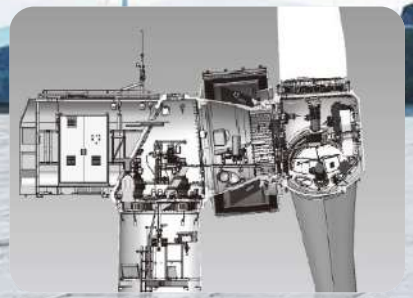
Arithmer AI-powered cameras installed within the nacelle of wind turbines can detect motor malfunctions and prevent potential fires or breakdowns.

WIND POWER AI

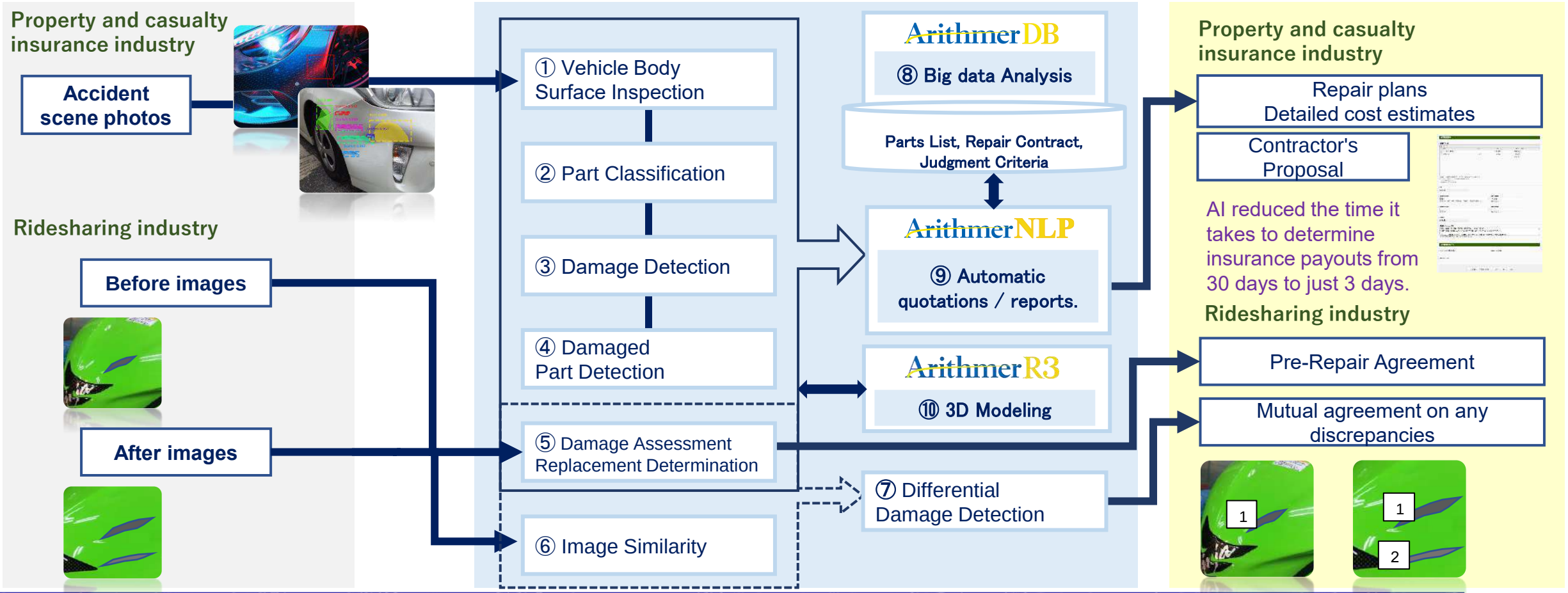
This advanced vision AI system can identify issues days before a major incident, and also detect abnormal oil leaks that might go unnoticed during human inspections.



AI Cameras

Vision AI for Insurance and Ridesharing

AI image analysis is revolutionizing the insurance and ridesharing industries, transforming claims processing and accident detection. Arithmer AI streamlines insurance claims by generating repair cost estimates from post-accident photos, improving efficiency and customer satisfaction. Ridesharing platforms leverage AI to detect potential accidents from pre- and post-trip images, enhancing safety and reducing fraud.



Vision AI

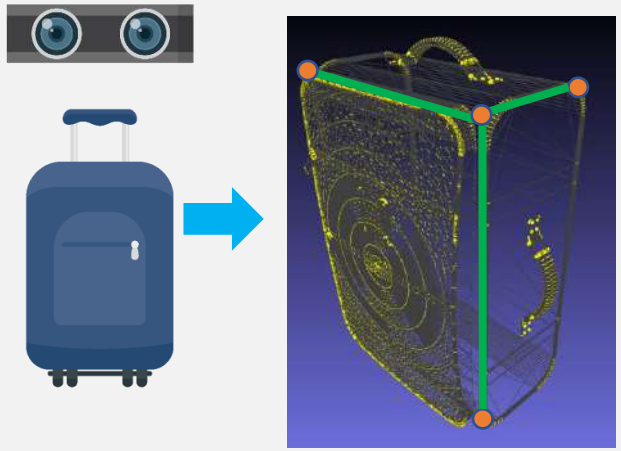
スーツケースだけでなく、形状が不定のボストンバックやゴルフバックの採寸も可能!

手法1

上面と側面を撮影した写真2枚（基準となるスケールを含む）から寸法を算出する手法。

手法2

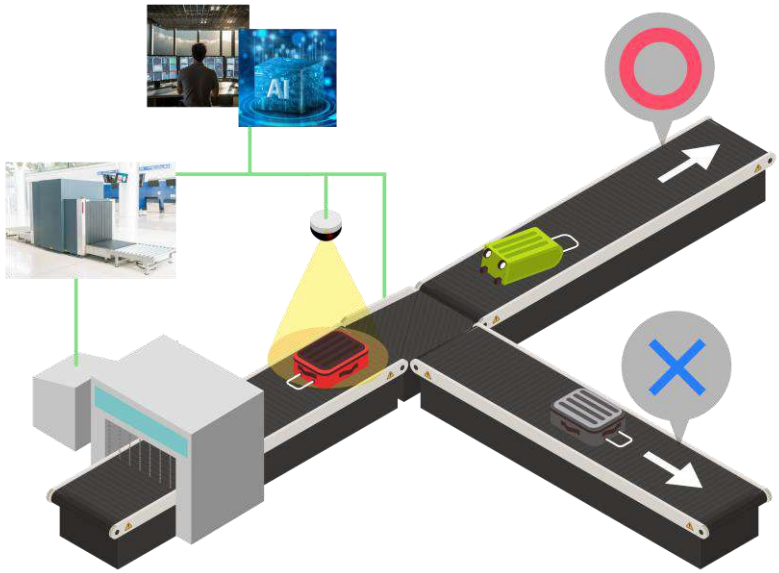
ステレオカメラを用いて形状を
3D点群として取得し、寸法を算出する手法。



手法3

スマートフォンを使って視差を
利用して寸法を算出する手法。

Streamlined BHS Security



1-shot
Vision AI

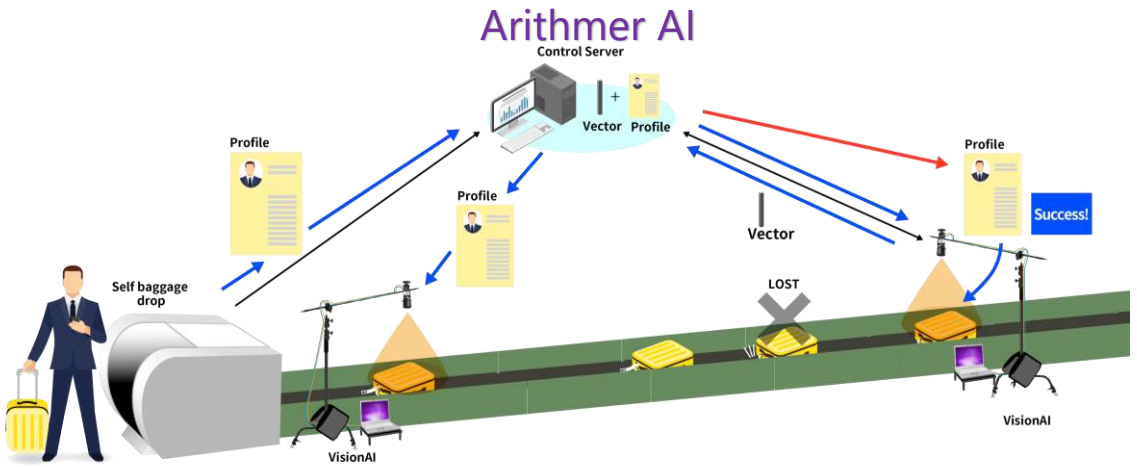
Airport efficiency suffers when prohibited items are found after initial screening. Stopping the entire BHS for retrieval disrupts operations, causing delays in baggage delivery and potentially impacting on-time flight departures. This results in significant logistical and financial losses.

