SCANOLOGY

Is your automotive inspection strategy ready for full-field precision?

A practical guide to 3D digitization, automated inspection and traceable quality assurance across automotive manufacturing.

SELFCHECK

Automotive Quality Under Pressure

Why traditional inspection strategies are reaching their limits.

Automotive manufacturing is evolving rapidly. Shorter development cycles, increasing vehicle variants, tighter tolerances and the shift toward electric vehicle platforms are raising the demands on dimensional quality.

Inspection now supports far more than final quality control. It is used across design validation, tool optimization, first article inspection, in-process monitoring, final assembly and traceable quality documentation.

The Hidden Risk of Limited Inspection Data

Many inspection strategies still rely on manual gauges, CMM spot checks or operator-dependent workflows. These methods can confirm selected features, but they often fail to provide the complete dimensional insight needed to control complex parts and assemblies.

Incomplete measurement information creates blind spots. Critical issues may only become visible when they already affect fit, function, appearance or production performance.

- Tool corrections are delayed, leading to repeated tryout loops
- Springback, trim line or hole position deviations remain undetected
- Gap & Flush results vary between operators or measurement methods
- Flexible interior components and EV battery structures are difficult to evaluate consistently
- Rework, scrap and production delays increase
- Quality documentation lacks the depth required for reliable traceability

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In high-volume automotive production, even small dimensional deviations can have significant downstream effects.A trim line issue can influence gap accuracy, a misplaced hole can disrupt fixture fit and a battery pack mounting deviation can compromise installation accuracy.

Without a complete dimensional view, manufacturers lose process transparency, making it harder to identify root causes, stabilize production and secure long-term quality.

SELFCHECK

How Ready Is Your Automotive Inspection Strategy?

A practical selfcheck for modern automotive quality assurance.

Automotive quality can no longer rely on isolated measurements alone. As components become more complex and production environments more demanding, inspection processes must provide full-field data, reliable documentation and repeatable results across development, production and final assembly.

Use the checklist below to assess whether your current inspection strategy is prepared for today's automotive quality requirements.

	yes	no
Can your inspection process capture full-field 3D data instead of only selected measurement points?	☐	☐
Can you reliably detect springback, trim line deviations, hole position issues and surface deviations in stamped parts?	☐	☐
Can you evaluate Gap & Flush consistently across body, lamp, bumper or interior assemblies?	☐	☐
Can you inspect flexible or delicate components such as headliners, carpets, seats or battery cells without deforming or damaging them?	☐	☐
Can your inspection workflow generate intuitive visual reports that engineers, quality teams and OEM customers can easily understand?	☐	☐
Can you inspect EV components such as battery cells, cooling plates, bottom shells or battery pack assemblies efficiently?	☐	☐
Can your setup support first article inspection, in-process inspection and final inspection?	☐	☐
Can your inspection data help identify root causes instead of only showing pass/fail results?	☐	☐
Can your process reduce dependency on manual gauges, feeler gauges and operator judgment?	☐	☐
Can your inspection data be used for traceability, process optimization and long-term quality documentation?	☐	☐

What Your Answers Reveal

If you answered "No" to three or more questions, your inspection strategy may be limiting quality transparency, efficiency and process stability.
Limited inspection data makes it harder to detect deviations early, identify root causes and prevent recurring quality issues. A future-ready inspection strategy should create a reliable data foundation across design, tooling, production and assembly.

