SymphonyAI

WHITE PAPER

Program Performance Intelligence

Introduction

Programs are the building blocks of successful missions that matter operationally across every branch of the government. Every program has a role to play, from a congressional notification exercise to building the components of an entirely new weapon system. While considerable technology exists for program creation, measurement, and management, virtually none are for program intelligence – the prediction of a program's future health.

Understanding potential changes in the health of a program, up to six months or more before the changes appear through more traditional metrics, enables organizations to see over the horizon and intercept risk. With that insight, those organizations can make the necessary adjustments to get back on track or prepare for downstream impact on other efforts.

Program Performance Intelligence from SymphonyAI Group Government Solutions uses structured and unstructured program data to predict program risk, months before traditional approaches. Based on SymphonyAI Group's award-winning technology, Program Performance Intelligence can be deployed across many different environments and technology stacks.

The Challenge of Program Performance Intelligence

The central challenge in assessing program performance is complexity. The combination of quantitative and qualitative data, dependencies, and exogenous factors complicate the ability of an organization to characterize program health effectively.

In most organizations, reviewers are responsible for rating program performance and providing insight to senior leadership to review programs through several systems. While the rating process differs from entity to entity, a common framework involves the assessment across multiple different areas with program leaders providing a rating (green, yellow, red) with justification and a summary for a program highlight document.

Reviewers then evaluate these program reports monthly or quarterly, using accumulated expertise to determine trends, interpret tone, make connections, find patterns, or source inconsistencies that might suggest future problems.

This process is time-intensive and often requires reviewers to read and assess volumes of information for each program. Ultimately, this is an imperfect process and needs humans to excel at a task for which they are not well-suited. It is then often a surprise when programs turn red, and the options available for remediation have narrowed.

Intelligent AI for Enterprise Applications

In contrast, SymphonyAI Group's Program Performance Intelligence looks at each component in the program review process, compares that with data on the progression of other programs, and makes an unbiased assessment.

Program Performance Intelligence does this by evaluating all available data, surfacing patterns, and relationships that indicate program performance changes. Using these relationships, the solution predicts the program's future health and details factors driving those findings in simple-to-understand terms. As it operates, Program Performance Intelligence learns continuously and takes advantage of new data points to refine the analysis.

At its core, Program Performance Intelligence uses SymphonyAI Group's Ayasdi AI platform powers to deliver this extraordinary business value. Originating from a DARPA project and developed by Stanford computational mathematicians, the Ayasdi AI platform technology, called topological data analysis (TDA), simplifies the extraction of knowledge from even the most complex data sets.

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The Ayasdi AI platform supports Program Performance Intelligence using five pillars:

- Discover the 'unknown unknown' information latent in complex data
- Predict the future with high accuracy and improve those predictions over time
- Justify actions, projections, and discoveries in a transparent and statistically proven fashion
- Act based on data, recommend actions to humans, and react to changes
- Learn from data as it changes over time

Technical Execution

To configure Program Performance Intelligence, SymphonyAI Group uses existing program data and actual project performance (e.g., red/yellow/green status and performance downgrades), performing any needed data transformation, and preparing it for ingestion and interpretation.

Once ingested into the solution, a TDA network model will begin an initial analysis. Based on the network model and existing and historical data,Program Performance Intelligence identifies key features and data transformations and pinpoints programs that will perform poorly and programs that will continue to perform well, with complete and extensive justification.