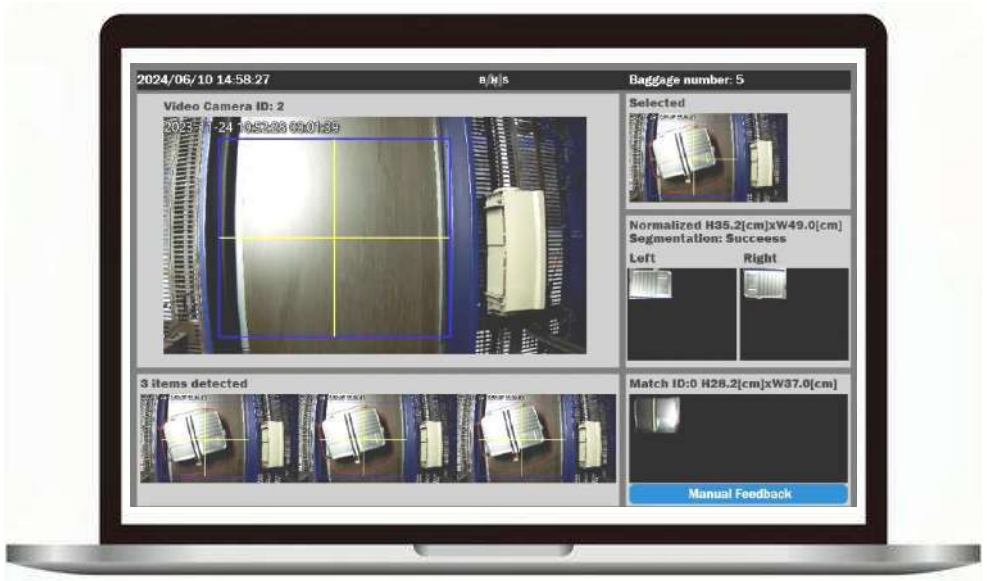
Arithmer Vision AI revolutionizes prohibited item detection in airport BHS using real-time analysis. This solution extracts key features like package outline and volume as it travels through the BHS, converting them into complex, high-dimensional representations (over 1,000 dimensions). By measuring the distance within this space, this AI instantly determines a package's suitability, enabling efficient detection of prohibited items and smoother BHS operations.

The AI goes beyond simple prohibited item detection. This intelligent system utilizes fine-tuning and reinforcement learning, continuously refining its detection capabilities with every scan. The more you use it, the smarter it becomes, ensuring ever-increasing accuracy and enhanced security within your BHS operations.

Arithmer Vision AI looks beyond today's security. This AI, combined with facial recognition technology, could revolutionize baggage handling. Imagine a tag-free future where your face becomes your checked bag's ID. The system would seamlessly track and route luggage throughout the BHS, eliminating physical tags and streamlining the process for airports and passengers alike.

Revolutionize BHS: Vision AI for Flawless Baggage Tracking





Tired of lost luggage and airport delays? AI BHS offers a revolutionary solution for smooth airport operations.

Traditional systems struggle with lost and untagged bags, causing frustration. This advanced system leverages two strategically placed cameras for exceptional accuracy.

The first camera creates a unique digital "fingerprint" for each bag even for similar luggage. The second camera verifies the bag's identity using this fingerprint. This two-step process ensures exceptional tracking.

Beyond identification, the system detects significant location shifts, enhancing security and efficiency. Simple installation – position 2-Shot Vision AI at designated points within the BHS.

Flood AI

In a recent win for innovation, Arithmer's Flood AI solution garnered prominent placement on the front page of Nikkei, a leading Japanese financial newspaper. The article showcased how the technology empowered a major property and casualty insurance company to streamline flood disaster claim payouts with greater efficiency and accuracy compared to traditional methods. This resulted in a significant reduction in claims processing times and associated costs, allowing the insurer to expedite compensation within a few weeks. This swift resolution demonstrably boosted policyholder satisfaction in the wake of the flood.

日本経済新聞 第1面

大水害 保険金一括払い

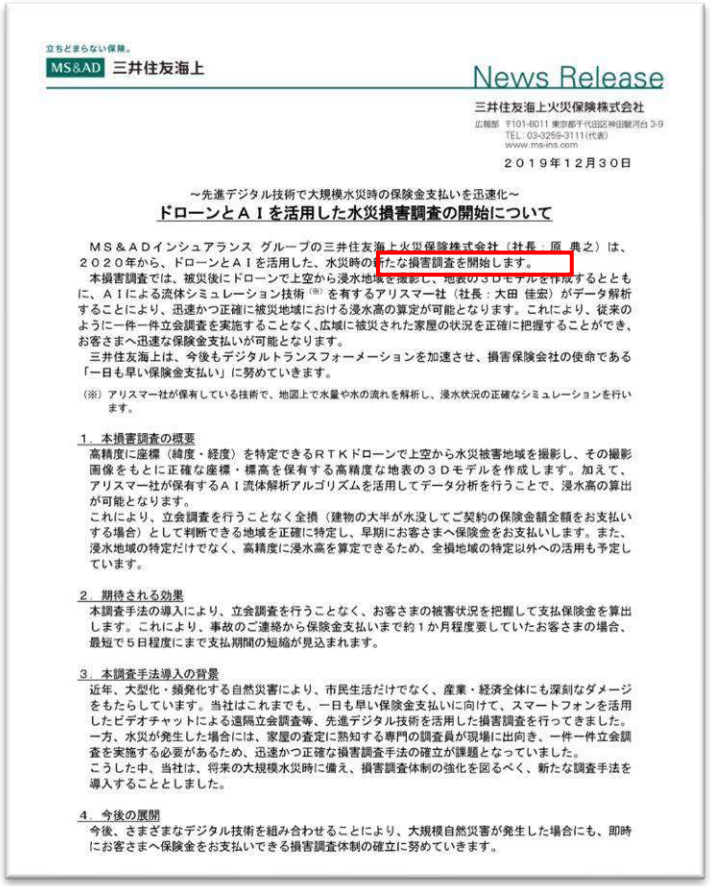
地域ごとAIで迅速判断

三井住友海上

三井住友海上火災保険は大規模な水害で家屋や家財に大きな損害があった契約者に、保険金を無条件で全額払う制度を2020年に導入する。人工知能（AI）を使って浸水量を想定し、地域ごとに支払いを判断する。被災者は1週間ほどで保険金を受け取れるようになる。担当者による査定が必要で、長い時間がかかる保険金の支払いが変わる契機となる。

大規模な災害のときに受け取る保険金は家屋の修繕や生活費にあてられる。企業は資金繰りが楽になり、関連倒産を減らせる。ただ、災害が大きくなると損保会社の査定担当者も足りず、事務手続きの遅れから保険金支払いまで時間がかかりがちだ。

