



RENAULT



Transforming Automotive Assembly With Wearable Intelligence

RENAULT CASE STUDY / Thread In Motion / 2025



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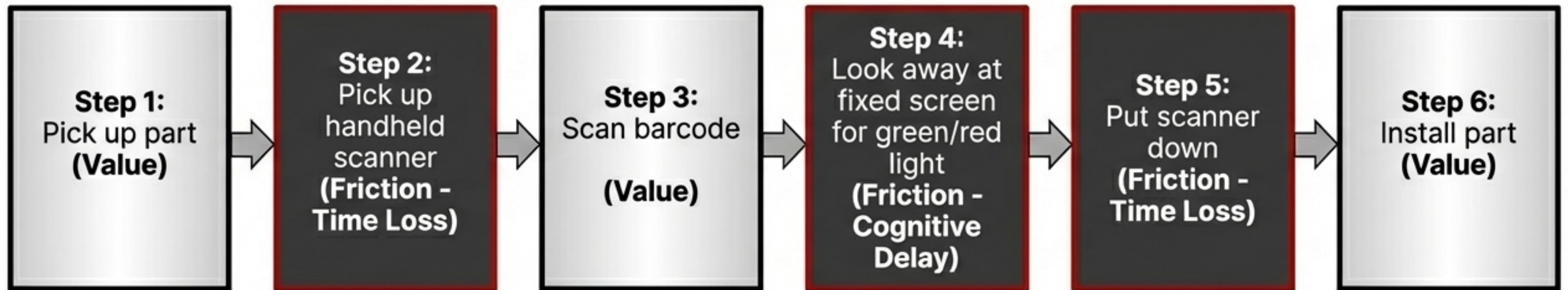
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Conventional manual scanning creates a severe productivity bottleneck

In the existing workflow, operators relied on conventional handheld barcode scanners. The constant need to pick up, aim, check, and put down heavy devices added critical seconds of non-value-added time to the takt cycle of every single part.

The Legacy Process



Total process duration: 8 seconds per part.

Hidden physical and technical limits degrade worker efficiency

The Ergonomic Toll



Conventional scanners are bulky and unergonomic. Repetitively lifting a half-kilogram device thousands of times per shift results in a cumulative lifting burden of over **1.5 metric tons** per worker daily, causing significant fatigue and musculoskeletal risk.

The Connectivity & Feedback Gap



Legacy Bluetooth devices suffer from short ranges (10-30m) and severe signal interference in metal-dense factory environments. Furthermore, relying entirely on visual screen prompts for verification leads to missed cues and delayed reactions in noisy workspaces.

Wearable architecture merges the scanner directly into the natural workflow

Thread In Motion (TIM) deployed VEGA smart gloves to eliminate physical friction. By transforming the scanner into a 35-gram wearable device, the hardware ceases to be an obstacle and becomes an extension of the operator.

Ultra-Lightweight:
Only 35–50 grams
(matchbox-sized)



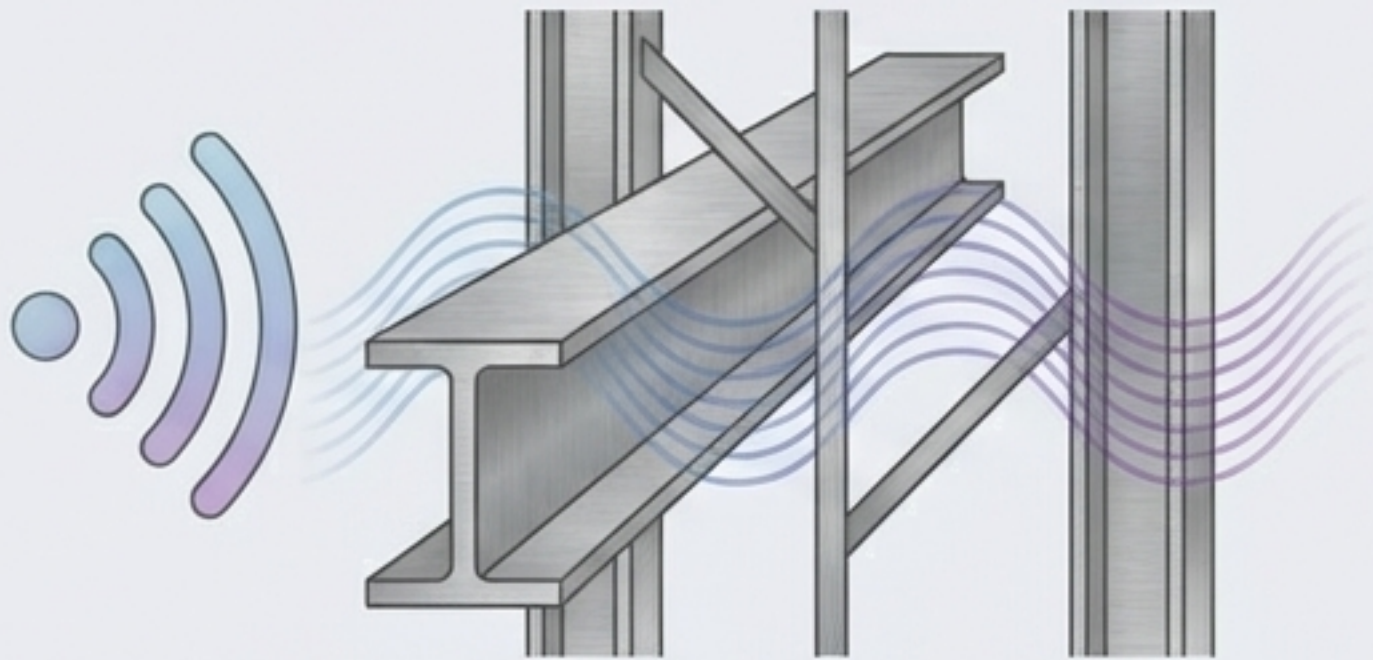
Hands-Free Operation:
Eliminates the need to pick up or set down equipment



