



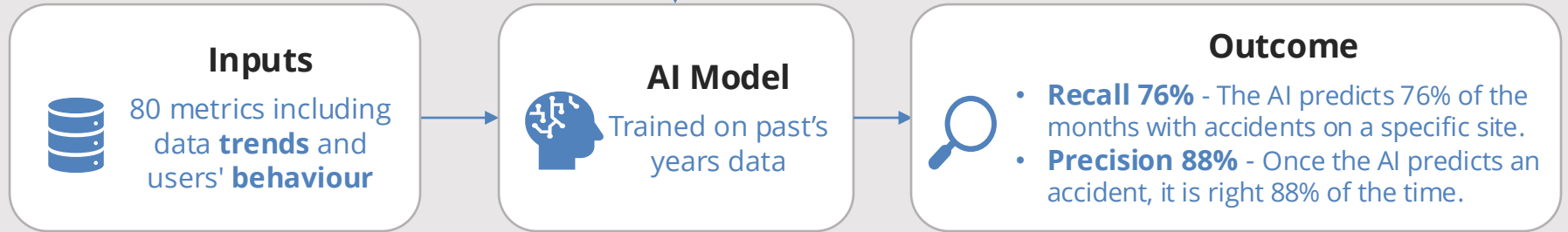
Power of Artificial Intelligence (AI): The Road to Predicting Field Accidents with > 80% Accuracy

Denis Branthonne
Co-founder & CEO of Novade

Predicting
80%
of accidents with AI

AI breakthrough: methodology to predict accidents on site

*Will there be an accident on
this site in the next month?*



A simple yet powerful outcome





“Having access to this kind of analysis is incredibly cost-effective. It allows us to take a more objective look at our projects...It's like having a new pair of glasses that helps us see our projects more clearly.”

- Kevin Seet, Head of Corporate Division, Tiong Seng Contractors

These AI predictions are in line with empirical evidences: very often, before an accident, the writing was on the wall



Near misses increasing

Increased delays in safety
action rectifications

Toolbox meetings skipped

PTW approval
issues rising

Overtime increasing

AI's ability to analyse huge amount data is very relevant for field safety



Human beings struggle to compute a huge amount of data



AI thrives in an environment with lots of data and clear outcomes



The most significant impact of the AI model
is not its predictions ...

...but the understanding of which parameters impact
the prediction

Download our article if you wish to learn more



Novade

Using AI to predict accidents on construction sites

It's a familiar scenario in the aftermath of an accident: workers and supervisors recognise that there were early indicators of danger, which went unnoticed amidst the daily tasks. This realisation, often summarised as "the writing is on the wall", reveals a significant gap in safety management—the inability to spot and act on these early warning signs in a timely manner.

Construction sites are characterised by abundant, complex data that are challenging to interpret, making them ideal candidates for AI applications. However, a known obstacle until recently has been the non-digitised nature of such data within the construction industry. At Novade, we have been collaborating with Tong Sang Contractors for several years to digitise their processes, thereby creating a rich repository of information. And in 2022, we started to explore the potential of using AI to predict accidents together.

Our hard work has led to an exciting result: a tool that can help us anticipate and mitigate risks before they escalate.

An AI capable of predicting 76% of accidents

What does that actually mean?

It means that our artificial intelligence (AI) model can predict, with over 70% accuracy, whether at least one reportable accident is likely to occur in the next month at a specific construction site.

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In data science terms:

- Our model has a recall rate of 76%, meaning it can predict 76% of all months with accidents. It does not catch every incident, but it does successfully pinpoint the majority before they occur. The model tends to miss non-severe accidents – those that do not result in any lost man-days.
- The precision rate of the model is 88%. This indicates that when our model predicts an accident, there is an 88% probability that the prediction will be accurate. This precision is crucial because predicting accidents with high frequency could lead to unnecessary alarms. It is essential to maintain a balance, only signalling high-risk situations to avoid the issue of "crying wolf."

Out of all months with accidents, the AI correctly predicts 76%.

When the AI predicts an accident, it is correct 88% of the time.



The AI predicted 76% of the months with accidents. The AI is correct 88% of the time.

This balance between recall and precision illustrates our model's ability to be both precise and reliable in operational settings.



