From Intelligence to EBIT:

AI Solutions that Know Your Industry

From volatile crude pricing to tightening refining margins and rising logistics costs, the Oil & Gas and downstream sectors are under relentless pressure. Traditional operating models struggle to safeguard profitability in such conditions. That's why **mcube™ by TCG Digital** was built—to help enterprises protect and grow EBIT through intelligent automation, AI-driven optimization, and real-time decision support. Whether it's maximizing yield in any given condition or enhancing process stability, mcube™ empowers operators to unlock hidden efficiencies and stay financially resilient—even in the most unpredictable markets.

Why **mcube™** for Oil & Gas?

1 Business logic at its core

2 Our secret sauce? Hybrid process modelling

3 Global deployments in complex environments

4 Rapid time-to-value : With 'under-3-month' deployments

"VELOCITY TO VALUE" is not just our mantra but what we achieve for enterprises - rapid ROI realization

Qualitative Benefits

Feedstock Cost Analysis
- ↑7% Yield
- 6× Faster decisions
- +$80/MT Margin

Optimizing Economic benefit from Spend Analysis
AI-powered Digital Twin:
- +NPV by $300M
- +1.5 wt% Yield
- ↓1–2% TIC/KTA

Real-Time Optimizer (RTO)
↑Profitability, efficiency, ↓CAPEX via bottleneck detection

Grade Sequence Optimization:
- ↑Throughput
- ↓Non-prime production
- ↓Inventory & stock-outs

Remote Monitoring
↑Yield ↓Energy
↑Asset uptime

Lab Analytics
LIMS analytics set up in 8 weeks → $200K revenue boost

Hydrocarbon Loss Analysis
- 100% Accurate allocation
- $10M Raw material savings

Inventory Optimization:
Optimized inventory:
- ↓0.40% MRO
- – $6.7M Inventory levels
- Cleared dead stock

ePOD:
Real-time tracking, pilferage control, billing automation, better transporter performance insights

Asset Monitoring
- ↓Disruptions
- ↑Asset visibility via mobile-first platform

Smart Turnaround
- 20× Faster insights
- New KPIs
- ↑Licensee satisfaction

Pricing Analytics
- Real-time visibility & actions
- +$2M Revenue

Logistics Optimization
Unified logistics & analytics:
- $5.5M Saved
- 15% Vendor performance ↑

Sales Analytics & Forecasting
- Real-time forecasts
- Agile plans
- ↑Revenue
- ↓Working capital

mcube™
by tcgdigital

| Procurement | Business Planning | Production | Maintenance | Distribution | Marketing & Retail |

This is a multi-year transformational project with several business use cases already implemented and live, and others at different stages of completion. Economic Benefit is based on our internal estimates.

mcube™-Powered Portfolio for Your Plant's EBIT Performance & Reliability spans 3 aspects of business value

Autonomous Plant Enablement for optimized EBIT in any given condition

Solutions that reduce manual load, automate transitions, and enable AI-driven decision-making

Intelligent Operations Optimization

Solutions that improve yield, energy, throughput, economics, and planning efficiency

Improving Plant Reliability & Risk Advisory

Solutions that reduce downtime, prevent failures, and increase asset availability

Our Capabilities

Automated Plant Control

AI-controlled feedback loops to self-regulate pressure, flow, and temperature with minimal human intervention.

Real-Time Process Optimization

Live tuning of energy usage, catalyst efficiency, and yields based on changing crude quality or market conditions.

Digital Twin for Process Units

Simulate unit behavior to test changes, predict failures, and run stress scenarios.

GenAI-Driven Predictive Maintenance

Predict critical failures using LLMs and auto-generate SOPs or intervention paths, tailored to current asset condition.

Remote Monitoring & Advisory Hubs

24/7 remote diagnostics with intelligent alerting, risk scoring, and event correlation across facilities.

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mcube™
by tcgdigital

TCG Digital is the digital & AI arm of The Chatterjee Group (TCG), a multi-billion dollar conglomerate with a diverse portfolio in Aviation, Pharmaceuticals, Biotech, Petrochemicals, and Real Estate across the US, EU, and South Asia. Our umbrella includes companies such as LabVantage, Lummus Technology, and TCG LifeSciences. At TCG Digital, we are driven by our mantra of delivering "Velocity to Value", helping enterprises transform faster and smarter. Our AI Analytics platform mcube™ is at the heart of these transformations. We enable organizations unlock the full potential of their data, and by seamlessly integrating AI/ML capabilities into their business processes, we empower businesses to accelerate their digital transformation journey, enhancing agility and driving impactful results.

www.tcgdigital.com

mcube™ is TCG Digital's flagship Data, AI, and Analytics platform—engineered at the intersection of deep industry knowledge and digital innovation. Built on a domain-driven design, it seamlessly navigates the most complex and disparate data landscapes. With AI 2.0 at its core, mcube™ fuses advanced models with real-world context to solve high-impact business challenges. By integrating mcube.data, mcube.ai, and mcube.agents, it transforms enterprise data into intelligent ecosystems. mcube™ drives semantic discovery through ontologies, and empowers agentic applications for autonomous decision-making and continuous learning. From harmonizing data to deploying intelligent agents, mcube™ accelerates 'velocity to value'—delivering clarity, intelligence, and outcomes at scale.

www.tcgdigital.com/tcg-mcube

Contact Us

✉ contact@tcgdigital.com
🌐 www.tcgdigital.com

📍 **TCG DIGITAL SOLUTIONS LLC**
265 Davidson Ave, Suite 220 Somerset
New Jersey 08873