



Metal Minds

AI for steel – profit for you





Metal Minds

The AI-powered decision platform for Steelmakers



over **\$50**
achieve savings
per steel MT¹

1 – estimated savings with full-scale deployment of the entire Metal Minds solution portfolio



We do the math. You steer the business.



We transform your production data into a full-scale **Digital Twin** using our **CoreMelt** algorithm to automatically¹ fit our solutions for your processes.



Our tailored AI solutions let you focus on strategy by analyzing every scenario to uncover **hidden cost-saving** opportunities and automate **procurement, operations, and planning**.

1 - the most challenging process assumptions are calculated statistically, while strategic targets and constraints remain under human control.



How Metal Minds Drives Value

Foundational solutions

CoreMelt

Creates accurate digital twin for EAF and LMF
Recovers actual chemical composition for every material

CoreFlux

Calculates VIU cost and annual production based on mass-energy balance scenarios

Procurement saves Up to \$26/MT

OptiScrap

Optimizes scrap mix
Saves up to \$12/MT

OptiShred

Optimizes feedstock mix cost and aligns with mill specs
Saves up to \$10/MT

OptiAlloy

Minimizes ferroalloy recipe costs
Saves up to \$4/MT

Operations saves Up to \$11/MT

IntelMix

Improves scrap mix quality adherence
Saves up to \$7/MT

IntelAlloy

Reduces ferroalloy consumption
Saves up to \$4/MT

Planning saves Up to \$20/MT

SmartPlan

Automates casting and rolling schedules from orders
Saves up to \$20/MT



We Guide You Every Step of the Way

Adoption and Integration

We streamline your processes with customized solutions, seamlessly integrated to drive efficiency and accelerate growth.



Supervision and Recalibration

Post-deployment, we actively monitor, recalibrate, and refine our solutions, ensuring peak performance and sustained value for your business.



CoreMelt: create a digital twin and restore chemical composition of metallics

Business Impact

Recovers actual chemical composition for every material type

Extracts data and tailors other Metal Minds solution for client specific data

How It Works

Digital Twin Parameter Generation

Calculates and delivers all critical parameters required for complete digital twin integration

Advanced Statistical Heel Restoration

Accurately predicts and restores heel levels through proprietary statistical modeling

Comprehensive Mass-Energy Balance

Creates unified system equations across multiple heats, integrating steel chemistry, slag samples, and consumption metrics

Intelligent Error Minimization

Identifies true chemical composition of all incoming materials through sophisticated algorithm optimization

	Fe	C	Mn	Si	P	S	Cu	Ni	Cr	Mo	Al	SiO2	Al2O3	CaO	MgO	Fe2O3	Volatiles
Scrap A	94.98	0.30	0.40	0.15	0.03	0.03	0.23	0.08	0.15	0.02	0.02	0.02	0.50	-	0.25	-	2.84
Scrap B	98.52	0.30	0.40	0.15	-	0.00	0.03	-	0.15	0.01	0.02	-	0.41	-	-	-	-
Pig Iron	94.35	4.00	0.60	1.00	0.05	-	-	-	-	-	-	-	-	-	-	-	-
HBI	84.15	2.50	-	-	0.01	-	-	-	-	-	-	2.42	2.00	0.50	0.30	3.33	4.79
Scrap C	97.94	0.22	0.40	0.09	0.03	0.04	0.23	0.09	0.15	0.03	0.02	-	0.50	-	0.27	-	-
Scrap D	97.29	0.30	0.40	0.15	0.03	0.05	0.26	0.15	0.15	0.05	0.02	-	0.50	-	0.25	-	0.39



CoreFlux: precise mass-energy balance scenario calculator

Business Impact

Drive strategic raw material decisions with fact-based value-in-use cost analysis

Unlock potential savings of up to \$50 per metric ton through comprehensive scenario assessment

