PHOTO ESTIMATING: THE HOLY GRAIL OF TOUCH-LESS CLAIMS

Qapter

Solera | Audatex

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INTRODUCTION

AI SET TO TRANSFORM THE CLAIMS WORKFLOW

Businesses around the world have fast-tracked technology adoption, specifically, Artificial Intelligence (AI) and Machine Learning (ML). According to Gartner, the year 2020 marked the continued democratization of AI and despite the global impact of COVID-19, 47% of AI investments were unchanged and 30% of organizations were planning to increase such investments.[1]

The insurance and automotive industries are no exception. In a recent report, McKinsey projected a potential annual value of up to $1.1 trillion in additional business revenue if AI is fully embraced in the insurance industry alone.[2] In addition to the use of AI and ML, pure digitization of documents and workflows are also pervasive in automotive claims. As insurers, accident management companies, and bodyshops look for new ways to quickly transform their processes to stay productive in a time of economic uncertainty. This period of rapid transformation has served as a catalyst for intelligent solutions and opened the door for AI and automation in a modern claims workflow. At Solera, we are seeing this with our customers across the globe.

As the ecosystem strives to introduce AI technology in the claims workflow, it became apparent that this is no easy task.

Moving in-house AI projects from proof of concept to production remains a challenge, with companies failing almost half of the time, according to Gartner.[3]

This whitepaper by Solera examines the rise of AI across the automotive claims ecosystem, the current barriers to entry, and explains how the correct approach to embedded AI in the collision estimating workflow can deliver the difference needed to ensure accurate, first-time repair estimates at scale.

[1] https://www.gartner.com/smarterwithgartner/2-megatrends-dominate-the-gartner-hype-cycle-for-artificial-intelligence-2020/

[2] https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/the-executives-ai-playbook?page=industries/insurance/

[3] https://www.gartner.com/en/newsroom/press-releases/2020-10-19-gartner-identifies-the-top-strategic-technology-trends-for-2021

PHOTO-ESTIMATING EVOLVES TO VISUAL INTELLIGENCE

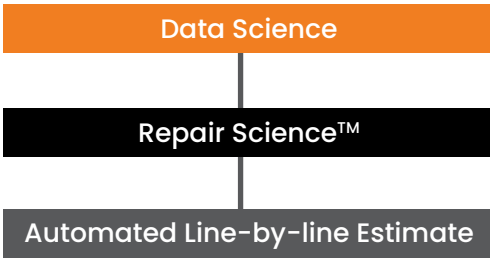
Typically, until the vehicle arrives at the repair shop or is inspected by a loss adjuster, insurers lack sufficient information about the severity of the damage and are unable to triage claims with accuracy. A turning point came when asking customers to send photos of the damage at the First Notification of Loss (FNOL), which opened insurers up to the possibility of introducing increased desktop assessment and reducing the need for field inspections.

This approach, however, has also caused friction with repairers due to concerns over accuracy and consistency in the process. In fact, many repair shop owners have become skeptical, as they fear they will be underpaid or faced with an increased number of supplementary estimates. Thankfully, the evolution of computer vision technology created an opportunity to transform the photo estimating process:

"What if computers were trained to perform damage estimating tasks as well as estimators do?"

Developments in deep learning and the power of computer vision technology, also referred as Visual Intelligence (VI), have enabled data scientists to build machine learning algorithms that can detect damages in a vehicle and predict the cost to repair just by processing photos.

VISUAL INTELLIGENCE



This approach creates an opportunity to automate decisions at key touch points in the end-to-end claims journey, including:

- **Vehicle condition at underwriting:** Improve risk assessment and reduce fraudulent claims.
- **First Notification of Loss (FNOL):** Accelerate claim decision process, offer cash settlement and reduce key-to-key times.
- **Total Loss Triage:** Identify total loss cases before they reach the repair shop.
- **Remote estimating:** reduce the need for physical inspections from light to medium damage cases.
- **Repairer allocation:** Ensure vehicles are sent to the right repair shop.
- **Repair authorization:** Compare the repair shop estimate and the AI estimate to flag differences or automatically authorize the repair.
- **Liability and anti-fraud support:** Reach liability decisions by the insurer carrier as well as identifying fraudulent claims.

For every touch point served by AI, the algorithms that power these solutions must be trained and supported by the right set of data to ensure consistency of results at every stage. In the following sections, we will explore how data science and repair expertise complement one another to solve the photo-estimating challenge.

Training a common set of AI models with the right data ensures consistency of results at every stage of the claim process

BUILDING AI MADE FOR HUMANS

AI THAT HUMANS UNDERSTAND

One approach to photo-based estimating is to train AI models by learning from historical claims data and related damage photos. This type of "unsupervised" machine learning requires access to thousands of claims to ensure the models have analyzed sufficient data, also referred to as 'cluster analysis', to learn how to detect damages and parts with reasonable precision.

