Lithos AI: Product Specification

AI-Powered Critical Minerals Intelligence Platform

November 2025

Executive Summary

Lithos AI is a Bloomberg Terminal-inspired platform supercharged by artificial intelligence for the critical minerals industry. The platform transforms months of mining diligence into minutes by ingesting and analyzing drill-hole logs, technical reports, satellite imagery, offtake contracts, and ESG filings through fine-tuned LLMs and geospatial models.

The platform delivers instant diligence notes, cash-flow forecasts, and supply-chain risk maps for miners, traders, and financiers, replacing fragmented workflows with an integrated solution that accelerates decision-making in the $7.1B resource intelligence market.

Core Product Architecture

1. Global Mining Intelligence Index

Functionality:

- Continuously ingests and normalizes data from multiple sources:

  - Public filings from ASX, SEDAR, EDGAR, LSE exchanges
  - Technical reports (NI 43-101, JORC, SAMREC standards)
  - Drill results and resource estimates
  - Permitting documents and environmental assessments
  - Real-time news and announcements
  - Satellite imagery and geospatial data

- Maintains comprehensive profiles for 10,000+ mining projects globally

- Tracks 50+ critical minerals including lithium, copper, nickel, cobalt, rare earths

- Updates within 15 minutes of source publication

  Key Features:

- Advanced search with 100+ filterable parameters

- Custom watchlists with real-time alerts

- Bulk data export (CSV, Excel, API)

- Historical data tracking with version control

- Source-linked citations for audit trails

2. AI-Powered Analytics Engine

Functionality:

- Domain-tuned LLM trained on 1M+ mining documents

- Natural language query processing for complex research

- Automated extraction of key mining metrics:

- – Resource/reserve estimates
- – Production forecasts
- – Capital and operating costs
- – Metallurgical recoveries
- – Infrastructure requirements

- Comparative analysis across projects and commodities

- Risk assessment and red flag detection

Key Features:

- Plain-English queries with cited responses

- Multi-document synthesis and summarization

- Automated diligence memo generation

- Technical report parsing with 95% accuracy

- Anomaly detection for data quality issues

3. Financial Modeling Suite

Functionality:

- Dynamic DCF models with mining-specific parameters

- Real-time sensitivity analysis across key variables:

  - – Commodity prices
  - – Grade and recovery rates
  - – Capital and operating costs
  - – Discount rates
  - – Exchange rates

- Peer benchmarking and valuation comparables

- Monte Carlo simulations for risk assessment

- Automated financial statement analysis

Key Features:

- Pre-built mining financial models

- Interactive sensitivity charts

- NPV, IRR, payback calculations

- Production cost curves

- Export to Excel with formulas preserved

User Interface Components

1. Project Screener Dashboard

Features:

- Dense, spreadsheet-style table with 15+ simultaneous projects

- Advanced filtering with multi-select options

- Real-time search across all columns

- Column management and visibility controls

- Bulk actions (export, watchlist, compare)

- Conditional formatting for IRR, ESG scores, risk levels

- Infinite scroll with virtualization for performance

2. Project Detail View

Features:

- Comprehensive single-project analysis interface

- Key metrics cards (NPV, IRR, Payback, Production)

- Risk alerts and red flags panel

- Interactive sensitivity analysis with real-time calculations

- Similar projects recommendations

- Multi-tab interface:

    - Overview: Executive summary and key highlights
    - Technical: Resource details and mining parameters
    - Financial: Models and sensitivity analysis
    - Documents: Source files and reports
    - AI Insights: Generated analysis and recommendations
    - News: Related articles and announcements
    - Experts: Team profiles and contact information

3. Comparison Tool

Features:

- Side-by-side comparison of up to 5 projects

- Percentage differences with trend indicators

- Detailed comparison tables

- Toggle switches for ESG Score, Jurisdiction Risk

- Spider charts for visual analysis

- Export to CSV/PDF functionality

4. Interactive Maps

Features:

- Global heat map of mining activity

- Project locations with commodity filters

- Infrastructure overlay (ports, rail, power)

- Jurisdiction risk visualization

- Satellite imagery integration

- Distance calculations to key infrastructure

Data Collection & Processing

Mining Agent System

Architecture:

- **Orchestrator:** Coordinates multiple scrapers and document processing

- **Scrapers:** Exchange-specific collectors for ASX, SEDAR, EDGAR, LSE

- **Document Processor:** Extracts structured data from PDFs and reports

- **News Aggregator:** Real-time monitoring of 500+ sources

- **Quality Assurance:** Validation and anomaly detection

Processing Pipeline:

1. Source monitoring and change detection

2. Document retrieval and parsing

3. Data extraction and normalization

4. Quality validation and error correction

5. Database update and version control

6. Alert generation and distribution

Advanced Features

1. **AI Assistant Chat Interface**
   - Conversational interface for complex queries
   - Multi-turn dialogue with context retention
   - Document upload for custom analysis
   - Code generation for data analysis
   - Export conversations with citations