How It Works

Mass-Energy Balance Engine

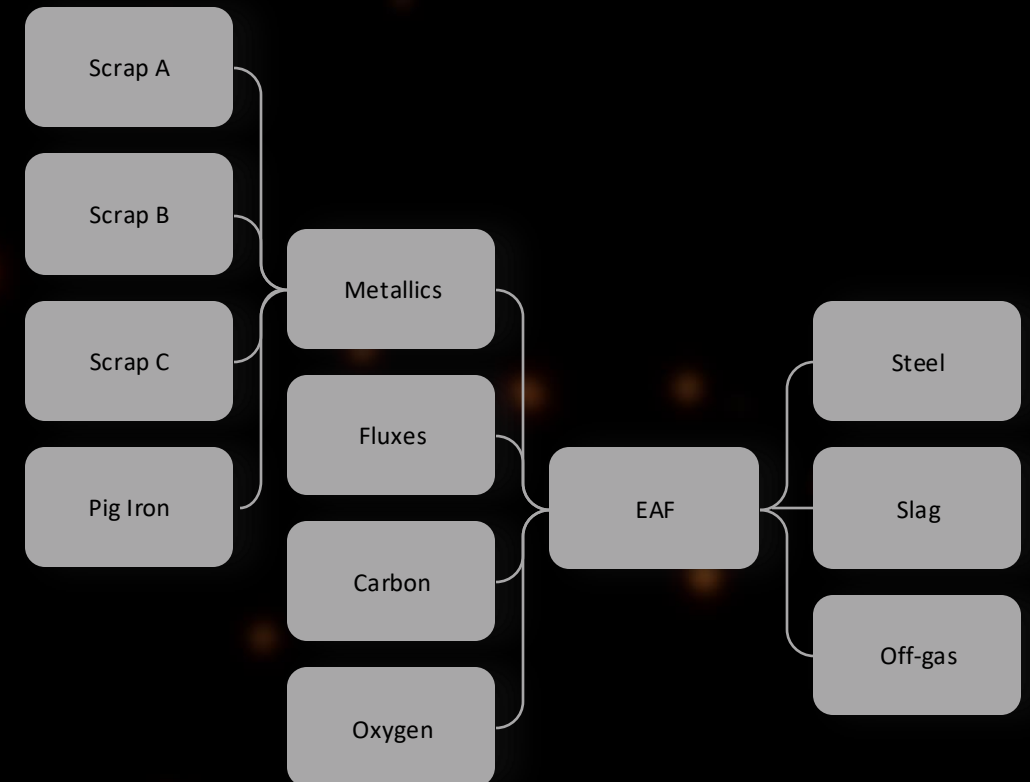
Calculates furnace performance (yield, energy use, tap-to-tap time) based on your input materials and composition.

Real Value-in-Use Cost Analysis

Computes actual steel production costs and projects annual financial impact of process changes.

Intelligent Scenario Assessment

Automatically identifies cost-saving opportunities by optimizing material mix and operational targets using both historical data and expert metallurgical insights.