新たな制度は19年の台風19号がもたらした規模の水害などを想定。被害の大きい地域は全損とまとめて認定し、契約者に火災保険の保険金を無条件で全額支払う。同じ制度は11年の東日本大震災で地震保険に適用された。火災保険での導入は業界で初めてで、家屋の2階以上まで浸水などがある地域を対象にする。全損の認定にはドローン（小型無人機）とAIを使う。ドローンで撮影した被災地の地形情報と、数カ所の実際の浸水状況を照合して家屋ごとの浸水状況を推定する。実証実験では9割以上で正確に測定できた。全損の認定を受けた地



立ちどまらない保険。
MS&AD 三井住友海上

News Release

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www.ms-ins.com

2019年12月30日

～先進デジタル技術で大規模水災時の保険金支払いを迅速化～

ドローンとＡＩを活用した水災損害調査の開始について

ＭＳ＆ＡＤインシュアランス グループの三井住友海上火災保険株式会社（社長：原 典之）は、２０２０年から、ドローンとＡＩを活用した、水災時の新たな損害調査を開始します。

本損害調査では、被災後にドローンで上空から浸水地域を撮影し、地表の３Ｄモデルを作成するとともに、ＡＩによる流体シミュレーション技術（※）を有するアリスマー社（社長：大田 佳宏）がデータ解析することにより、迅速かつ正確に被災地域における浸水高の算定が可能となります。これにより、従来のように一件一件立会調査を実施することなく、広域に被災された家屋の状況を正確に把握することができ、お客さまへ迅速な保険金支払いが可能となります。

三井住友海上は、今後もデジタルトランスフォーメーションを加速させ、損害保険会社の使命である「一日も早い保険金支払い」に努めていきます。

（※）アリスマー社が保有している技術で、地図上で水量や水の流れを解析し、浸水状況の正確なシミュレーションを行います。

1．本損害調査の概要

高精度に座標（緯度・経度）を特定できるＲＴＫドローンで上空から水災被害地域を撮影し、その撮影画像をもとに正確な座標・標高を保有する高精度な地表の３Ｄモデルを作成します。加えて、アリスマー社が保有するＡＩ流体解析アルゴリズムを活用してデータ分析を行うことで、浸水高の算出が可能となります。

これにより、立会調査を行うことなく全損（建物の大半が水没してご契約の保険金額全額をお支払いする場合）として判断できる地域を正確に特定し、早期にお客さまへ保険金をお支払いします。また、浸水地域の特定だけでなく、高精度に浸水高を算定できるため、全損地域の特定以外への活用も予定しています。

2．期待される効果

本調査手法の導入により、立会調査を行うことなく、お客さまの被害状況を把握して支払保険金を算出します。これにより、事故のご連絡から保険金支払いまで約１か月程度要していたお客さまの場合、最短で５日程度にまで支払期間の短縮が見込まれます。

3．本調査手法導入の背景

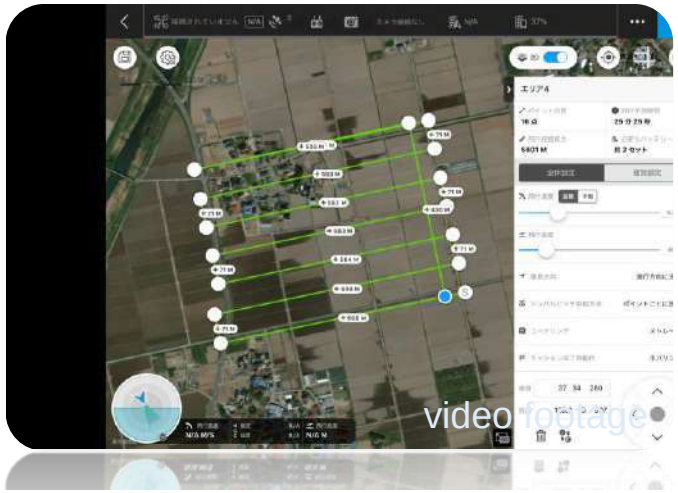
近年、大型化・頻発化する自然災害により、市民生活だけでなく、産業・経済全体にも深刻なダメージをもたらしています。当社はこれまでも、一日も早い保険金支払いに向けて、スマートフォンを活用したビデオチャットによる遠隔立会調査等、先進デジタル技術を活用した損害調査を行ってきました。一方、水災が発生した場合には、家屋の査定に熟知する専門の調査員が現場に出向き、一件一件立会調査を実施する必要があるため、迅速かつ正確な損害調査手法の確立が課題となっていました。

こうした中、当社は、将来の大規模水災時に備え、損害調査体制の強化を図るべく、新たな調査手法を導入することとしました。

4．今後の展開

今後、さまざまなデジタル技術を組み合わせることにより、大規模自然災害が発生した場合にも、即時にお客さまへ保険金をお支払いできる損害調査体制の確立に努めていきます。

Flood AI



The integration of high-performance LiDAR-equipped drones has revolutionized 3D mapping workflows. These drones leverage cutting-edge laser scanning technology to capture vast datasets with centimeter-level precision, generating highly detailed and accurate environmental representations. This comprehensive data acquisition empowers professionals across various industries to make informed decisions with unparalleled spatial awareness.

Drone: PRODRONE PD6B-Type II

Laser: Riegl VUX-1UAV

Scanning Range: 330°

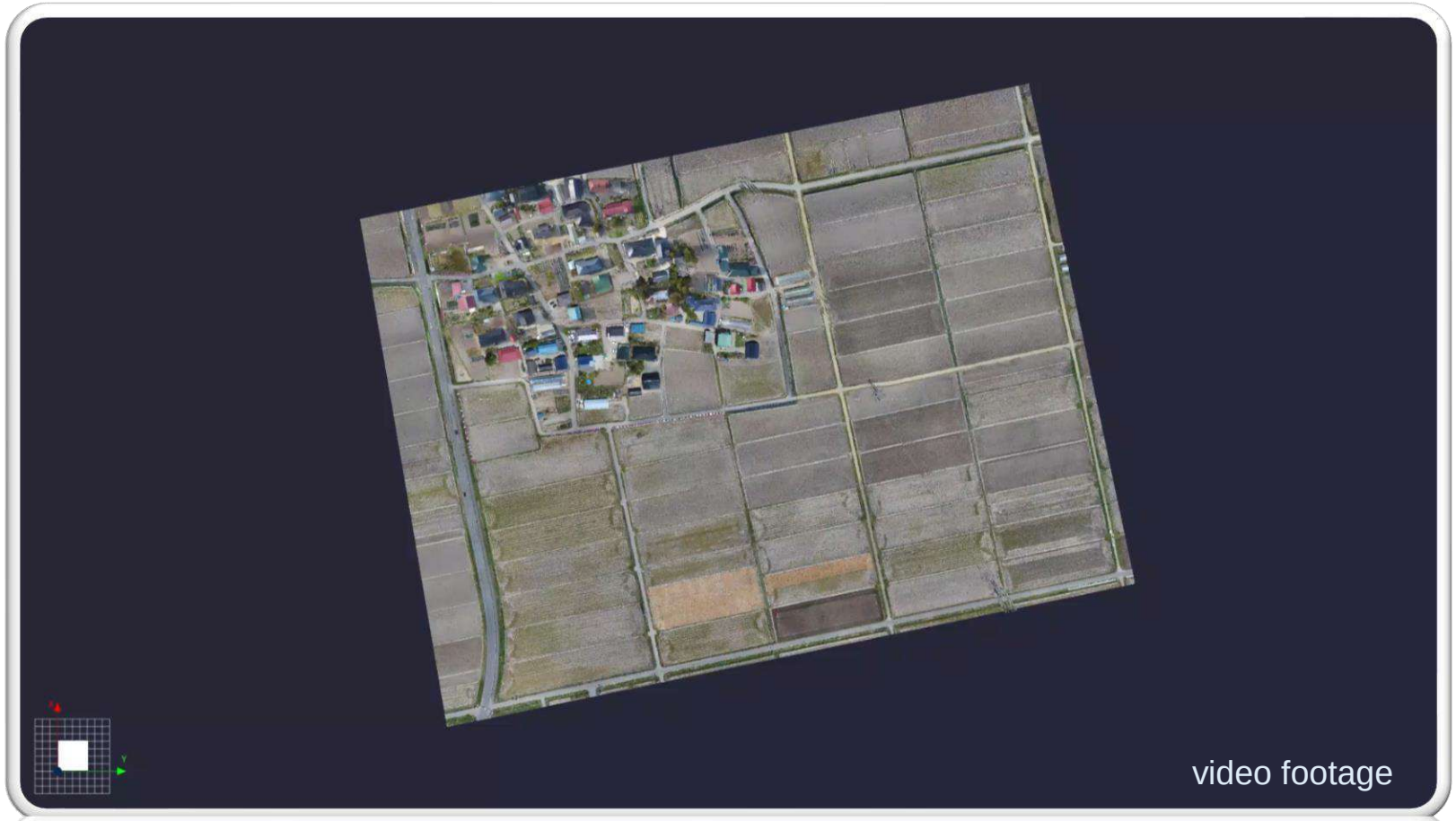
Scanning Speed: 10 to 200 revolutions per second

