Odin - WhitePaper

Enhancing Organisational Decision-Making Through Artificial Intelligence and Data Orchestration

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Odin - Data Orchestration

WhitePaper 2022

Introduction: ISSM Labelling Solutions

AT A GLANCE

→ Founded in 2020 by Industry Veterans

→ Research and Development Company

→ Published Artificial Intelligence Papers

INTRODUCTION

— Founded in 2020, ISSM is an R&D company primarily focusing on different domains of AI such as NLP/NLU, Computer Vision, Cybersecurity, and Data Orchestration.

Most of our products within these domains emanate from our own published work that we are now productizing. Our team includes academic and industry veterans that are building globally competitive products.

Our applications come with pre-trained machine learning models that automatically relearn from the organization's existing data to become optimized according to each requirement.

The Data Foundation

Petabytes of data are created daily in every industry and context imaginable. Ineffective data management, minimum utilization, and lack of analysis often lead organizations and their leaders to overlook factors that can optimize their resources or reveal insights hidden within their data lake. Our goal is to operationalize all this data. Companies that are able to create and organize workflows using data logically can maximize production output, save time and resources they would otherwise spend on maintenance, and build manufacturing scenario simulations before implementing expensive changes in the field.

Challenges Faced With Big Data

DATA INTEGRATION HEADACHES

The large, compounding volume of data that companies can access is both a blessing and a curse. Data is only an asset when it's accessible. Too often, analysts find themselves wading through an endless sensor, video, telemetry, ERP, lab, and other potentially useful data without knowing the right ways to bring it all together. Flooding databases and analytical applications with unstructured data makes it difficult to separate the signal from the noise, preventing you from making effective use of the data you have at hand.

DISPARATE SOLUTIONS LEAD TO CRIPPLING COSTS AT SCALE

Because so many kinds of projects fall under the Industry 4.0 umbrella, most vendors have an overwhelming number of solutions and applications for IT and business staff to sort through. For example, vendors often expect firms to cobble together a machine learning solution, a cloud warehouse, and a sensor management solution — and that's just to start.

This lack of consolidation doesn't just result in more complicated projects. It also means that the more opportunities to leverage your data, the greater the spending on different connectors, services, and solutions, resulting in a runaway budget. Suddenly, a project originally scoped for two connectors and two applications now requires six connectors, six applications, and higher costs than anticipated.

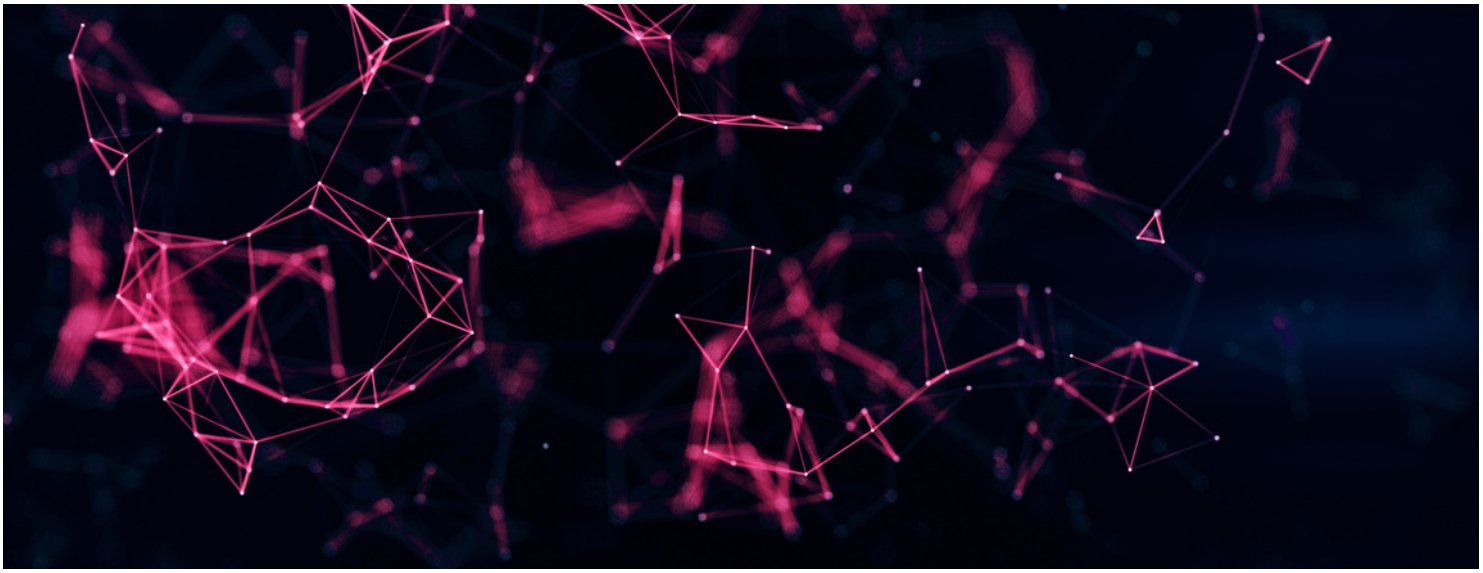
Challenges Faced With Big Data - Continued