2. **Automated Reporting**
   - Weekly market summary reports
   - Portfolio monitoring dashboards
   - Custom alert configurations
   - Scheduled data exports
   - Email and webhook integrations

3. **API & Integrations**
   - RESTful API with comprehensive endpoints
   - GraphQL support for flexible queries
   - Webhook notifications for real-time updates
   - Excel plugin for direct data access
   - Python/R libraries for data science workflows

4. **Collaboration Tools**
   - Team workspaces with role-based access
   - Shared watchlists and portfolios
   - Annotation and commenting system
   - Version-controlled analysis documents
   - Audit trails for compliance

Technical Specifications

Technology Stack

- **Frontend:** Next.js 15.2.4, React 18, TypeScript

- **UI Components:** Radix UI, shadcn/ui, Tailwind CSS

- **Backend:** Node.js, Express, PostgreSQL

- **Database:** Supabase (PostgreSQL with real-time)

- **Authentication:** Supabase Auth with SSO support

- **AI/ML:** OpenAI GPT-4, Custom fine-tuned models

- **Web Scraping:** Firecrawl API, Puppeteer

- **Analytics:** Apache Spark for large-scale processing

- **Infrastructure:** AWS/Vercel, Docker, Kubernetes

Performance Metrics

- Page load time: ¡2 seconds

- Search response: ¡500ms

- Data refresh rate: 15 minutes

- API response time: ¡200ms (p95)

- Concurrent users: 10,000+

- Data accuracy: ¿95%

- Uptime SLA: 99.9%

Security & Compliance

- SOC 2 Type II certified

- GDPR and CCPA compliant

- End-to-end encryption for sensitive data

- Multi-factor authentication

- Role-based access control (RBAC)

- Comprehensive audit logging

- Regular penetration testing

Pricing Tiers

Basic Plan - $1,000/month

- 3 users
- 100 projects in watchlist
- Basic screening and alerts
- CSV exports
- Email support

Professional Plan - $2,500/month

- 10 users
- Unlimited watchlists
- Advanced analytics and AI assistant
- API access (10,000 calls/month)
- Custom alerts and reports
- Priority support

Enterprise Plan - $5,000+/month

- Unlimited users
- Custom data sources
- Private cloud deployment option
- Unlimited API access
- SSO and advanced security
- Dedicated customer success manager
- Custom integrations
- White-label options

Implementation Roadmap

Current Release (v1.0)

- Core screening and project database
- Basic financial modeling
- AI-powered search and insights
- Real-time data updates
- Export functionality

Q1 2026 (v1.5)

- Advanced sensitivity analysis

- Portfolio optimization tools

- Mobile applications (iOS/Android)

- Enhanced collaboration features

- Expanded commodity coverage

Q2 2026 (v2.0)

- Geological data integration

- 3D resource modeling

- Supply chain tracking

- ESG scoring engine

- Transaction marketplace

Q3 2026 (v2.5)

- Satellite imagery analysis

- Predictive analytics for project success

- Automated due diligence workflows

- Integration with trading platforms

- Blockchain-based audit trails

Competitive Advantages

1. **Speed:** 100x faster than manual analysis through AI automation

2. **Coverage:** Most comprehensive mining project database globally

3. **Accuracy:** 95%+ data extraction accuracy with source verification

4. **Integration:** End-to-end workflow from screening to decision

5. **Intelligence:** Domain-specific AI trained on mining data

6. **Cost:** 50-70% lower than incumbent solutions

7. **Usability:** Modern interface designed for mining professionals

8. **Real-time:** 15-minute data refresh vs daily/weekly competitors

Customer Success Metrics

- **Time Savings:** 90% reduction in research time

- **Coverage Increase:** 5x more projects monitored per analyst

- **Decision Speed:** 3 days to 3 hours for initial assessment

- **ROI:** Average 12x return on platform investment

- **User Adoption:** 85% daily active usage rate

- **NPS Score:** 72 (industry average: 35)

Support & Training

Onboarding Program

- Dedicated onboarding specialist

- Custom data migration assistance

- Team training sessions (virtual or on-site)

- Best practices documentation

- 30-day success review

Ongoing Support

- 24/7 technical support for Enterprise

- Comprehensive knowledge base

- Video tutorials and webinars

- User community forum

- Regular feature updates and improvements

Conclusion

Lithos AI represents a paradigm shift in mining intelligence, transforming how professionals discover, analyze, and act on critical minerals opportunities. By combining comprehensive data coverage, AI-powered analytics, and intuitive workflows, Lithos delivers unprecedented value to mining investors, corporate development teams, and industry consultants.

The platform's ability to compress months of diligence into minutes, while maintaining audit-quality accuracy, positions Lithos as the essential tool for navigating the rapidly evolving critical minerals landscape. With continuous innovation and customer-centric development, Lithos is building the operating system for the future of mining intelligence.

For more information or to schedule a demo:
www.lithosai.com
sales@lithosai.com
+1 (555) 123-4567