Accuracy: 10 millimeters

Maximum Measurement Distance: 300 meters

Additional Information:

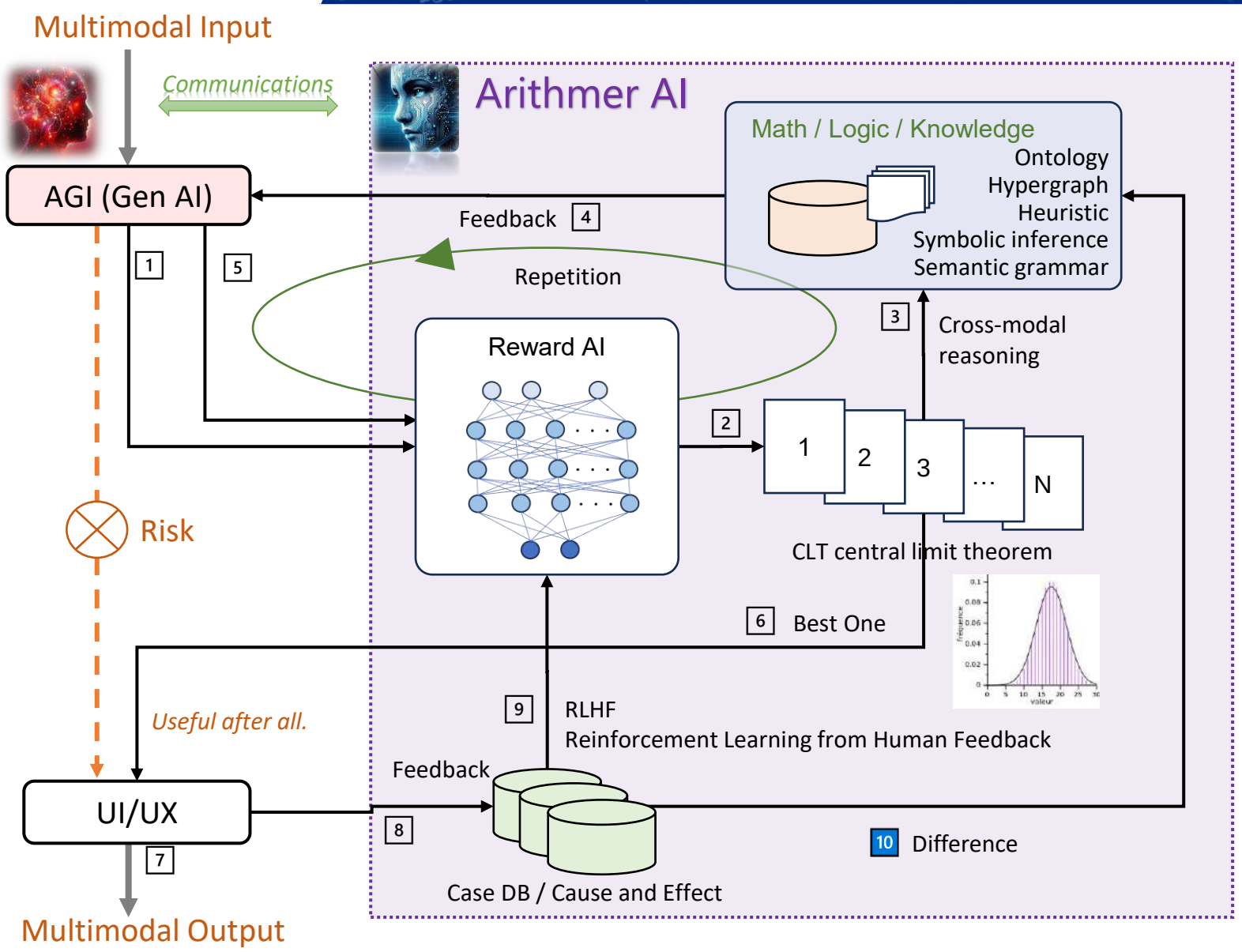
- **Imaging Area:** Approximately 600 meters x 400 meters
- **Flight Altitude:** 80 meters
- **Flight Time:** Approximately 25 minutes



AI Smart City Project

Hirono Town is harnessing the power of 3D point cloud data captured by drones to enhance construction and infrastructure planning, paving the way for a more resilient future. These detailed 3D models provide valuable insights for informed site planning, enhanced construction monitoring, and resilient infrastructure development, enabling the town to make informed decisions and build stronger, more climate-proof structures. This proactive approach serves as an inspiration for other communities seeking to adapt to a changing climate and ensure the safety and well-being of their citizens.

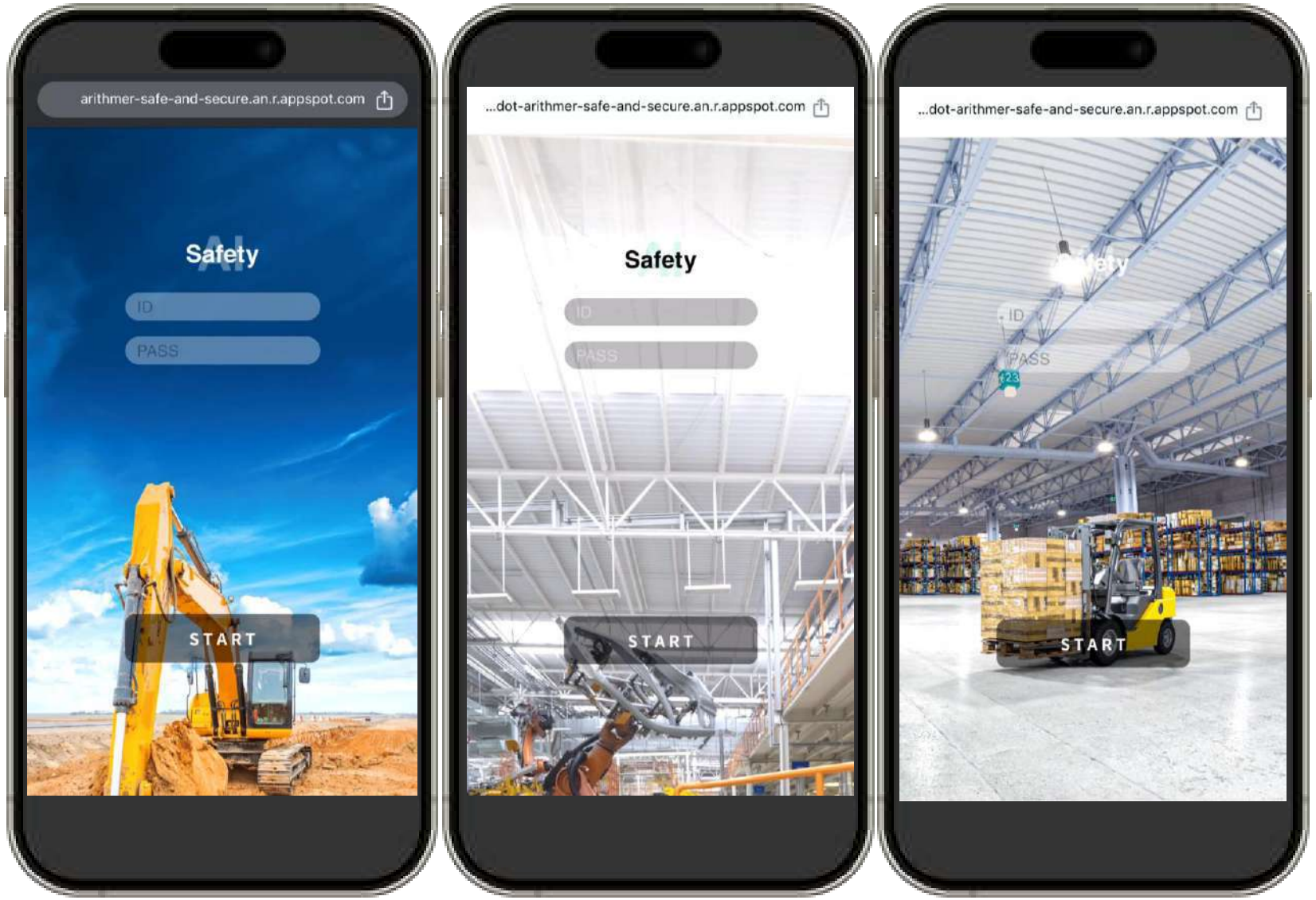
Arithmer postdiction AI for Mitigating Gen AI Risks