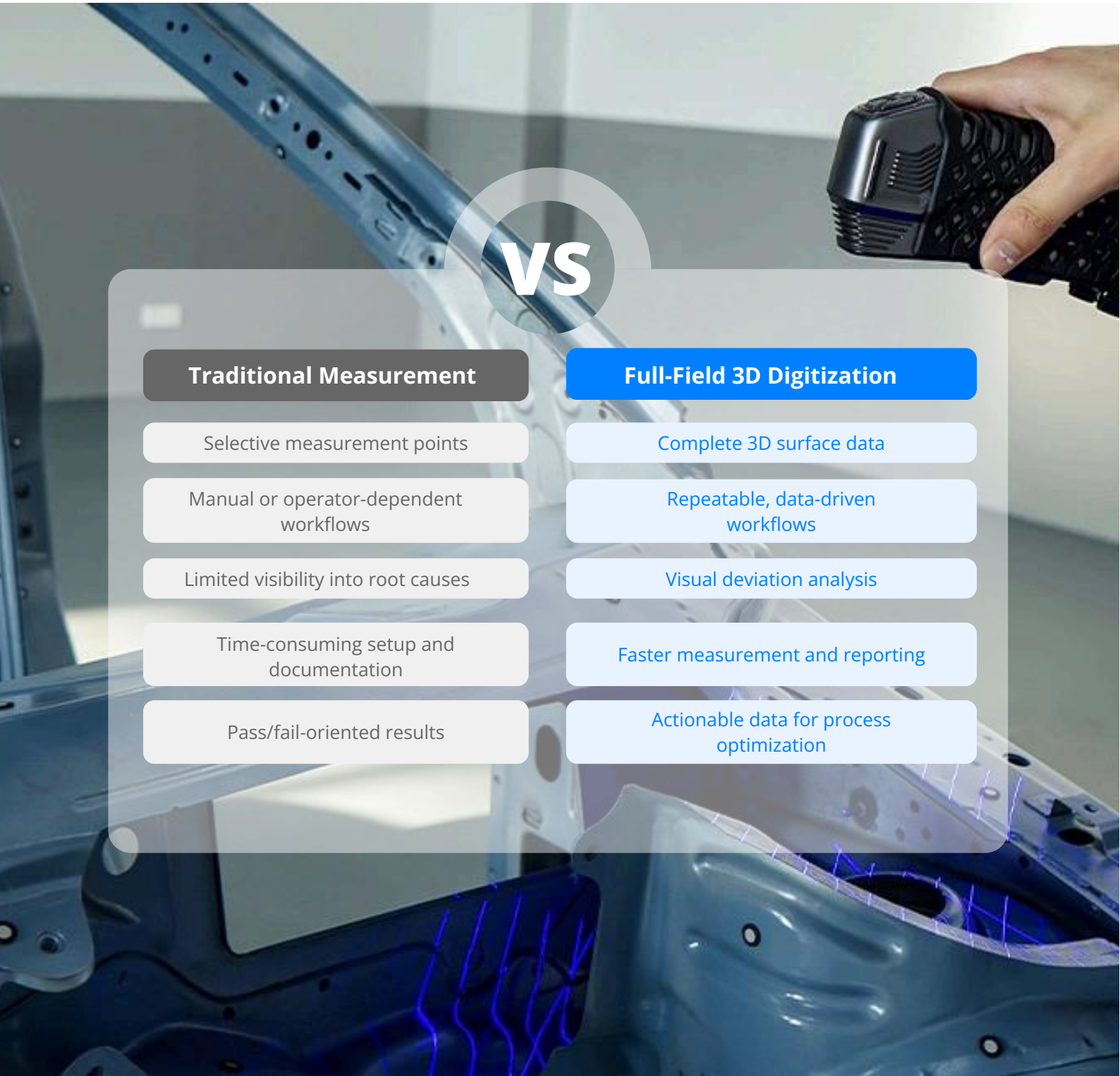
From Limited Inspection to Full-Field 3D Digitization

Turning physical parts into complete digital datasets.

Full-field 3D digitization captures the surface geometry of parts and assemblies and converts it into measurable digital data.

Instead of relying on isolated inspection results, manufacturers can evaluate shape, position and surface behavior across the entire component. This makes deviations easier to visualize, compare and document.

For automotive production, this provides a stronger basis for validation, tool optimization and quality decisions, especially for complex, flexible or difficult-to-access components.



What Full-Field 3D Data Enables in Automotive Manufacturing

Turning inspection results into process intelligence.

