows in, maintaining precision.

Seamless Border Verification

Cross-border movement validated against national databases in seconds.

Automated Movement Authorizations

Risk-based permissions issued automatically using health and surveillance criteria.

Automated Export Certification

Health and movement histories compiled instantly for trade requirements.

Predictive Analytics

Machine learning highlights high-risk routes and forecasts potential spread patterns.

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Alignment with Saudi Vision 2030

A modernized movement intelligence system directly supports the Kingdom's agricultural transformation agenda and strategic priorities across multiple national initiatives.

MEWA Digital Transformation

Integrated livestock data systems are central to the Ministry's digital priorities and modernization goals.

NLFDP Modernization

Real-time production intelligence strengthens strategic planning and resource allocation.

SDAIA AI & Analytics

Movement data enhances national-level predictive analytics and food security insights.

Saudi Reef Smart Flock

Autonomous animal ID collection enables scalable precision livestock management.

National Food Security Goals

Stronger disease surveillance and faster response protect domestic supply and reduce import dependence.

Movement intelligence turns the Kingdom's strategic ambitions into operational capability.

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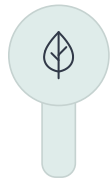TECH
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The Horizon: The Next Evolution in Movement Tracking

The next generation of movement tracking moves beyond external devices into embedded, autonomous intelligence. These technologies are emerging in laboratories today—deployment is closer than most expect.
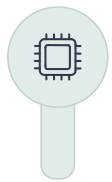
Bio-Compatible Embedded Sensing

Miniaturized sensing integrated directly into animal biology, eliminating external hardware entirely.

Biodegradable Technologies

Systems designed to dissolve naturally after use, without environmental impact or recovery requirements.

Self-Reporting Network Flocks

Herds that function as distributed data networks with minimal external hardware or infrastructure.

Satellite-Relay Intelligence

Direct transmission via satellite, removing ground infrastructure requirements and enabling coverage anywhere.

Ambient Movement Intelligence

Passive, continuous sensing embedded into the natural environment with no animal-mounted devices.

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Why This Matters

Livestock movement tracking is evolving toward systems with no infrastructure burden, no manual intervention, and minimal physical devices. Countries preparing now will be positioned to leapfrog legacy models and decades of incremental upgrades.

- **Infrastructure Independence**

  Future systems won't rely on gates, arrays, or cellular coverage—they operate everywhere.

- **Continuous Intelligence**

  Movement data becomes fully automated and always available, with zero reporting gaps.

- **Leapfrog Potential**

  Early adopters can bypass decades of legacy infrastructure and move directly to next-generation systems.

- **Regional Leadership**

  The Kingdom is well positioned to lead next-generation livestock intelligence across the region and beyond.

The pathway to operational deployment is measured in years—not decades. The future of movement intelligence is autonomous, embedded, and inevitable.

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