



# Forwood Analytical Self-Service Tool (FAST) CASE STUDY



## Next Generation Data Analytics For Fatality Prevention

### ► The Client

Alcoa (NYSE: AA) is a global industry leader in bauxite, alumina and aluminum products, with a strong portfolio of value-added cast and rolled products and substantial energy assets. Alcoa is built on a foundation of strong values and operating excellence dating back 135 years to the world-changing discovery that made aluminum an affordable and vital part of modern life. Since inventing the aluminum industry, and throughout history, talented Alcoans have followed on with breakthrough innovations and best practices that have led to efficiency, safety, sustainability and stronger communities wherever they operate. Visit [www.alcoa.com](http://www.alcoa.com), [@Alcoa](https://twitter.com/Alcoa) on Twitter, and [www.facebook.com/Alcoa](https://www.facebook.com/Alcoa)



### ► The Background

High-risk industries have collectively spent billions of dollars on traditional safety approaches and their related reporting metrics such as LTIFR, TRIFR, and AIFR. These approaches and metrics show significant improvements in general safety performance over the last 50 years, however fatalities and serious injuries continue to occur.

Alcoa has long recognized that traditional safety metrics and safety approaches were outdated. Traditional safety metrics measure what went wrong, not what went right. In 2018, Alcoa implemented Forwood CRM. This system gathered vast amounts of proactive safety data. CRM provides 'live' measures on what critical controls are failing before an accident actually occurs. Alcoa saw the opportunity to use this data to create a broad range of new age safety metrics and dashboards.

A team was created to provide business input and create benchmark dashboards that could be used to identify where the next serious injury or fatality was most likely to occur.



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## ► The Challenge

Alcoa needed a reporting tool that could analyze CRM's large volume of data and deliver real-time statistics to leaders in the field.

The tool needed to be simple and easy to use and focus managers on how to best use their time to prevent serious injuries and potential fatalities during 'time in field' activities.

At a corporate level, it was also essential the solution assisted Alcoa to transition from reliance on traditional safety metrics to 21st century data analytics.



Forwood's Analytical Self-Service Tool (FAST) key features:

- ✓ Pre-built dashboards specific for fatality prevention
- ✓ New age safety metrics
- ✓ Business intelligence and data insights
- ✓ Serverless, scalable architecture
- ✓ Visualization tools
- ✓ Self-service reports with easy to understand visualizations
- ✓ Incorporated machine learning algorithms

## The Solution ◀

Throughout the CRM implementation, Alcoa learned that Forwood partnered with Amazon QuickSight for advanced data analytics, and this was an integral part of their Critical Risk Management Solution. Alcoa requested a demonstration of Forwood's Analytical Self-Service Tool (FAST) and was provided with an overview of key features.

After a thorough review of FAST, Alcoa decided to implement the solution globally.

Forwood deployed FAST in a matter of days and gave Alcoa immediate access to the most advanced fatality prevention analytics on the market. This included a powerful suite of dashboards, interactive data sets and machine learning (ML) tools. All analyses were fully customizable and instantly available to leaders in the field.

“ Forwood Safety FAST works for both a data hound like me and somebody who is the complete opposite. Users want the flexibility to have information at their fingertips. There's a dashboard, or there's a new report that will answer their questions, so they can focus back on their work. ”

**Ben Maxson,**  
Global Critical Risk Manager,  
Alcoa Corporation



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## ► The Results

Despite a global pandemic in 2020, Alcoa achieved their goal of strengthening and embedding their Fatality Prevention Program. Alcoa used the FAST dashboards and predictive capabilities to provide leaders in the field with powerful tools that give insights into hidden trends and outliers in fatality prevention data and critical control failures. These insights transitioned Alcoa from lagging data to leading data. It also provided HSE with deep analytics for predictions.

The results of the analytic capabilities of FAST are far too great to cover in a single case study, however to highlight the value of FAST there are three examples of tools this case study will reference: predictive forecasting, contribution analysis and tornado effort analysis.

### 1. Predictive Forecasting

Predictive forecasting shows data predictions for the near future. In the example below, the tool identifies the predicted trend of critical control failures and looks at whether these failures will increase or decrease over time. When managers are aware that a non-compliance trend is increasing, they can take proactive steps to lower non-compliance rates.