Another approach is to use a training data set containing annotated or "labeled" photos. This typically requires a team of data processors to examine thousands of images and draw contours around parts and damages and label this data to train the AI algorithm effectively and accurately.

The advantage of the latter is the ability to provide users with a view of "what the AI has seen" at pixel-level, highlighting both the parts and damages in a photo. As a result, building trust among customers by providing clear and transparent data that reassures the user of consistency, coverage, and accuracy in the repair estimate, with a full itemized assessment and parts list. This also eliminates uncertainty that has been created by AI solutions considered "black boxes", as they make it harder for humans to understand them, ultimately limiting the potential for adoption at scale.

"Black box" AI solutions are hard for humans to understand and trust

VEHICLE DNA MATTERS

The next step in the process is to recommend the correct repair operations. Providing an accurate estimate of the size, position, and severity of the damage plays a crucial role in getting the repair cost correct. Variables that influence the cost include material, geometry, accessibility, and thickness. Modern vehicles are made of alternative materials, such as different types of steel, aluminum, and carbon fiber.

For example, if the AI detects a medium sized dent on the Left Rear Side Panel of an Audi TT Mk1—which is made of steel—it can determine that the panel is repairable. However, if the vehicle were an Audi TT Mk2 with the same level of damage, it would likely recommend the panel be replaced, given that it is made from aluminum. In this case, only AI solutions

that understands the "DNA" of the vehicle would be able to steer the case to an aluminum specialist and produce an accurate repair cost estimation. [1]

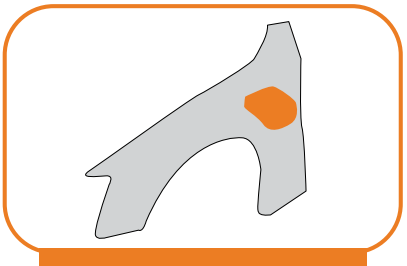
Improving accuracy of routing decisions within networks significantly reduces the time vehicles are moved between sites. Assigning complex cases to the right repair team earlier in the claims process saves valuable time and cost while improving customer satisfaction.

THE VALUE OF REPAIR SCIENCE™

Thanks to years of training and experience, appraisers and repairers know that the position, area and severity of a vehicle's damages can dramatically influence labor times. Variables such as material, thickness, geometry and under-the-surface parts, working units can and will influence repair cost and time. This is the science of repair.

For example, a 3 dm2 light damage in the front fender of an Audi Q5 can take anything from 10.7 WU (work units) to 25.8 WU depending on the position of the damage in the panel, a

Audi Q5 - Front Fender



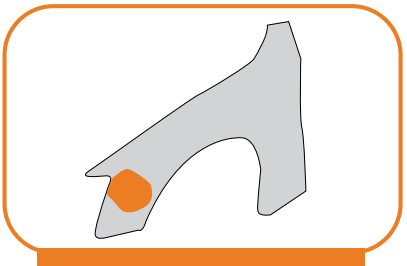
TOTAL 10.7
Work Units

Repair Time 5.2

Preparation Time 1.5

Additional Labour Operations 4

(Wheel + Wheel shell)



TOTAL 25.8
Work Units

Repair Time 5.3

Preparation Time 1.5

Additional Labour Operations 19

(Wheel + Wheel shell + GFS + Sound insulation + Bumper cover + Headlamp + Adjust headlamps)

[1] The Audi models referenced are only used for example purposes, and all references are based on Solera own research