OptiScrap: reduce scrap cost with optimized procurement

Business Impact

Up to \$12 per MT steel reduction in monthly scrap costs

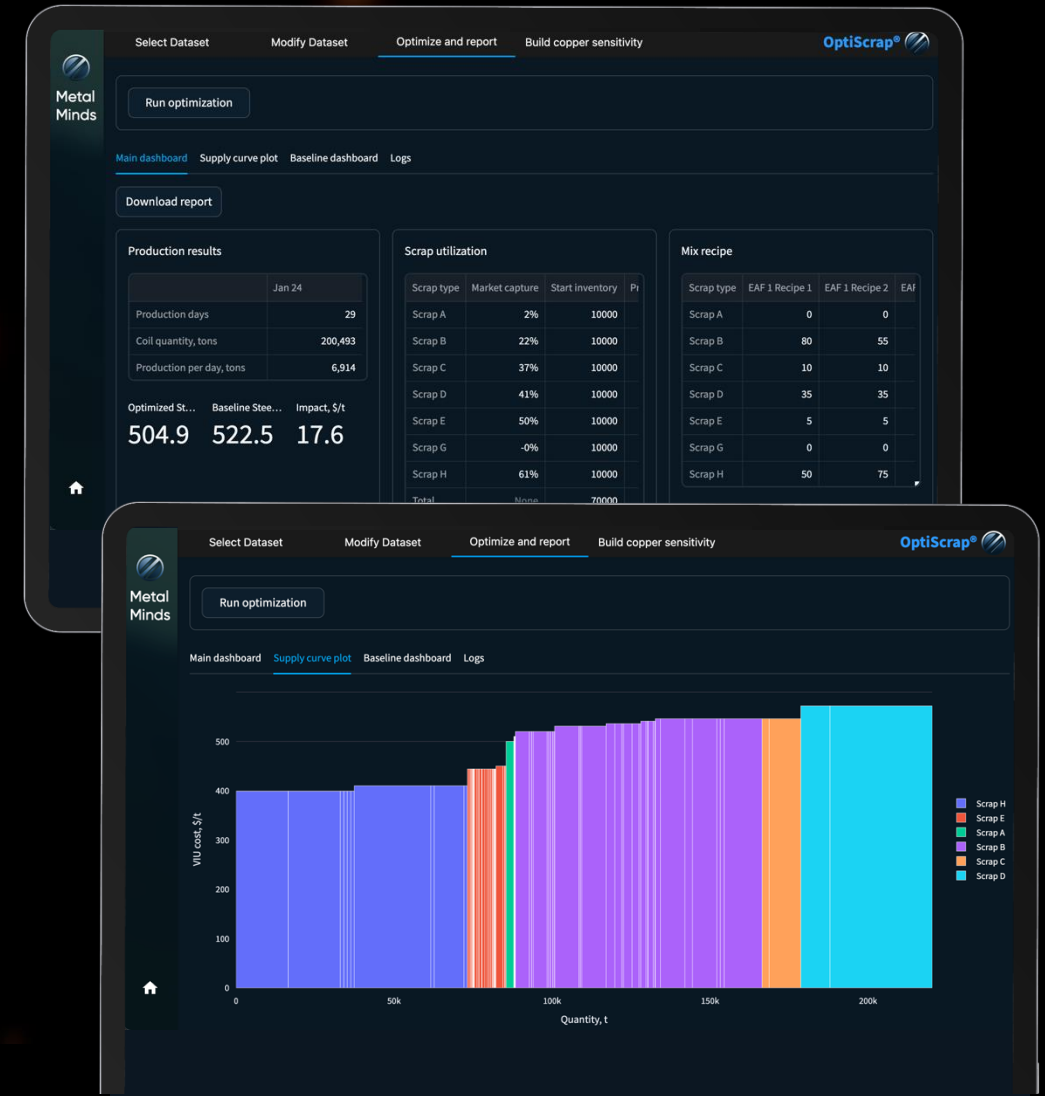
Optimized metal composition across production

How It Works

Monthly user updates to market data and constraints

AI compares all procurement options by value-in-use cost

System recommends most profitable scrap mix while respecting copper levels, type constraints, and production requirements





OptiShred: reduce feedstock cost and integration with meltshop for shredders

Business Impact

Achieve up to \$10 per ton cost reduction on feedstock materials

Maximize shredding capacity utilization

Seamlessly integrate procurement with meltshop operations (OptiScrap integration)