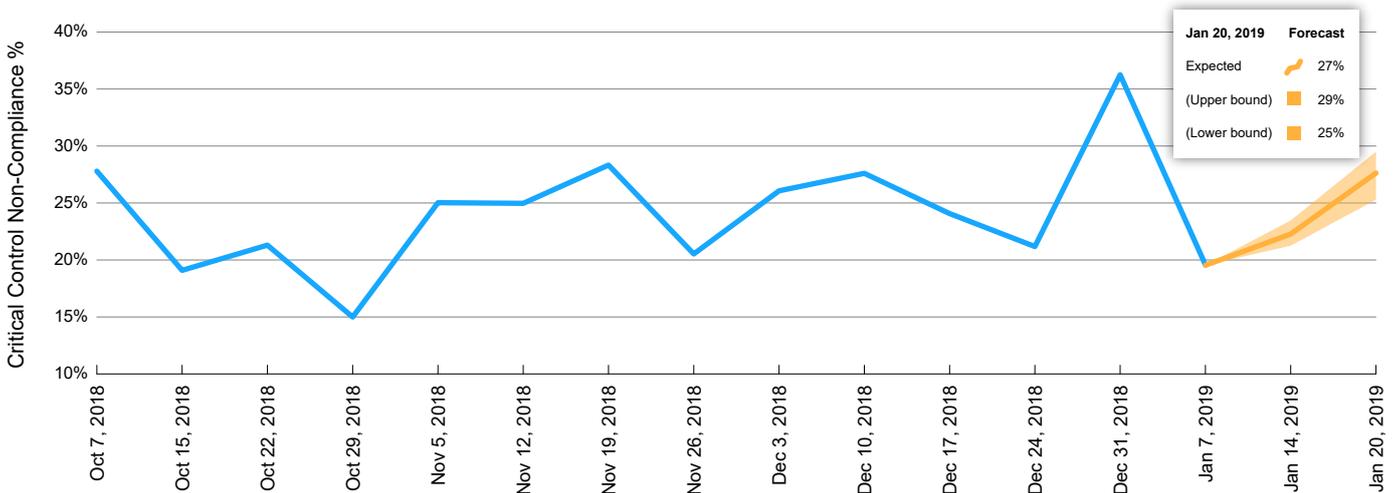


Figure 1 below shows the predictive verification trend for a specific critical risk which is likely to trend up in the future.

Machine learning algorithms are standard tools in the FAST reporting platform and can be used on all critical risk and critical controls to predict future outcomes.

**Figure 1 Predictive Analysis Feature (Example Data)**

Verification Non-Compliance % Forecast



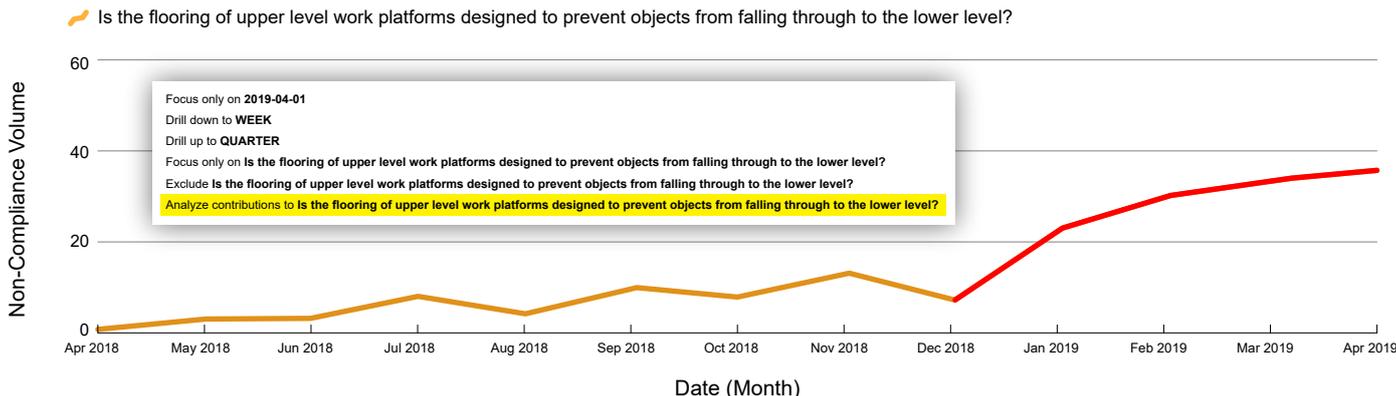
### 2. Contribution Analysis

Contribution analysis uses AI to automatically analyze why a particular trend is occurring. Managers can use this tool to understand why critical control failures are increasing or decreasing.