In automotive manufacturing, inspection data becomes valuable when it helps teams make better decisions earlier. Full-field 3D digitization enables engineers and quality teams to move beyond isolated measurement results and gain a clearer understanding of part behavior, assembly quality and process stability.

Instead of simply confirming whether a part passes or fails, complete 3D data helps reveal where deviations occur, why they matter and how they affect downstream processes, from tooling and supplier quality to assembly and final vehicle appearance.

Earlier deviation detection

Identify springback, surface deviations, hole position issues or assembly gaps before they create downstream problems.

Clearer root-cause analysis

Use visual deviation maps to understand where and why quality issues occur.

More reliable documentation

Generate intuitive inspection reports for engineering, quality teams, suppliers and OEM customers.

Scalable inspection workflows

Support different inspection scenarios, from design validation and first article inspection to in-process and final inspection.

From Measurement to Process Intelligence

FROM	TO
Measuring parts	Understanding processes
Finding deviations	Preventing recurring issues
Manual judgment	Traceable quality decisions
Isolated checks	Connected quality workflows

By turning complete 3D data into actionable insight, automotive teams can move from reactive inspection to proactive quality control.

Automotive Application Areas

Where full-field 3D data creates value.

Full-field 3D digitization supports automotive quality teams across critical inspection areas, from body-in-white and assembly quality to supplier checks and high-volume production. Instead of relying only on selected measurement points, automotive manufacturers can capture complete 3D data, visualize deviations and generate inspection reports that support faster and more reliable quality decisions.

Inspection of Car Body

Correct body assembly depends on the precise alignment of connecting features and subassemblies. Body-in-white inspection involves many inspection points across in-process monitoring, subassembly monitoring and final body inspection. With 3D scanning, automotive teams can evaluate complex body structures more flexibly and identify issues that may remain hidden during early-stage checks or selective measurements.

Relevant inspection features:

surfaces, holes, slots, nuts, studs, body structure deviations and subassembly alignment.

Improved visibility into body structure deviations, better alignment control and more reliable inspection documentation.

Automotive Gap & Flush Inspection

Gap and flush conditions directly affect perceived vehicle quality, assembly consistency and customer experience. Traditional manual methods such as feeler gauges and flush gauges are often time-consuming, less accurate and can lead to inconsistent data. 3D scanning enables faster on-site analysis of critical transitions and helps quality teams verify whether deviations originate from part geometry, assembly conditions or process variation.

Relevant inspection areas:

door surfaces, body gaps, bumper transitions, lamp installation areas and interior panel interfaces.

More consistent assembly evaluation, faster root-cause analysis and improved control of perceived quality.

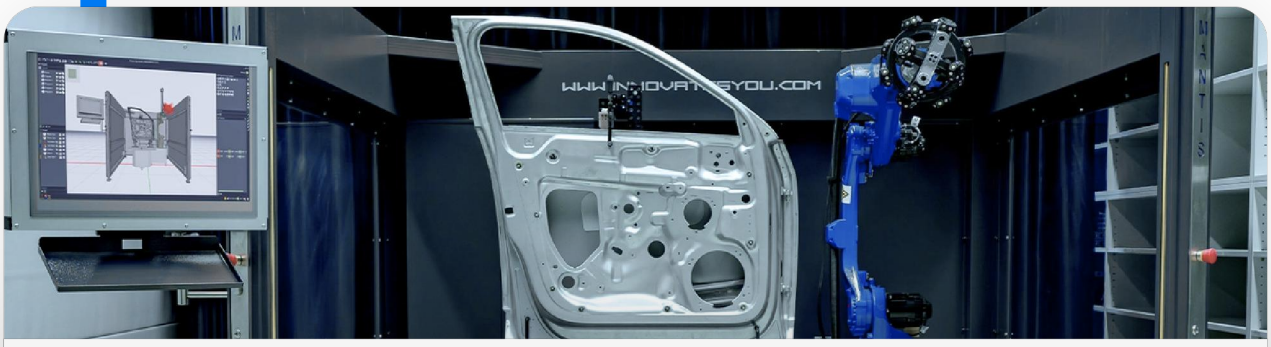
Supplier Quality Assurance

Automotive manufacturers depend on suppliers to deliver parts that meet agreed dimensional and quality requirements before they enter assembly. Portable 3D scanning enables on-site inspection of complex surfaces and narrow spaces, including supplier locations or incoming quality control environments. It also supports clearer documentation when parts, gauges or supplied components need to be checked quickly and reliably.