How It Works

Shredded Scrap Supply Curve

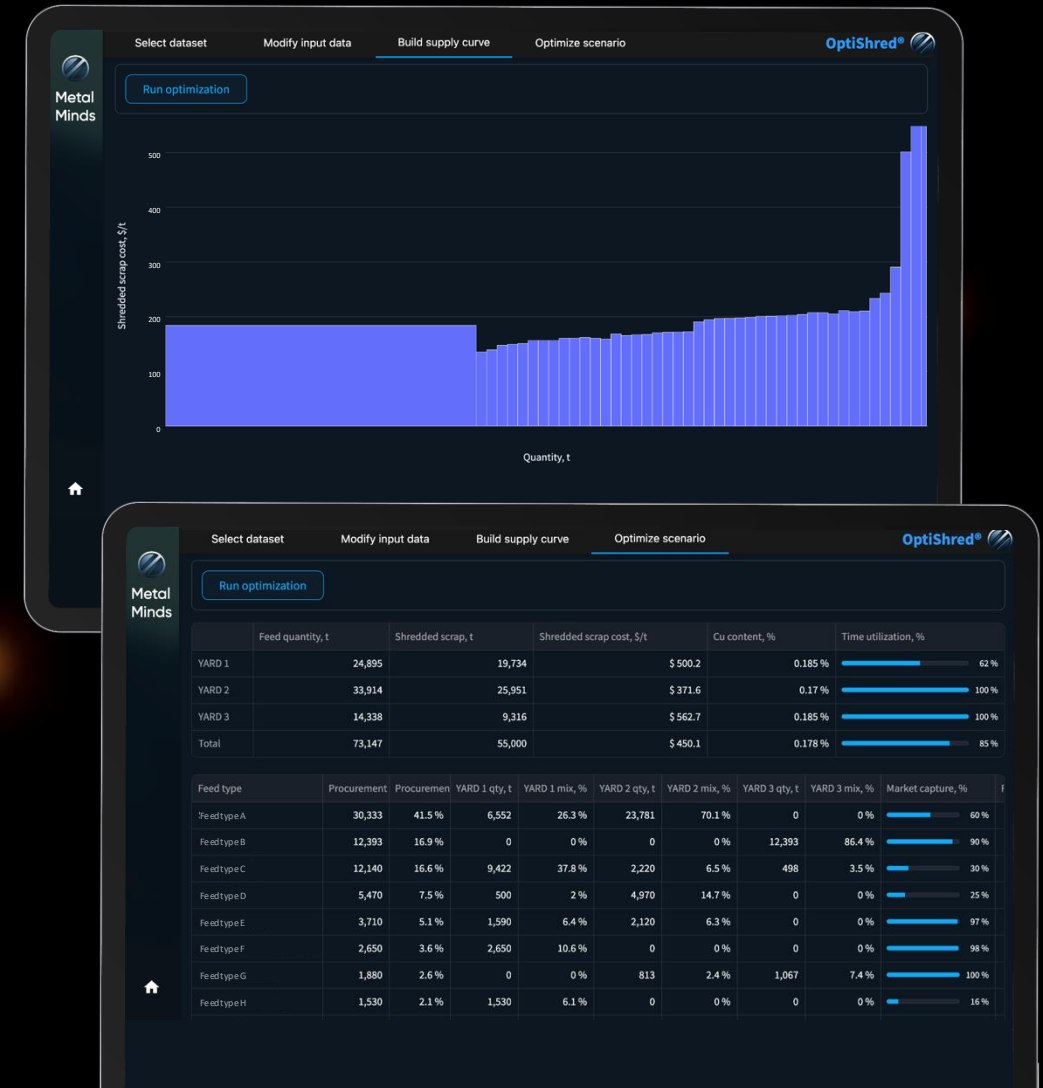
Converts diverse feedstock market options into a single optimized supply curve of output material.

Network Optimization

Routes feedstock to optimal shredding locations based on geographic availability and transportation logistics.

Procurement Execution

Following OptiScrap quantity and quality decisions, dynamically reoptimizes procurement strategy throughout the month.





OptiAlloy: Ferroalloy Recipe Optimization for Cost Reduction

Business Impact

Achieve up to \$4 per ton cost reduction through precision ferroalloy recipe optimization

How It Works

Recipe Optimization

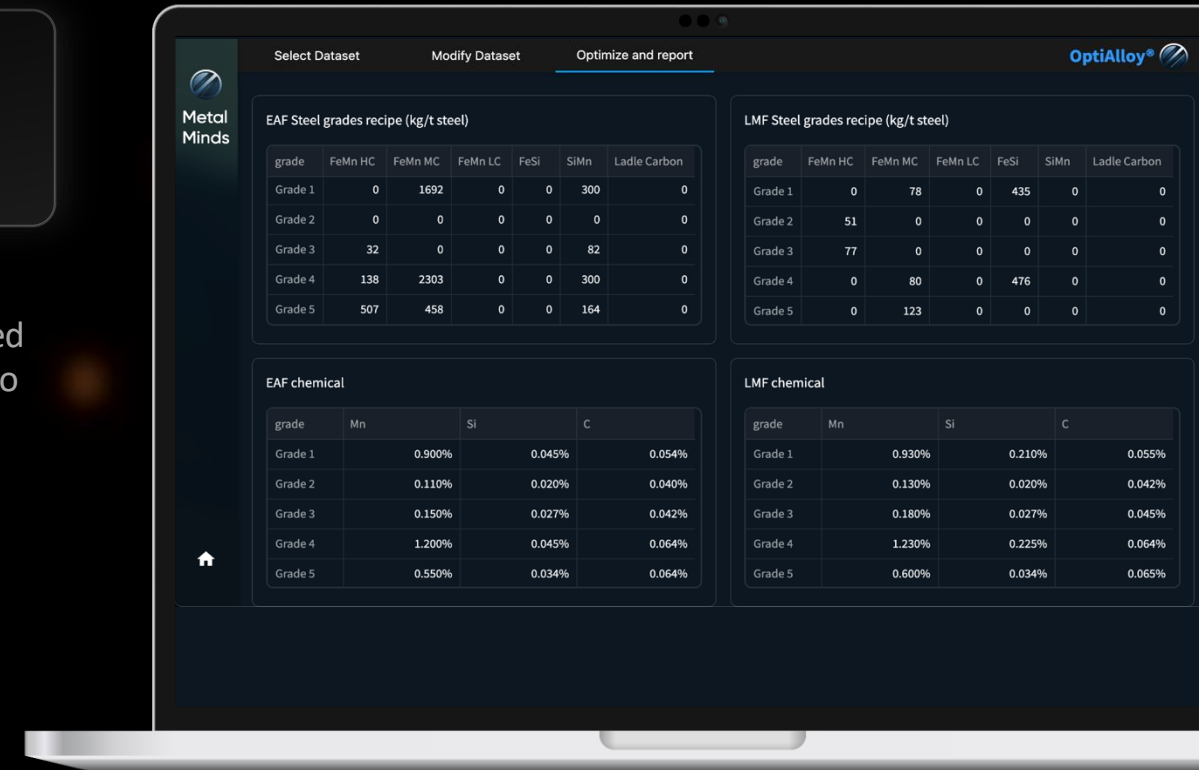
Creates optimal EAF and LMF addition recipes based on current market prices and grade specifications to maximize cost efficiency while meeting all quality requirements.