LONG TIMELINES AND AND COMPLEX CONFIGURATIONS

When it comes to industrial projects, many companies make ambitious goals, create a reasonable roadmap, and marvel at their pre-work. But while these roadmaps look great on paper, they don't account for the difficulty of integrating structured and unstructured data and the subsequent creation of useful workflows. Companies struggle to sift through numerous cloud storage warehouses, build custom operational tools, and allocate the required internal resources, resulting in much longer timelines (and more complicated roadmaps) than originally anticipated. Midsize firms face the challenge of scale and resourcing. These organizations need a solution that can scale without requiring them to hire tons of engineers. Enterprise firms, on the other hand, certainly could scale headcount, but doing so would be a tremendous waste of time and resources. Enterprises need to focus on innovation. This requires access to tools that remove the minutiae of managing workflows from engineers' plates. Enterprise resources are better-served building and delivering new capabilities, not optimizing Excel reports.

THE BOTTOM LINE: DATA IS ONLY USEFUL IF YOU CAN USE IT TO BUILD OPERATIONAL WORKFLOWS

With all of the data coming from machines, devices, vehicles, and more, your enterprise has no shortage of data. But are your integrations adept enough to allow for operational decision making? Can you simulate changes to your operations before implementing them? And can you build workflows spanning the IT team, business strategists, and machine operators?



ODIN - A Technical Overview

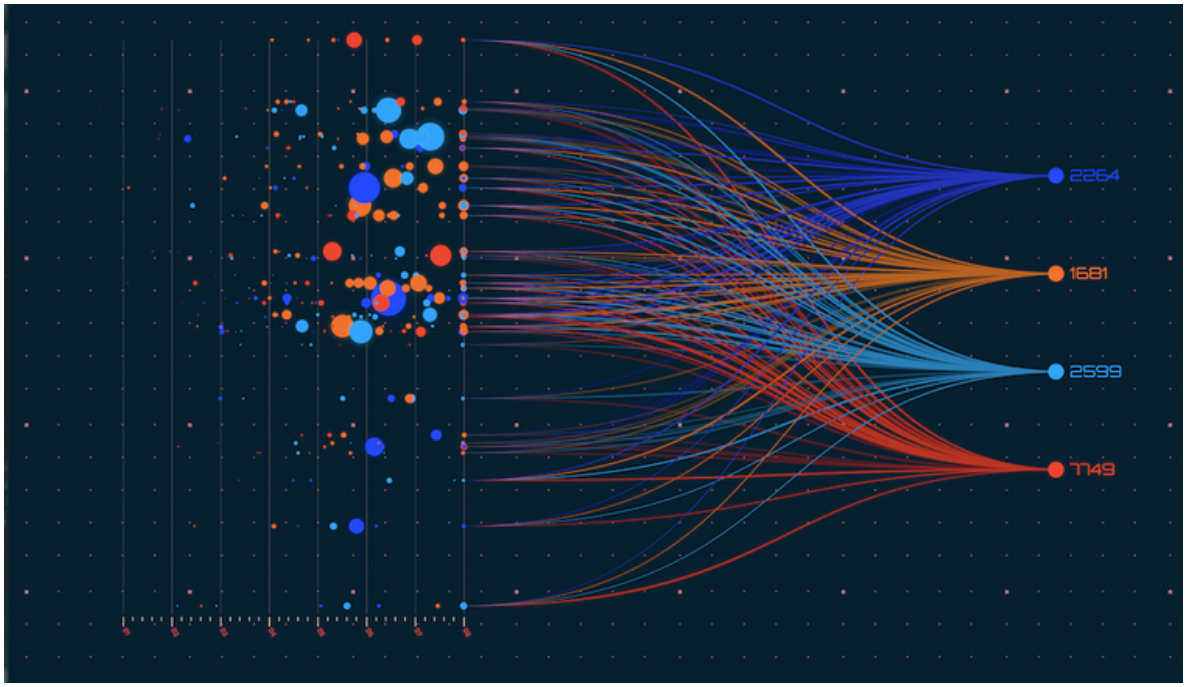
Odin is the operating system for the modern enterprise.

Odin As The Solution To Industry Challenges

We propose ODIN, a platform that empowers organizations to integrate various meta-data to generate insights and empower decision-making effectively. ODIN enables organizations to build a 'Digital Twin' of their organizations and the external environments to use Artificial Intelligence and Machine learning to recognize patterns, anomalies, correlations, etc. Odin can analyze large sums of data from different sources, departments, or even regions to generate insights that a human agent cannot analyze.