Relevant inspection tasks:

supplied part verification, incoming inspection, complex surface inspection, narrow-space measurement, gauge accuracy, gauge wear and gauge deformation.

Clearer supplier documentation, faster incoming inspection and stronger control of supplied part quality.



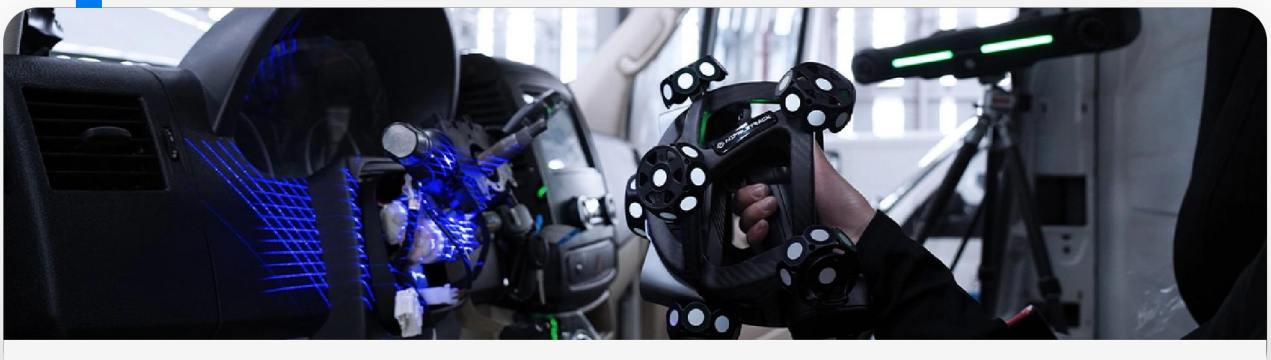
Automated Inspection of Stamping Parts

Stamping parts are produced in very high volumes and must meet strict dimensional requirements before they move into downstream assembly processes. 3D inspection helps teams evaluate stamped parts more comprehensively than selective manual checks and supports quality control from first article inspection to in-process and final inspection.

Relevant inspection tasks:

surface deviation, hole diameter, hole position, hole-to-hole distance, trim line inspection, springback analysis, boundary inspection, gauge analysis and material thinning.

Reduced manual effort, earlier deviation detection and better control of high-volume stamping quality.



Car Modification

Automotive customization requires precise digital data of existing vehicle interiors and components. According to SCANOLOGY's automotive website, typical applications include van interior fit-outs and the development of accessories such as car floor mats, seat covers, dashboard screens, navigation and audio components. Non-contact 3D measurement is useful because it is not limited by different shapes and angles, while complete scan data provides a precise basis for further design of center consoles, seats and mat floors.

Relevant application areas:

van interior fit-outs, floor mats, seat covers, dashboard screens, navigation components, audio components, center console design, seat design and mat floor design.

Faster customization workflows, more accurate fitment and a reliable digital basis for redesign and accessory development.

1

Capture the real component or assembly

Scan body structures, gap & flush areas, supplied parts, stamping parts, EV battery components or customized vehicle interiors.

2

Generate complete 3D data

Create full-field point cloud or mesh data as a digital reference for geometry, surface and feature analysis.

3

Compare, analyze and document deviations

Evaluate CAD comparison, surface deviations, hole positions, gap & flush conditions, deformation, flatness or fitment quality.

4

Use insights to improve the process

Support tool correction, supplier feedback, assembly optimization, production quality control, EV battery inspection or custom-fit component development.

SCANOLOGY Solution Architecture

One scalable platform for different automotive inspection needs.