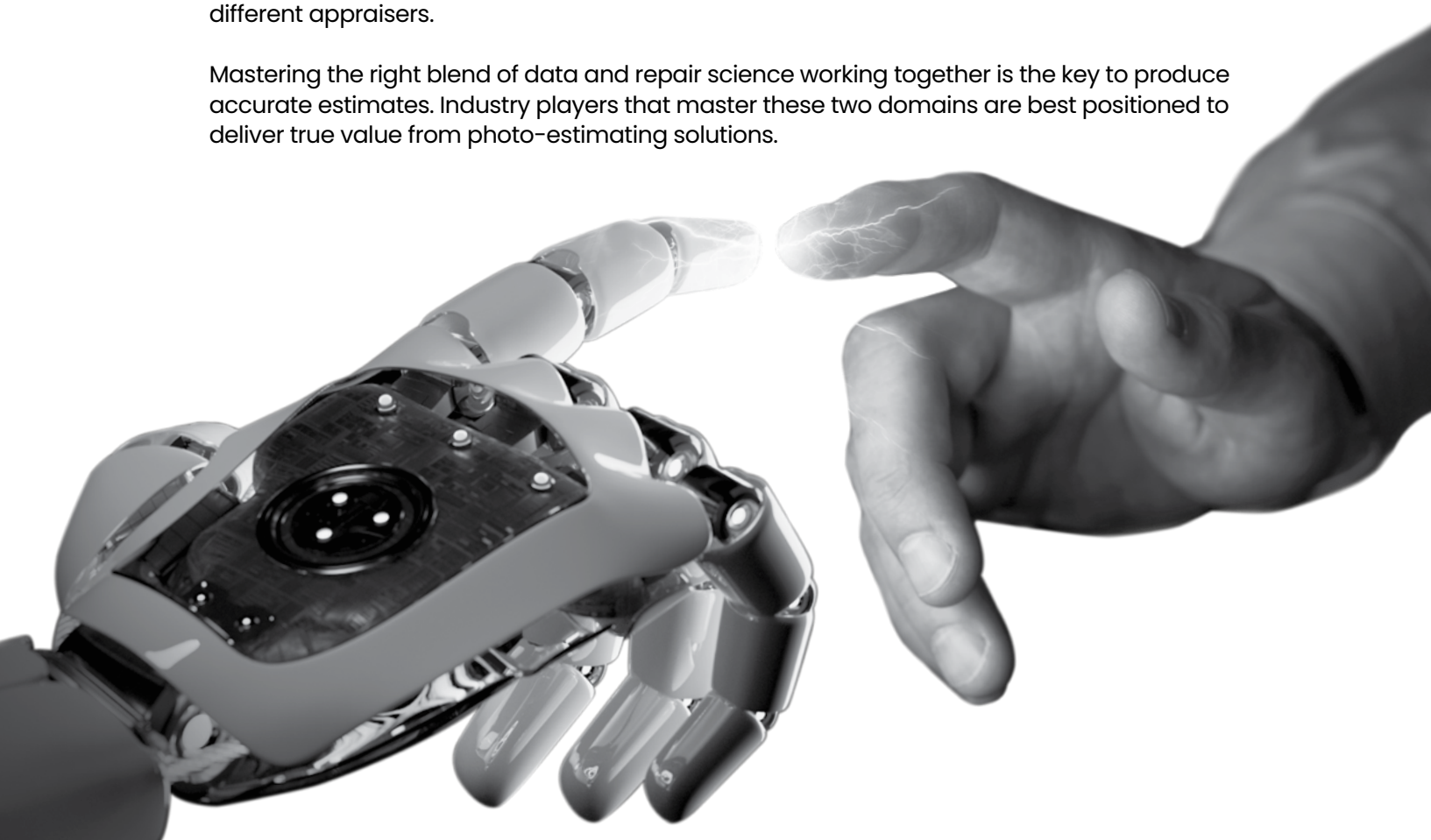
Variances between “predicting” and “calculating” repair cost can be extremely high

Although the repair times in the above example are similar, damage to the fender closer to the headlamp requires 15 additional repair operations when compared to damages in other areas. This poses a challenge to the vendors that pursue a “data science” only approach to photo estimating, as the variance between “predicting” and “calculating” repair cost can be extremely high. Companies like Solera invest and collaborate with collision repair research centers, where automotive experts simulate repairs on damaged vehicles, disassembling them and measuring each step of the process. This provides accurate measure repair times, which are used to create formulas in calculation algorithms.

Another challenge associated with data science-only approaches is that the data is not country agnostic. Accurate repair solutions require AI models to be “calibrated” to predict repair and replace operations specific to every market. Each market has a different threshold to influence repair or replace decisions. As a result, many factors are at play, such as the cost of labor and the use of alternative parts. AI calibration projects can take months if not years to deliver acceptable results, affecting time-to-market and return on investment targets.

Moreover, subjectivity in the damage identification process, as well as lack of skilled appraisers usually means inconsistent estimates; sometimes varying by 300% across different appraisers.

Mastering the right blend of data and repair science working together is the key to produce accurate estimates. Industry players that master these two domains are best positioned to deliver true value from photo-estimating solutions.