Generative AI (Gen AI) offers vast potential, but significant challenges remain. These include unrealistic content generation, bias inherited from training data, and misuse for misinformation or deepfakes. To mitigate these issues and ensure responsible use, advancements in Gen AI technology are essential.

One such advancement is Arithmer's postdiction AI. This technology facilitates repeated communication, empowering machines to reason logically using symbols and rules. By integrating Arithmer AI, Gen AI can potentially gain enhanced reasoning capabilities and increased decision explainability, ultimately leading to more reliable and trustworthy AI systems.

Safety AI Revolutionizes Workplaces



In today's dynamic workplaces, employee safety is paramount. Safety AI emerges as a revolutionary solution, proactively enhancing safety and streamlining tasks in construction, manufacturing, and logistics.

Safety AI empowers workers with voice-guided briefings and real-time hazard alerts. It also promotes proactive equipment maintenance and AI-powered problem-solving assistance.
Safety AI's multilingual interface and audible warnings ensure clear communication for all. By combining these features, Safety AI fosters a proactive safety culture while driving efficiency and productivity.

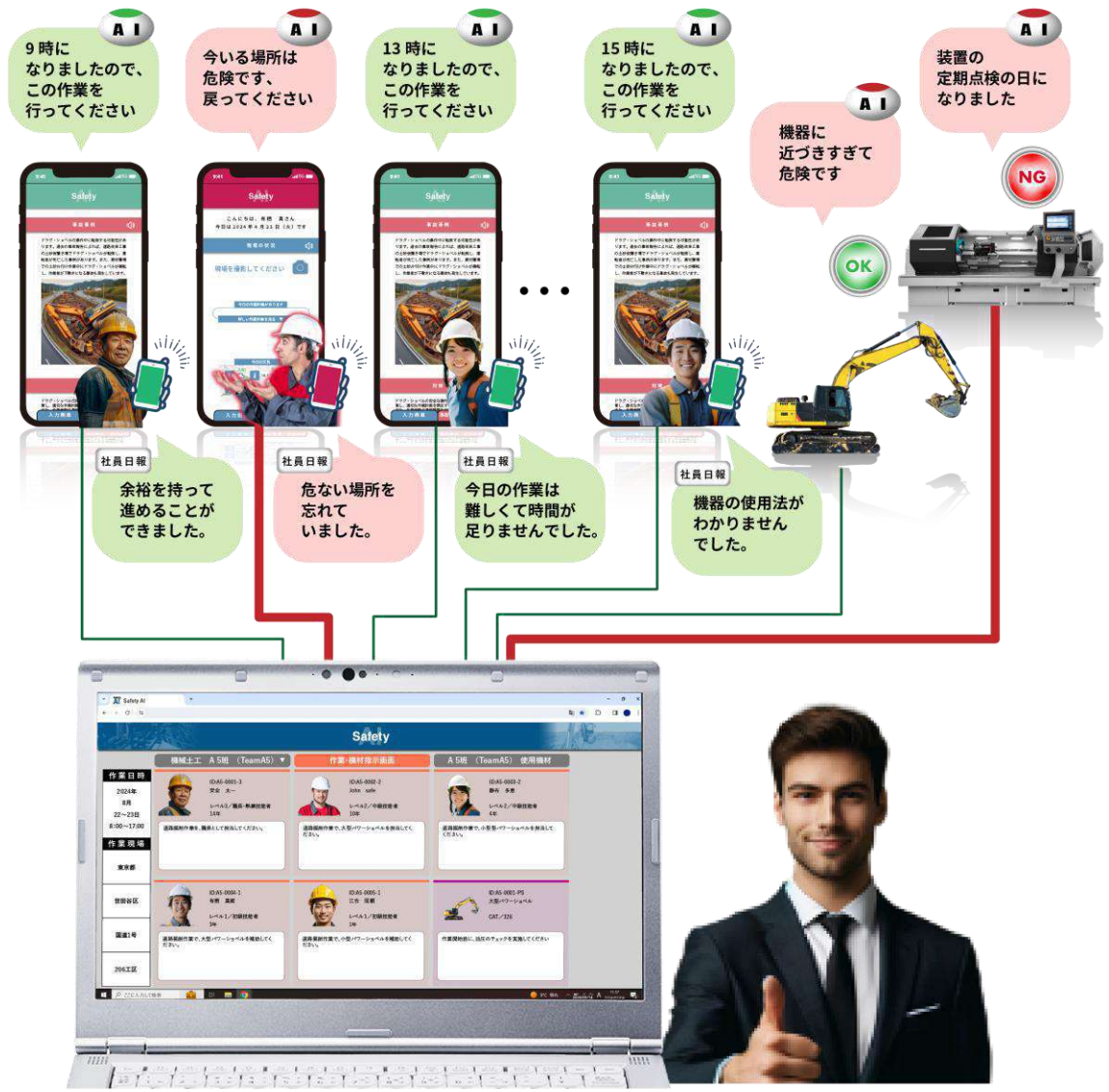
Safety Redefined: AI Predicts, Prevents, and Streamlines Workplace Safety

SafetyAI goes beyond traditional surveillance, leveraging advanced AI to analyze video footage for risky situations – unsafe worker behavior or environmental hazards – before accidents occur. Real-time analysis enables immediate intervention, preventing incidents.

SafetyAI isn't reactive; it's predictive. By analyzing equipment data, it anticipates potential failures, allowing businesses to schedule repairs during downtime, minimizing disruptions and costs.

Furthermore, SafetyAI integrates seamlessly. It works with existing cameras and even employee phones. A simple snapshot allows automatic issue identification, like equipment counting, eliminating manual data collection.