Dynamic Market Adaptation

Rapidly recalculates optimal recipes in response to changing market conditions, ensuring continuous cost optimization with minimal delay.

Seamless Integration

Fully integrated with existing systems for immediate implementation of updated recipes across operations





IntelMix: Real-Time Scrap Mix Optimization with Chemical Control

Business Impact

Deliver up to \$7 per ton cost reduction

Achieve 30% better adherence to planned mix targets

Enable more aggressive mixes with reduced buffers for critical elements like Cu

How It Works

Live Reoptimization

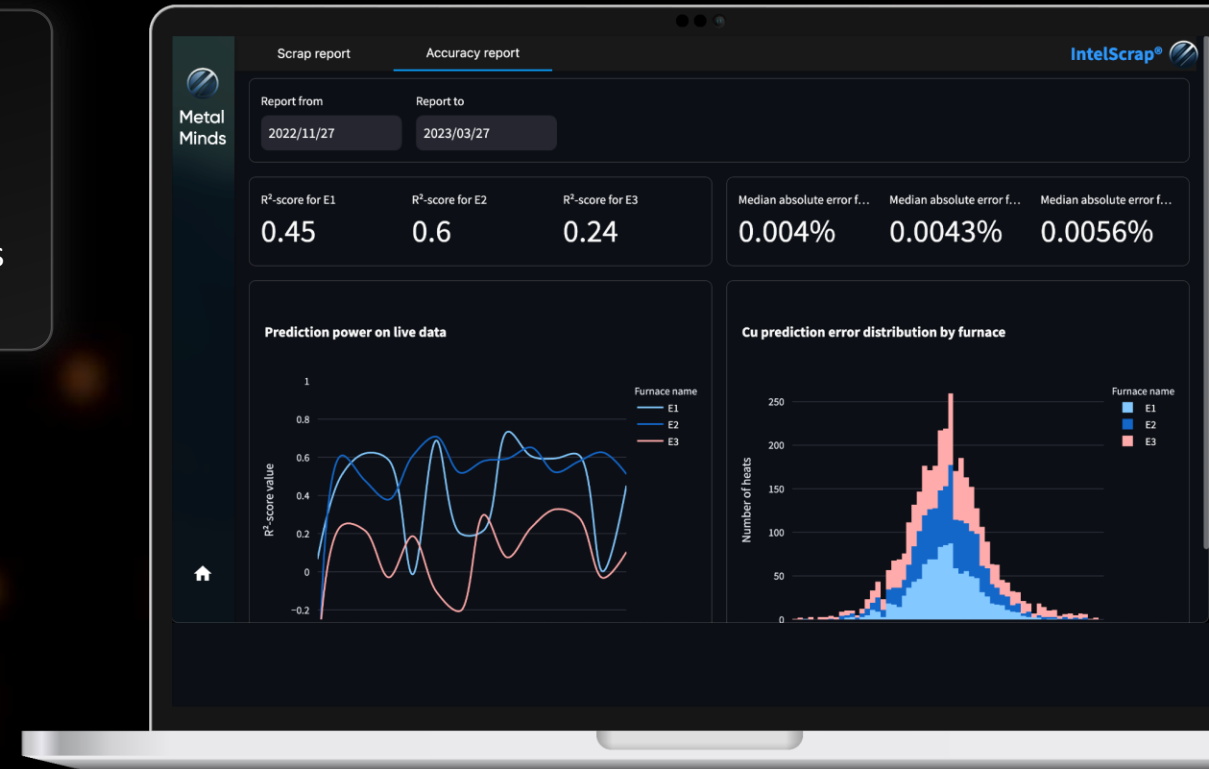
Continuously analyzes input from CoreMelt (tracking chemical composition of all material types) to verify chemical constraints and dynamically adjust mix when specifications are not met.