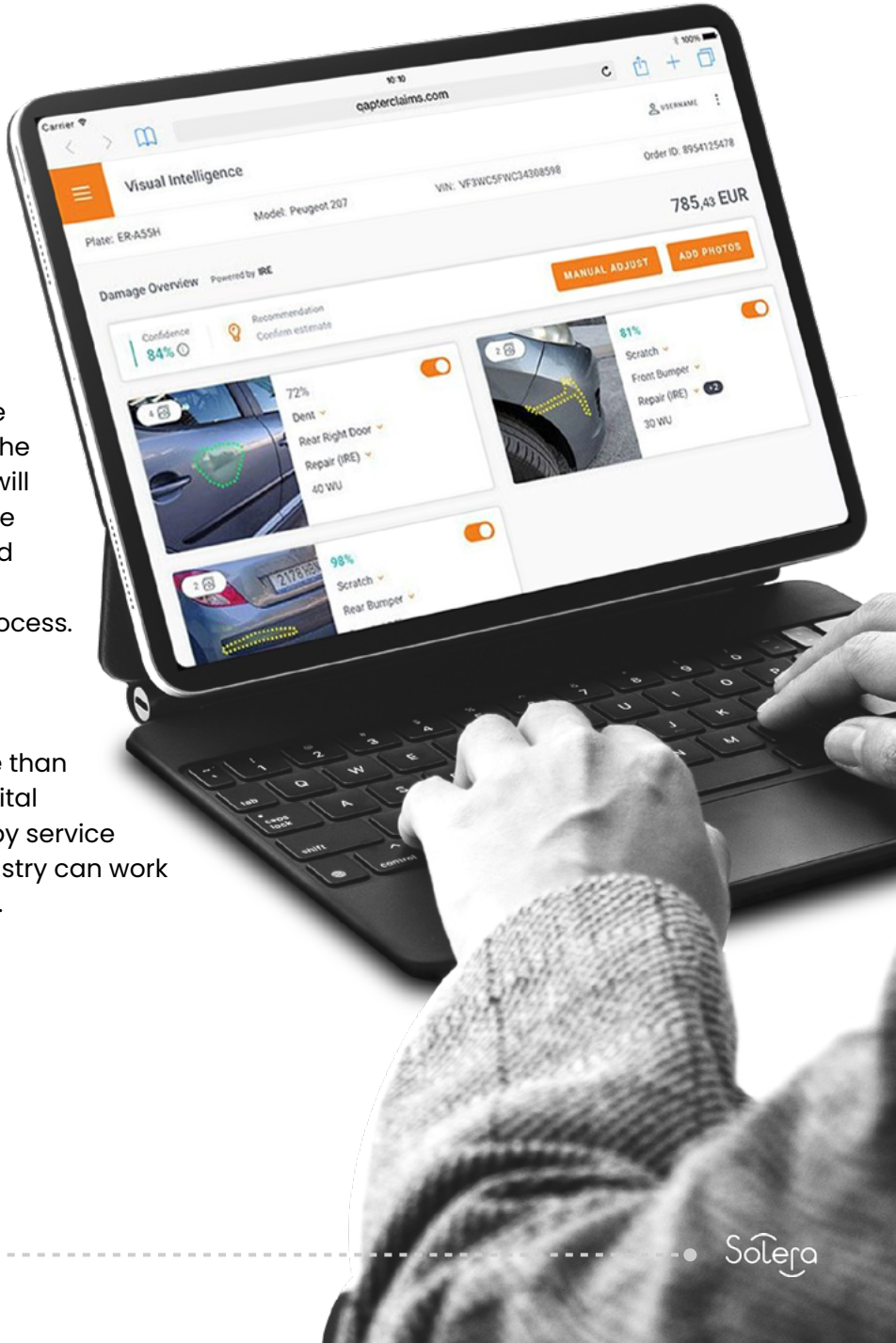


VISUAL INTELLIGENCE: A HYBRID APPROACH

UNLOCKS THE FULL POWER OF AUTOMATION

Taking a "hybrid" approach, that combines the power of data science and Repair Science, is the holy grail of successful and scalable photo estimating. On one hand, computer vision automates the damage capture process, detecting parts and damages, working as the "eyes" of appraisers. While on the other hand, Repair Science powered by actual vehicle data and best practices in body repair brings consistency and removes subjectivity inherent to the estimating processes.

Photo estimating assisted by AI is undoubtedly a true game-changer for the global collision repair industry. Low value, high volume, repetitive tasks such as site inspections, image capturing and damage reports can certainly be replaced by digital technologies like computer vision. This will improve operational efficiency, reduce the claim cycle and increase customer satisfaction. Looking into the near future, the next big step for all will be to increase the adoption of image capture among both businesses and consumers, and ensure it happens as early as possible in the claims process.



At Solera, we are pioneering this transformation towards AI-driven, photo-based estimating. Now, more than ever, with customers embracing digital channels and AI becoming trusted by service providers around the world, the industry can work smarter and faster than ever before.

ABOUT SOLERA

Solera is a global leader in risk and asset management data and software solutions, empowering companies across the automotive and insurance ecosystem with trusted solutions that adhere to the highest standards of data privacy, security and integrity to support connectivity across the vehicle value chain. Solera's solutions bring together customers, insurers and suppliers, empowering smarter decision-making through service, software, enriched data, proprietary algorithms and machine learning that come together to deliver insight and ensure customers' vehicles and property are optimally maintained and expertly repaired.

The company is active in over 90 countries across six continents, processing more than 300 million digital transactions annually for over 235,000 customers and partners. By drawing on the market-leading solution capabilities and business process best practices from its technologies around the world, Solera provides unsurpassed scale and strength with superior performance while delivering innovation to move the industry forward.

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