Call to action

You can leverage digital tools **now** to improve safety in the field



Collect

Capture real-time data from the field



Analyse

Monitor trends and identify patterns

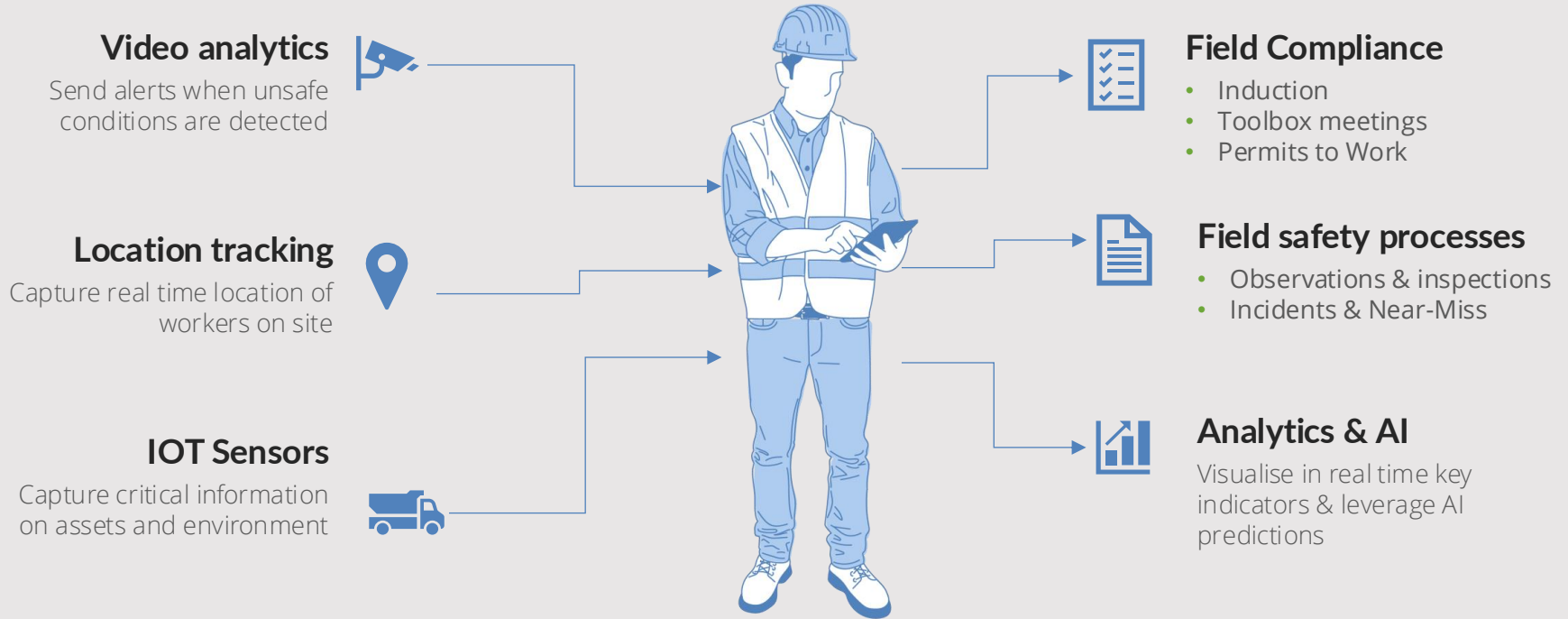


Act

Make decisions and continuously improve

And within one or two years, if you collect enough relevant and accurate data, you will be able to leverage AI

Leverage mobile devices & IOT to manage compliance and improve safety in the field



About Novade



Novade is a global organisation operating across Europe and Asia

20

Countries

10 000

Sites

150K

Users

1 Million

Processes every month

With Novade manage field operations with one single mobile app

Digitise field processes



Quality assurance

- Quality Inspections
- RFIs, ITPs
- Punch Lists, Defect Rectification
- Handover, Commissioning



HSE compliance

- Toolbox meetings
- Permits to Work, Safety Forms
- Observations, Issues, NCRs
- Safety Incidents & Near-Miss



Progress & resource tracking

- Daily reports: Activity, Workforce, Equipment, Supplies.
- Progress reports and production ratio
- Waste tracking & Carbon footprint



Manage data & resources



Project Location

- Project Spatial hierarchy (WBS, Units)
- 2D Drawings & 3D models



People

- Workers profiles
- Site check in / check out
- Workers' qualifications



Assets

- Equipment, machinery, supplies
- Location tracking
- Equipment certification

Novade is trusted by industry leaders

Owners & developers



Public Sector



General Contractors



Specialist Contractors



Novade is used on iconic projects across the world



Tunnel – Lyon Turin
Vinci / Spie Batignolles



Highway - Norway
Eiffage



High end resorts – Thailand
Banyan tree



Condominium – Malaysia
Lendlease



Metro Stations - Singapore
China Construction



Shipyard – Singapore
Pax Ocean



Rail (HS2) - United Kingdom
EKFB



Gas field – Saudi Arabia
Aramco & Hyundai

Made in Singapore, for Singapore



World-class local team

Management and R&D teams based in Singapore.



Technology you can trust

Singapore data center, ISO certification and strict compliance with PDPA.



Enterprise Singapore Support

Capital investment in 2018 and selected for the Singapore Scale-Up Program in 2021.



IMDA accreditation

Strict audit process enabling Novade to supply Singapore public agencies such as PUB, DSTA, PA, and BCA.

Contact us





Novade

Digital transformation
from the ground up