Ergonomic Integration: Thumb-press trigger allows grabbing and scanning in one fluid motion

Intelligent networks and instant feedback loops eliminate cognitive delays

Industrial-Grade LoRa Network



Unlike fragile Bluetooth, VEGA utilizes Long Range (LoRa) RF infrastructure. This provides highly stable, kilometer-range connectivity that penetrates metal structures without interfering with factory Wi-Fi, ensuring zero connection drops.

Tri-Modal Sensory Feedback



The system instantly verifies the scanned part against Renault's digital bill of materials. Operators no longer look at screens.
Optic: LED flashes (Green/Red).
Acoustic: Confirmation beeps or error alert tones.
Haptic: Distinct vibration patterns for immediate physical alerts.

Comparing legacy constraints against continuous wearable infrastructure

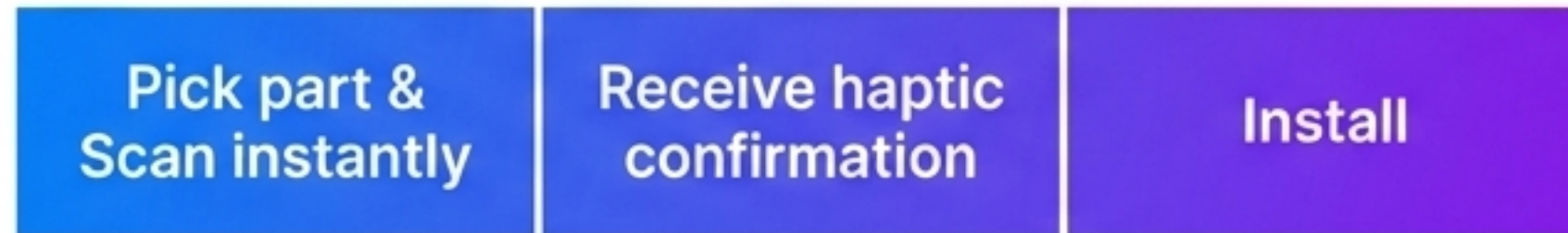
	Conventional Scanners	VEGA Wearables
	The Past for Renault Silver	The VEGA Wearables TIM
Weight & Ergonomics	Heavy, 500g+, repetitive strain	Ultra-light, 35-50g, fatigue-free
Operational Flow	Interrupted, pick-up/put-down required	Seamless, hands-free integration
Error Feedback	Visual only, requires looking away	Tri-modal: Haptic, Acoustic, Optic
Connectivity	Bluetooth: restricted 10-30m range, high interference risk	LoRa: long-range stability, metal-resilient
Cycle Time	~8 seconds per scan	~4 seconds per scan

Redesigning the operational flow halves the time required per task

Old Flow: 8 Seconds



New Flow: 4 Seconds



By eliminating non-value-added physical and cognitive steps, Takt Time was reduced by 50%, doubling operational scanning speed.

Micro-level time savings compound into massive enterprise efficiency



8,333 Hours Reclaimed Daily

This is the equivalent of adding 347 extra hours of productive capacity to the workforce every single day, allowing Renault to increase throughput without extending shifts.

Immediate operational upgrades across speed, accuracy, and safety



Speed

50% Faster

Takt time reduced from 8 seconds to 4 seconds, eliminating the scanning bottleneck.



Accuracy

100% Verification

Instant multi-sensory feedback virtually eliminated incorrect part installations, preventing rework and quality spills.