SafetyAI Through Communication and Management

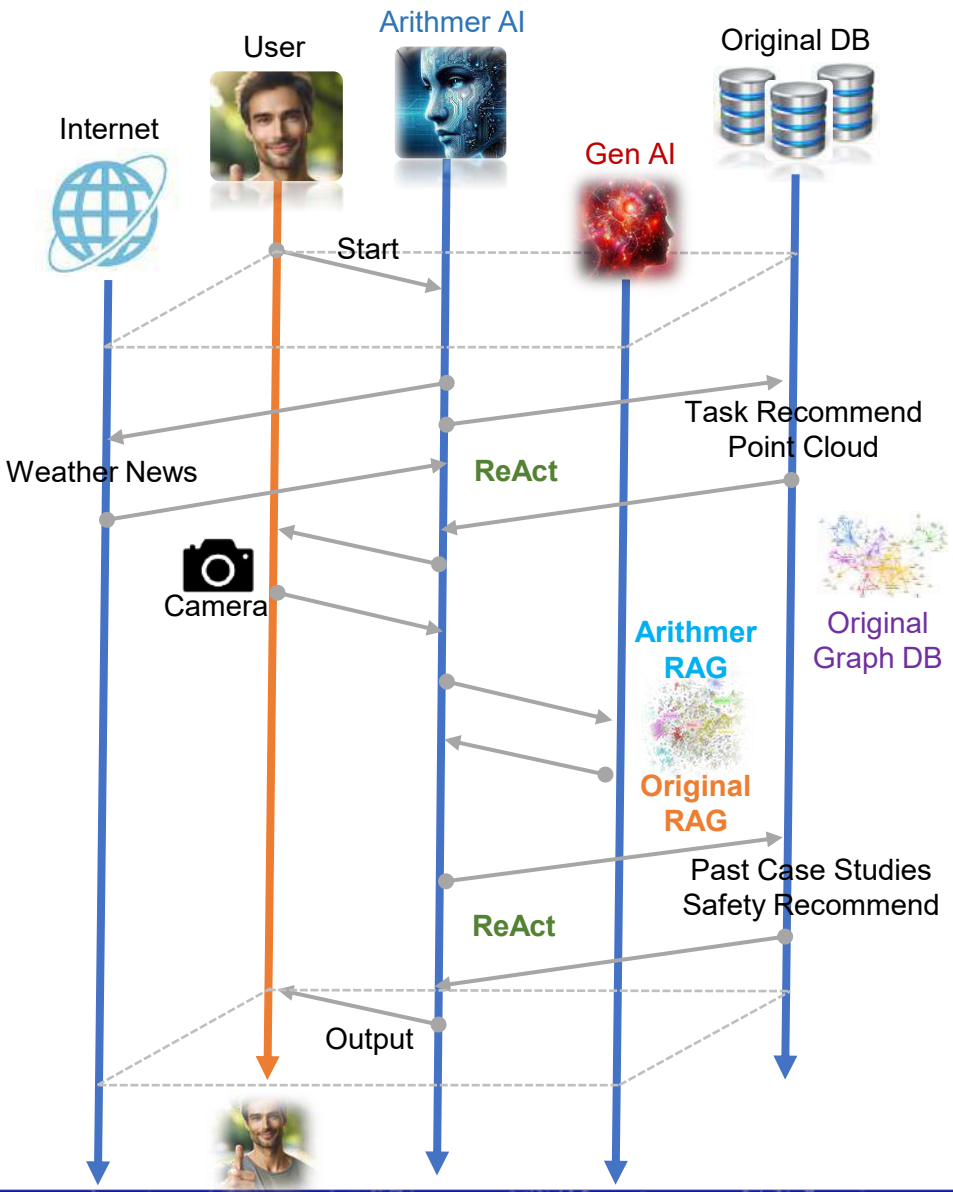


SafetyAI is a revolutionary safety management solution designed to empower both workers and managers.

Streamlined Operations: Field personnel receive real-time task updates on their smartphones, eliminating delays and improving workload efficiency.
Enhanced Safety: Embedded AI in worker smartphones instantly detects hazards in high-risk areas, proactively reducing accident risks.
Predictive Power: SafetyAI goes beyond reactive measures by providing predictive machine failure alerts. This empowers managers to take pre-emptive maintenance actions and minimize downtime.

Actionable Insights: Managers gain access to a centralized platform with comprehensive log data. This allows for proactive identification of safety concerns and targeted interventions like safety alerts or personalized training programs.

Multi-Agent Systems for AGI

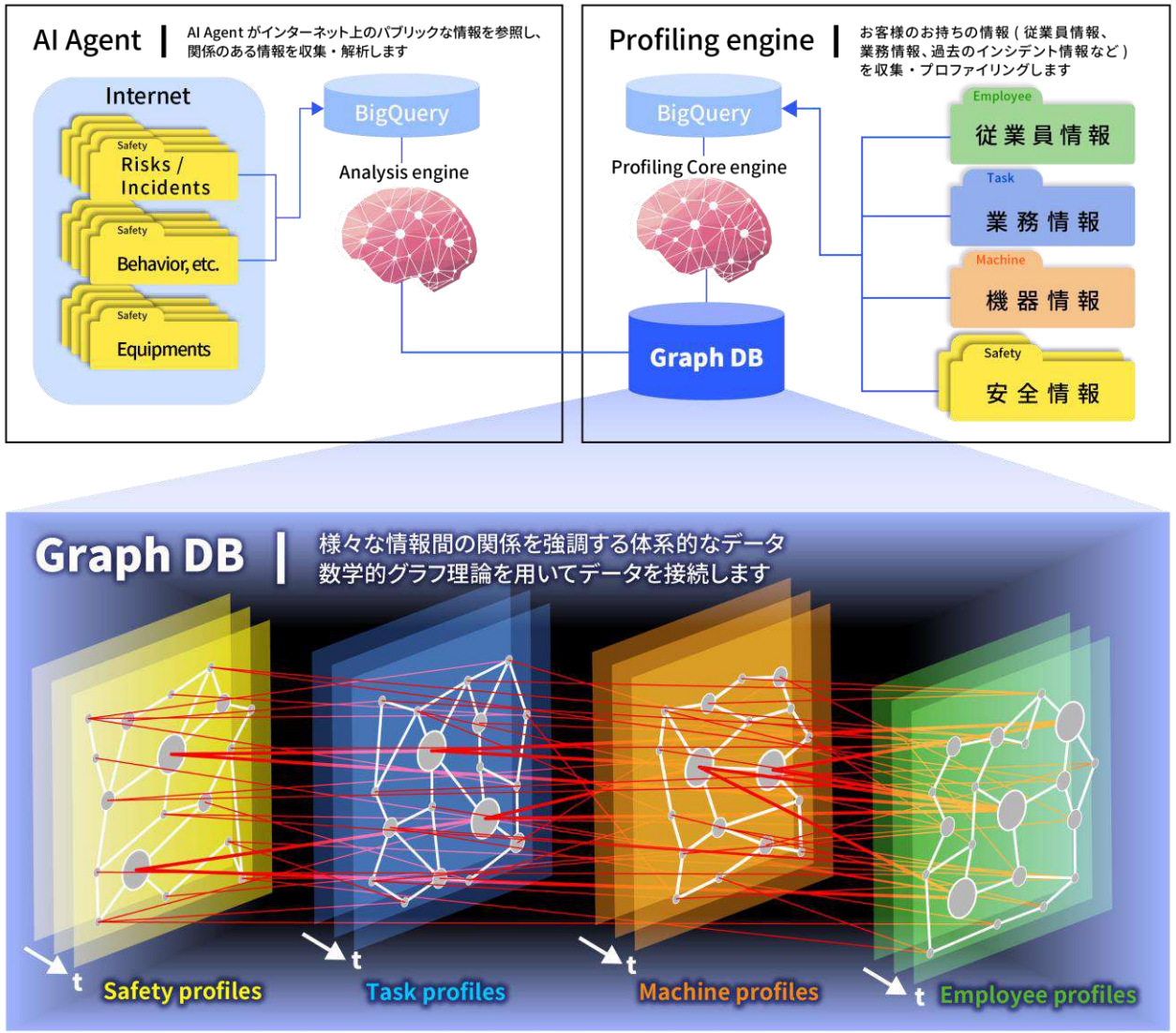


Massive datasets train Large Language Models (LLMs), but they can sometimes lack factual grounding.