End-to-End Data Operating System

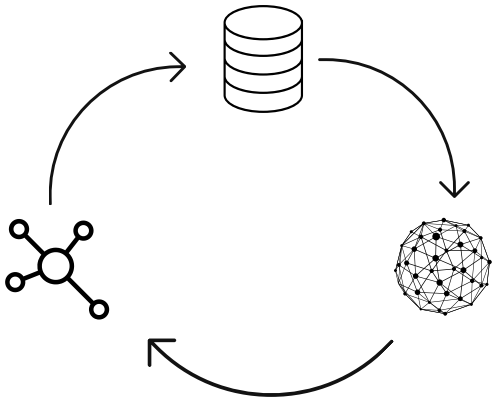
Data integration, visualization, and point analytics are helpful, but they don't provide a foundation to truly steer the organization and its operations. Our software creates software-defined feedback loops that span data, analytics, and business teams. These feedback loops are unique to Odin and essential for local and global organizational learning. Each layer of Odin contributes to the goal of delivering outcomes for the business at increasing complexity and ambition.



ODIN - A Technical Overview

Odin In A Nutshell

Odin is a highly available, continuously updated, fully managed SaaS platform that spans from cloud hosting and data integration to flexible analytics, visualization, model-building, operational decision-making, and decision capture. Your business is a-lot more complex than just one-directional data flows, operations run parallel to each other in multiple layers, data produced in all of these layers has connection across your organisation and there are insights to be generated via identifying correlation in your data all the way down to DB level. Having all of these capabilities available as part of a unified platform protects against the friction and risks associated with siloed technologies, and ensures a seamless experience where data history, security, and privacy are protected and maintained.



Key Elements of Odin

ODIN platform comprises five main elements:

Data Integration
Model Integration
Ontology
Workflows
Decision Orchestration

01. Data Integration

Secure, scalable, and resilient integration of all data sources.

DATA CONNECTION

- Data connectors, leveraging an extensible plugin-based paradigm
- Flexible ingress topology, which can leverage agent-based, REST, JDBC, and other approaches
- Easy-to-configure schedules, success criteria, and permission models
- Multi-modal (structured, unstructured, streaming, IoT, geospatial, etc.)

Examples:

- Mongo to mysql
- Mongo to psql
- PSQL to Mongo
- Mysql to mongo
- PSQL to mysql
- Myql to PSQL
- CSV to MYSQL
- CSV to PSQL
- TSV to MYSQL, PSQL
- Mongo to oracle
- PSQL to Mongo
- PSQL to oracle
- MYSQL to oracle
- Mongo to Microsoft SQL
- PSQL to Microsoft

DATA TRANSFORMATION

- Flexible architecture with bundled engines
- Low-code / no-code transformation (Preparation, Contour)
- Treating Data like Code (versioning, branching, full change management)
- Full provenance through the Job Spec paradigm

PIPELINE ORCHESTRATION

- Build system that is engine-agnostic
- Intelligent refreshing / state-tracking across all pipelines
- Seamless integration with Odin's health monitoring

Security

- Role-, Classification-, and Purpose-based paradigms
- Integration with existing authorization models
- Propagation by default; extreme configurability

Lineage

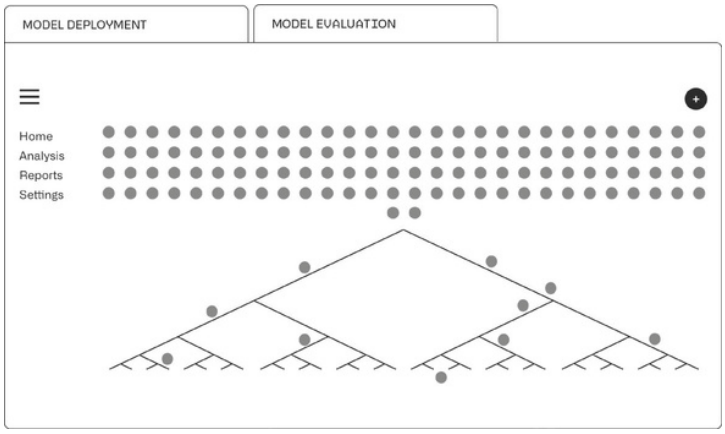
- Interwoven with security paradigm; provides immutable tracking
- Allows for impact analysis, granular usage analysis
- Rich APIs allow for navigation upstream and downstream, for a given resource

DATA HEALTH MONITORING

- Pre-built checks, and customisable checks
- Leverages Odin's lineage system, for alerting and impact analysis
- Full triage & tracking

02. Model Integration

Flexible integration (or registration) of models and business logic.



CODE WORKBOOKS

- An integrated, end-to-end workbench for model construction (PySpark, R, SparkSQL)
- Native, secure data access for model builders (dataset and ontology paradigms)
- Integrated model training, health, and management services
- Flexible deployment options, for use in operations (batch and inference)

EXTERNAL MODEL INTEGRATION

- Build and train your models in any industry-standard toolset
- API-driven connectivity to the Ontology from those external tools
- Promote into production through Odin, when ready

MODEL OBJECTIVES

- “Mission Control” for models being used throughout Odin workflows
- Rich, competitive evaluation of models; comparing performance
- Binding directly to the Ontology, which provides a “type system” for models - allowing them to be leveraged in myriad operational settings (without putting the onus on the application builder)

ISSM Labelling Solutions
Csquare Pvt Ltd
aarish@issm.ai
ashar@issm.ai

Document made by :
Aarish Naeem - Junior Engineer (CV)
Abu Abdullah Ashar - Chief Product Officer

The End