Workforce Wellbeing

1.5 Tons Mitigated

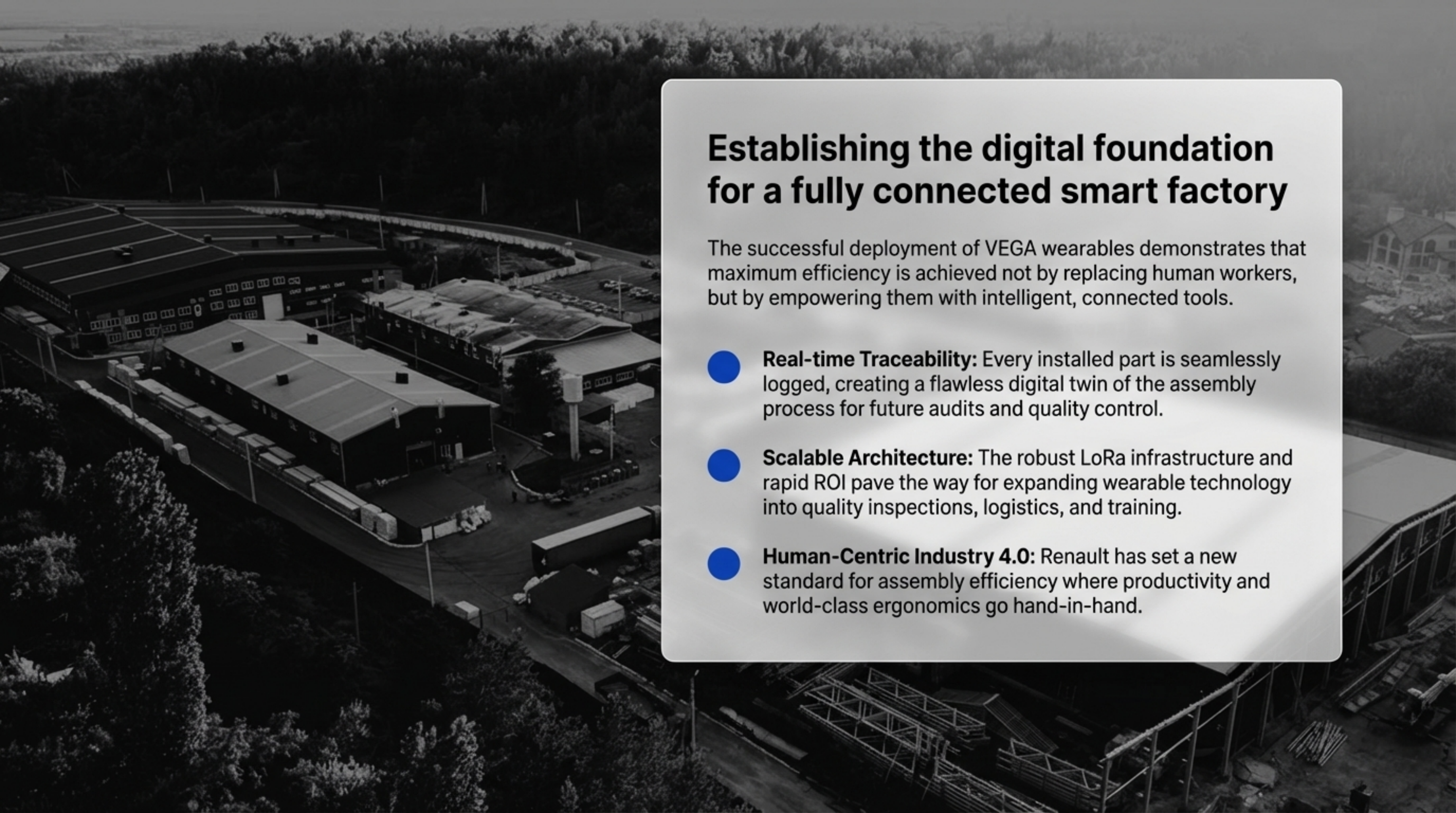
Removed the daily cumulative lifting burden of traditional scanners, drastically improving worker ergonomics and safety.



Deployment Agility

2-Week Rollout

Plug-and-play LoRa integration required minimal training, achieving full assembly line adoption in just two weeks.



Establishing the digital foundation for a fully connected smart factory

The successful deployment of VEGA wearables demonstrates that maximum efficiency is achieved not by replacing human workers, but by empowering them with intelligent, connected tools.

- **Real-time Traceability:** Every installed part is seamlessly logged, creating a flawless digital twin of the assembly process for future audits and quality control.
- **Scalable Architecture:** The robust LoRa infrastructure and rapid ROI pave the way for expanding wearable technology into quality inspections, logistics, and training.
- **Human-Centric Industry 4.0:** Renault has set a new standard for assembly efficiency where productivity and world-class ergonomics go hand-in-hand.



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