RAG addresses this by incorporating external knowledge sources during generation, leading to more informative and trustworthy outputs.
Building on this concept of leveraging external knowledge, ReAct performs both reasoning and action simultaneously. This allows ReAct to access and process information from the real world, making its responses more comprehensive and grounded in factual evidence.
Multimodal AI integrates various data types to gain a richer understanding, advancing accuracy and fostering applications in healthcare, autonomous vehicles, and product development.

Arithmer AI leverages a combination of RAG, ReAct, and proprietary G-functions to facilitate communication between AI systems and enable users to retrieve desired information through minimal input.

SafetyAI unlocks hidden risks in connected Graph DB



Arithmer AI's graph database technology transforms your intricate employee network into a visual representation, empowering you to gain deeper insights for proactive risk identification and optimized workflows.

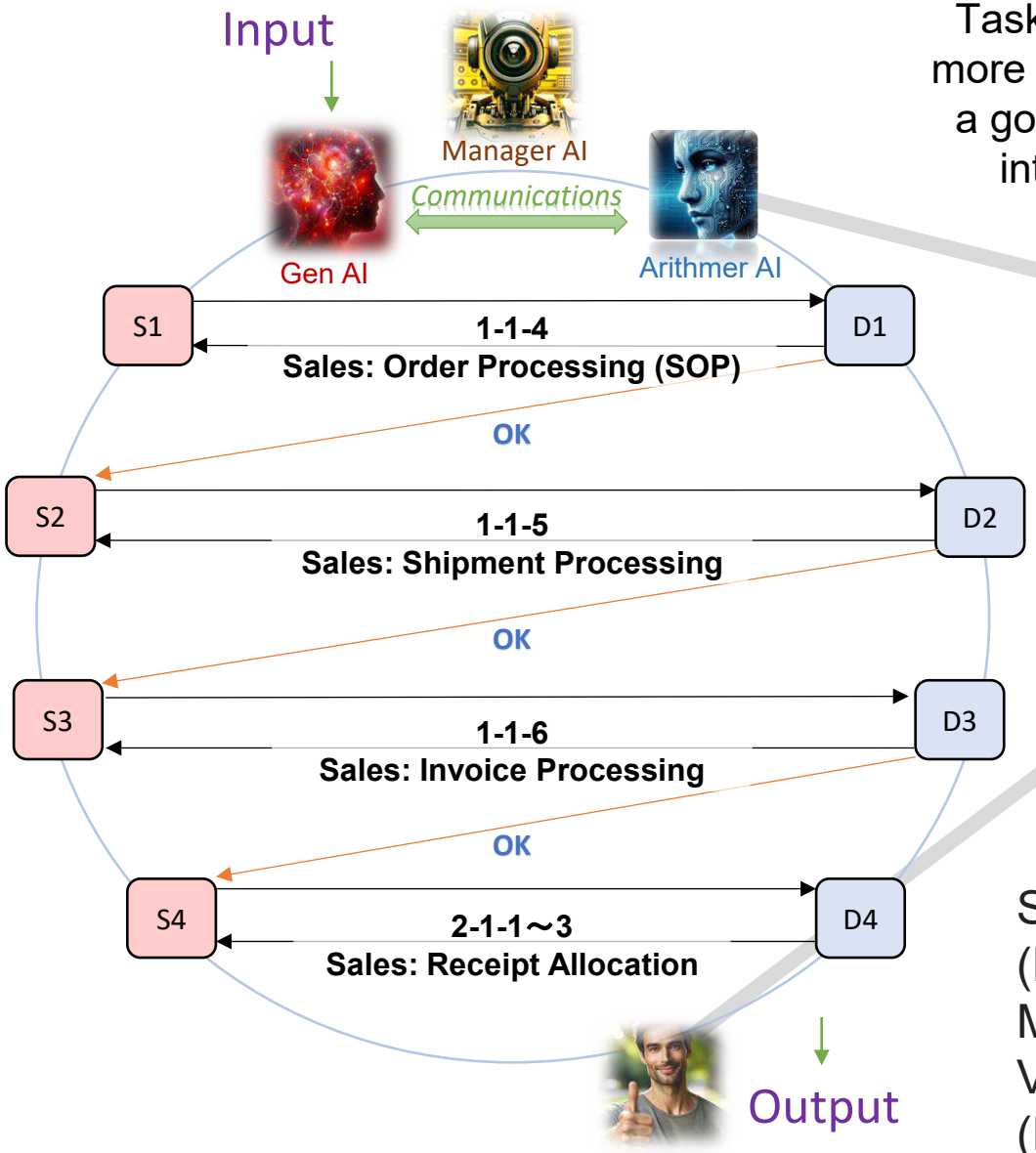
Consolidate disparate data sources, including employee profiles, machine details, tasks, safety protocols, and daily reports, into a unified platform, eliminating data silos and ensuring real-time access to the latest information.

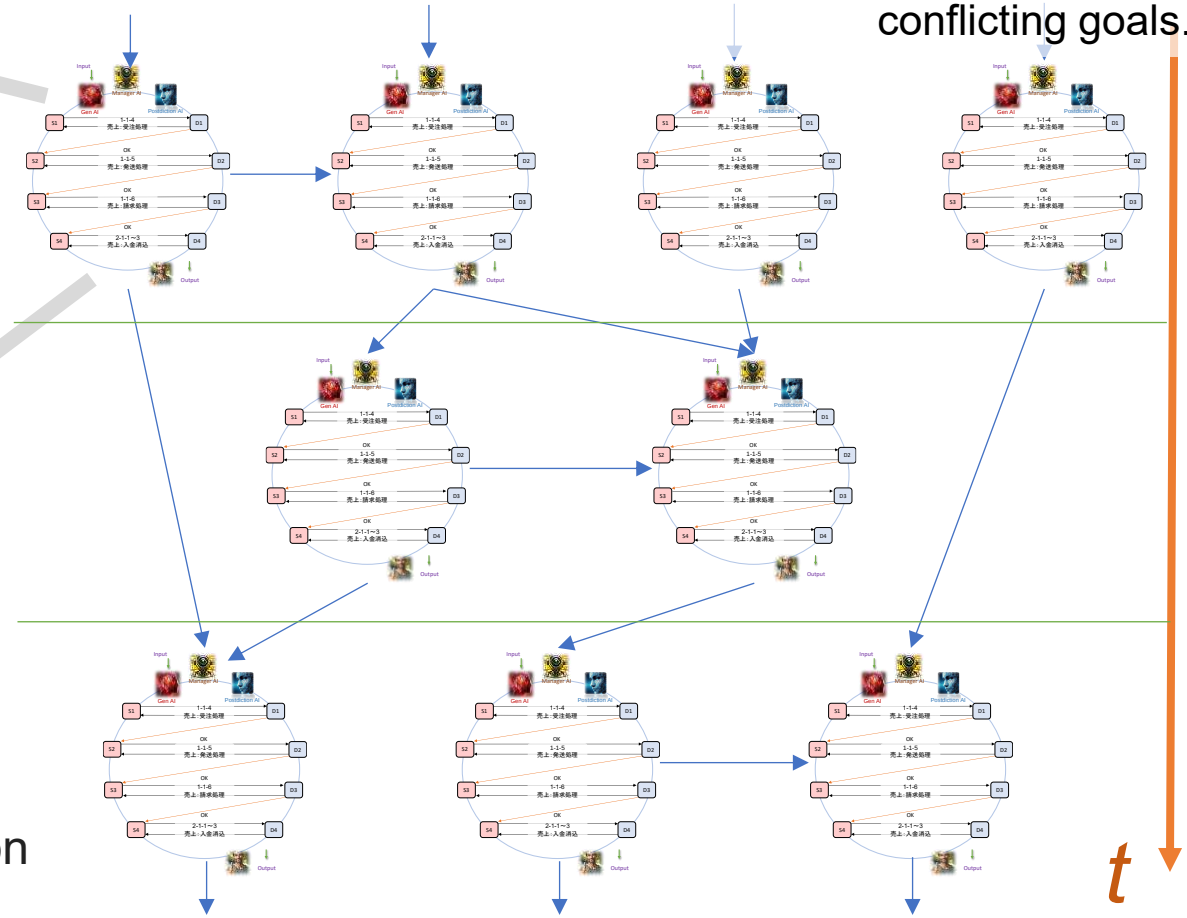
AI-powered agents proactively collect and integrate relevant public data, keeping your information fresh and reflecting real-world conditions.