Automotive inspection requirements vary across applications, from flexible on-site measurement to repeatable production inspection.
SCANOLOGY supports manufacturers and suppliers with a scalable 3D digitization architecture that adapts to different components, workflows and production environments. From handheld scanning to tracking systems, automated measurement and digital reporting, teams can select the right setup for each quality task.

Handheld 3D Scanner

Flexible on-site inspection of body areas, supplier parts, trim components and customized vehicle interiors.

→ car body inspection, supplier quality assurance, car modification and fast deviation checks.

Tracking 3D System

Large-scale 3D measurement for assemblies, body structures and complex components that require stable spatial reference.

→ body-in-white inspection, gap & flush analysis, large assemblies, battery structures.

Probing System

Tactile measurement for specific points, hidden features or geometries that require direct contact measurement.

→ hole positions, reference points, assembly features and difficult-to-scan areas.

Automated 3D Measurement

For repeatable inspection workflows in production environments.

→ automated stamping inspection, first article inspection, in-process inspection, final inspection.

DefinSight 3D Inspection Software

All-in-one software for CAD comparison, deviation analysis, feature inspection, and visual inspection reports

→ ideal for root-cause analysis, supplier documentation, and process optimization.

CMM AccuArm

Portable contact measurement for specific points, hidden features or geometries that require precise on-site inspection.

→ reference points, assembly features, fixture adjustment, dimensional inspection and difficult-to-scan areas.

One architecture. Multiple automotive workflows.

From flexible on-site inspection to automated quality control, SCANOLOGY helps automotive teams turn physical components into reliable digital data.

Why SCANOLOGY?

Modern automotive inspection demands more than measurement devices. It requires certified precision, complete 3D data and scalable inspection workflows that support quality decisions across development, production and assembly.

10,000+
Industrial customers worldwide

70+
Countries and regions served

300+
Authorized patents in 3D digitization technologies

40%
Of employees dedicated to R&D

Certified Precision. Recognized Excellence.

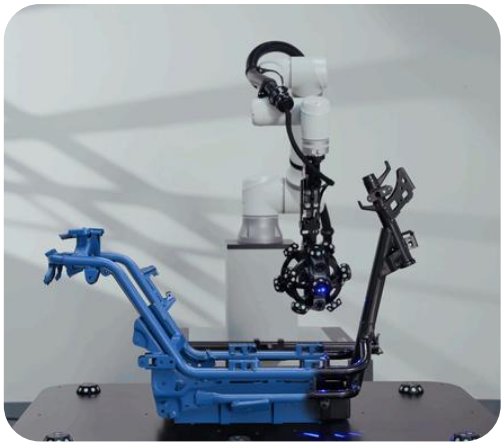
SCANOLOGY operates a certified calibration laboratory in accordance with ISO/IEC 17025, ensuring traceable and internationally recognized measurement accuracy.

All industrial systems are developed in compliance with VDI/VDE 2634 and ISO 10360-13 standards, supporting metrology-grade precision for demanding applications in automotive, aerospace and advanced manufacturing.

Listed as a public company since 2025, SCANOLOGY represents technological leadership and long-term innovation strength in industrial 3D digitization.

Driven by Innovation

Automotive manufacturing is evolving rapidly, from high-volume stamping and body-in-white inspection to electric vehicle platforms and customized interior applications. With over 300 authorized patents and a strong focus on research and development, SCANOLOGY continuously advances optical performance, wireless 3D scanning and intelligent system integration.



Designed for Automotive Scale

From flexible handheld inspection to automated 3D measurement systems, SCANOLOGY provides a modular portfolio that adapts to different automotive production environments and quality workflows.

The portfolio supports applications across car body inspection, gap & flush evaluation, supplier quality assurance, automated stamping inspection and car modification. This enables automotive teams to start with flexible on-site inspection and scale toward repeatable, automated and digitally connected quality control.

SCANOLOGY

Digital data defines quality. Quality defines competitiveness.

SCANOLOGY delivers certified 3D digitization solutions for development, inspection, automated measurement and quality assurance across modern automotive manufacturing.

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