This gives Alcoa insight into what is causing the non-compliance trend. Figure 2 below shows an increasing trend that would benefit from contribution analysis. Users simply click on the trend and select the analysis option.

## Figure 2 Contribution Analysis Feature (Example Data)

Question Non-Compliance Over Time



### 3. Tornado Effort Analysis

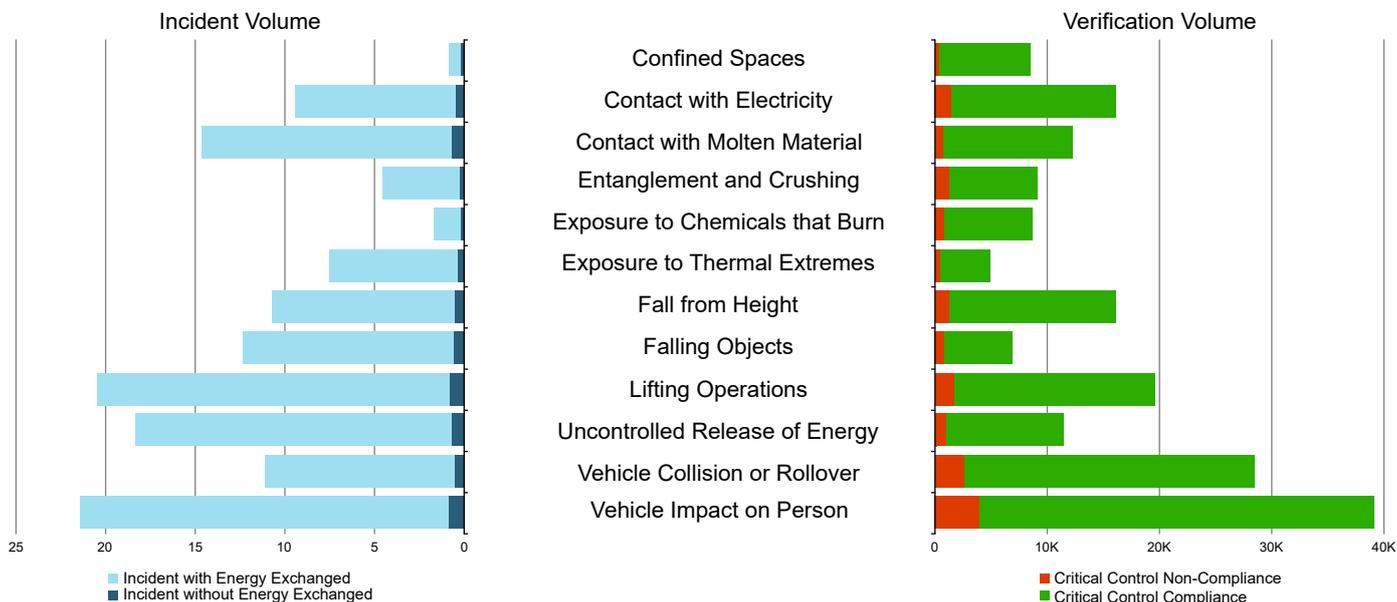
Another example of these new metrics is the Tornado chart that provides a comparison between traditional safety metrics (lagging data) and CRM metrics (leading data). There are many insights with this chart, but one primary insight is around Verification Effort. Are we doing verifications where we need to?

Comparatively, CRM gathers significantly higher volumes of leading data which is processed with ML and AI to identify predictive indicators for potential accidents.

The Tornado Chart also visually shows that traditional safety metrics gather limited amounts of data on accidents and injuries.

The chart can also be used to identify if fatality prevention efforts are apportioned accurately. Organizations don't have unlimited resources, unlimited time and unlimited budget, so it is critical to ensure that all effort is allocated appropriately.

### Figure 3 Tornado Chart (Example Data)



Tools, such as these available within Forwood's FAST reporting solution, enable Alcoa to effortlessly answer critical safety questions regarding localized fatality prevention efforts:

- How effective are the sites critical controls?
- What critical control has the highest failure rate and how can this problem be fixed?
- Where is a fatality most likely to occur on-site?

Every manager and every safety practitioner needs to know the answer to these questions. Forwood's FAST reporting tool gives Alcoa the ability to predict potential fatalities and provide information on how to stop these events before they occur. Alcoa has used FAST extensively for supplemental support during campaigns. FAST is a powerful tool to complement any organization's fatality-free efforts.