Prioritize both employee and equipment safety while optimizing workflows for peak efficiency with Arithmer AI's data-driven insights.

Multi-agent AI for Enterprise Resource Management

Task decomposition is the process of breaking down a complex task into smaller, more manageable subtasks. This can be helpful for both AGI and LLMs to achieve a goal like huge amount of document processing. Multi-agent AI involves multiple intelligent agents working together. These agents can be software programs or robots, and they might collaborate on a common goal or pursue their own conflicting goals.

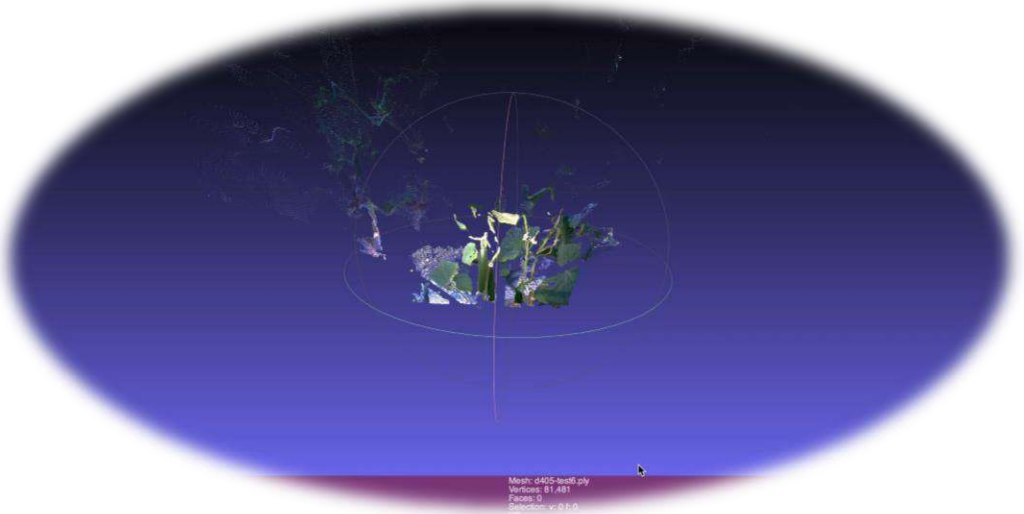




State
(Profile
Memory)
Value function
(Planning
Action)

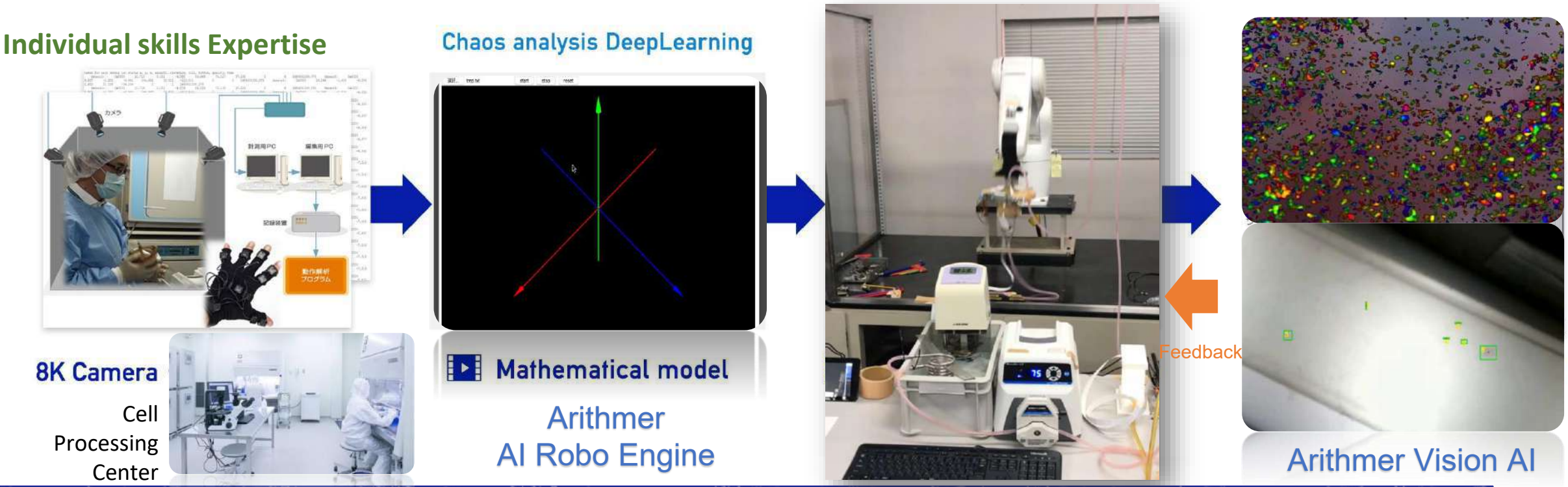
Autonomous Agriculture

Our team leads a national project pioneering AI-powered autonomous agriculture. This project develops robots for unattended harvesting of fruits and vegetables. Advanced Vision AI identifies and selects ripe produce, ensuring optimal quality and maximizing value. Intelligent Path Planning calculates the most efficient path for the robot's arm, minimizing damage to surrounding plants. This innovative technology promises a future of efficient and high-quality harvests.



AI Robo for Regenerative Medicine

In the field of diabetes treatment, our company is spearheading the development of an AI-powered surgical robot that replicates the elusive "God's Hand" technique. This maneuver, known for its exceptional precision and difficulty to teach, has long been a bottleneck in islet transplantation surgery. Our groundbreaking technology leverages motion capture analysis to meticulously record and replicate the expert surgeon's movements, allowing the AI robot to perform the delicate task of isolating Langerhans islets (pancreatic cell clusters responsible for insulin production) with unmatched accuracy. This innovation has the potential to revolutionize islet transplantation by making this highly specialized surgery more cost-effective and accessible to a vastly greater number of patients. Following successful completion of animal trials in 2023, the AI robot is primed for its clinical debut in 2024 at the National Center for International Medical Research, a preeminent transplant center in Japan. This represents a significant advancement in the fight against diabetes. The AI-assisted procedure has the potential to transform diabetes treatment by providing a minimally invasive and highly accurate method for islet transplantation, with the possibility of achieving complete remission for patients.

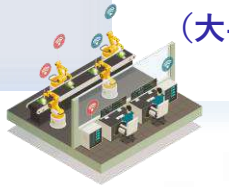


AI Smart City

ASPIC
先進ビジネス
モデル受賞

エネルギーAI

設備の予兆保全AI
発電量予測AI
（大手電力/風力発電企業様）



製造AI

工場内の予兆AI
カートの運転AI
（トヨタ様・日本製鐵様）

物流AI

WMS・AMR・SCM
倉庫内のピッキングAI
物流のルート最適化AI
（大手商社/マテハン企業様）

ASPIC
準グランプリ
受賞

インフラAI

都市計画のデジタルAI
施工現場の浸水AI
（大手ゼネコン/建機メーカー様）

リテールAI

ECサイトのレコメンドAI
金融データの
マッチングAI
（コナカ様・大手地方銀行様）

バイオAI

創薬技術のロボットAI
データによる生産工程の
最適化AI
（大手製薬/バイオ企業様）

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Arithmer