Intelligent Recovery

Automatically reverts to planned mix when chemistry normalizes, ensuring changes occur only when cost-efficient and necessary.

Seamless Operator Integration

Updated mix calculations are transmitted directly to crane operator screens without manual intervention, enabling immediate implementation.





SmartPlan: Intelligent Scheduling Optimization for Steel Production

Business Impact

Reduce fillerbars by up to 40% while increasing on-time delivery by up to 15%

Generate fully automated schedules from order book for both single and dual casting

Dynamically optimize existing schedules (1-2 days ahead) with incoming orders

How It Works

Proprietary Optimization Algorithm

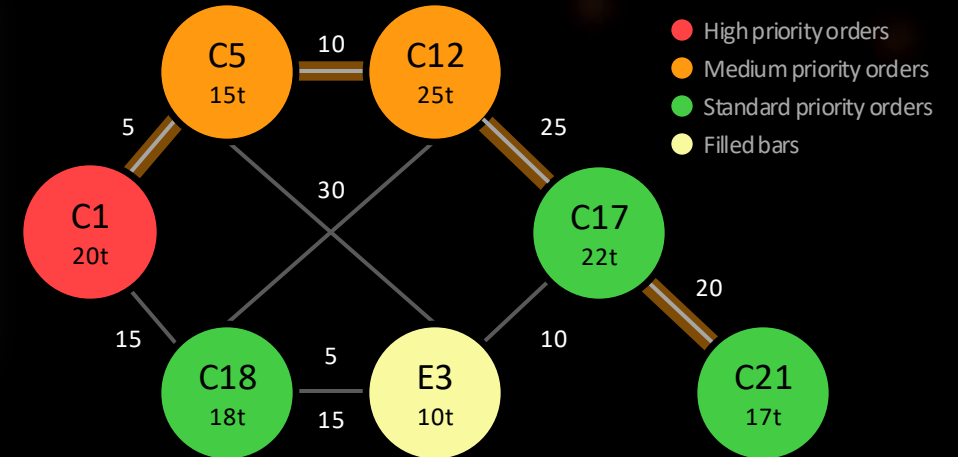
State-of-the-art optimization algorithm specifically designed to solve complex dual and single casting scheduling challenges across casting and rolling operations.

Comprehensive Constraint Management

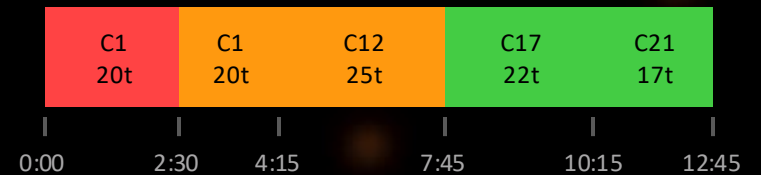
Processes all critical operational parameters including width and gauge transitions, heat size requirements, grade transition rules, starting and tailing bars, total schedule length, and more.

Automated Schedule Orchestration

Proprietary algorithm runs nightly to analyze the complete order book, evaluate new orders, reoptimize existing schedules (replacing filler bars when possible), and construct optimal new schedules.



Optimized schedule time



Filler bars: 0

Total production time: 12:45 hrs

Total transition cost: 60 units

 Ready to see these solutions in action?
Schedule your demo today.



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