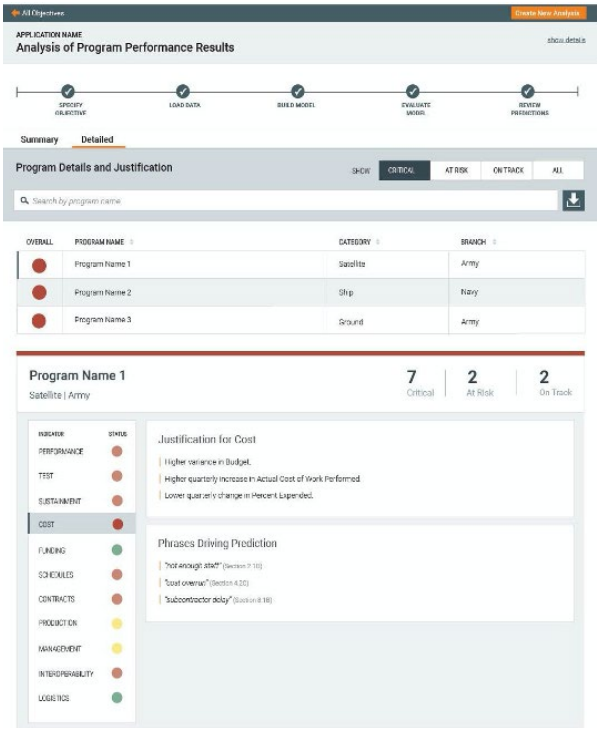

Figure 1 Program Performance Intelligence identifies programs at risk by using AI-based analysis of patterns and relationships in complex data sets1

Program Performance at Lockheed Martin

As a global government contractor, Lockheed Martin has hundreds of discreet programs at any given time, from managing a software upgrade to overseeing the F-35 Strike Fighter. Program success equates to company success, financially, operationally, and strategically.

In its analysis of program performance, Lockheed had discovered that schedule performance index (SPI) and cost performance index (CPI) were lagging indicators. By the time those indicators turned "red," it was too late to do anything but react, an expensive and challenging position.

Having insight into future programs held the promise of creating a portfolio of options and flexibility for the Lockheed Martin management team. Their goal was to detect signatures in the data that predicted future program performance early enough to create these options. Given the exceptional number of different features in the data, however, the combinatorial complexity was too great for any program manager to process, hiding the signatures of trouble.

By deploying Program Performance Intelligence, Lockheed was able to determine the correct combination of variables that produced the signatures that indicated potential problems.

Ultimately, Lockheed identified a concise set of attributes that predicted program health up to six months in advance of traditional techniques. Additionally, Program Performance Intelligence used only two months of data compared to six months of data used in other approaches. As a result, even new programs benefited, delivering exceptional value, and Lockheed determined that unstructured data was a better predictor of program success than the structured data that powered their traditional indicators.

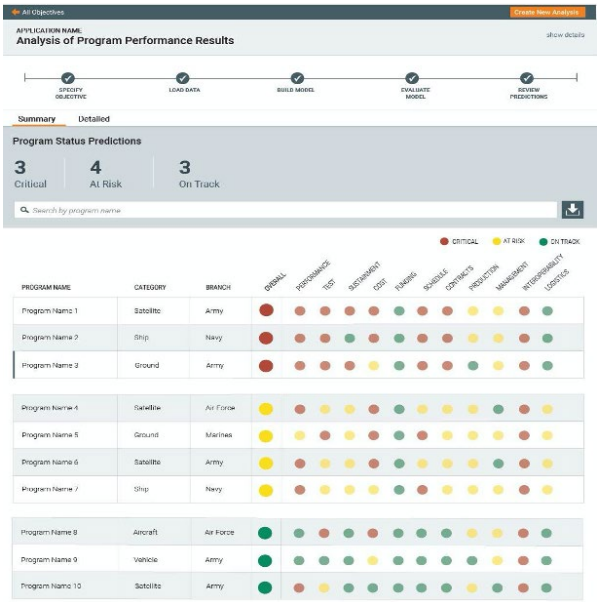

Figure 2 Program Performance Intelligence provides visibility into the status of multiple components of a given project, enabling managers to take action to avoid issues

Summary

Large, complex programs are challenging to manage and even harder to forecast. As a result, today's technology is mainly focused on the problem of management and misses the real opportunity to see into the future and detect issues before they become insurmountable. Instead, the Program Performance Intelligence solution can transform an organization's program management function to detect the signatures of trouble up to six months sooner and to do so with only two months of data. This early warning system creates exceptional options, allowing for adjustments, mitigation, and modifications when such changes can have maximum impact.

About SymphonyAI

SymphonyAI is building the leading enterprise AI company for digital transformation across the most important and resilient growth verticals, including life sciences, healthcare, retail, consumer packaged goods, financial services, manufacturing, and media. In each of these verticals, SAI businesses have many of the leading enterprises as clients. SAI is backed by a $1 billion commitment from Dr. Romesh Wadhwani, a successful entrepreneur and philanthropist. Since its founding in 2017, SymphonyAI has grown rapidly to a combined revenue run rate of more than $300 million and over 2,200 talented leaders, data scientists, and other professionals.

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