SMART ENERGY SOLUTIONS

REVOLUTIONIZING ENERGY MANAGEMENT WITH ADVANCED DATA ANALYTICS

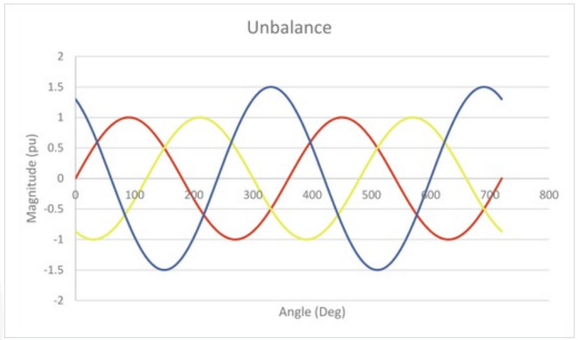
PROBLEMS

01 **Monitoring and controlling electrical parameters in real-time**

- Voltage;
- Current;
- Active/reactive power;
- Cos ϕ

02 **Energy Theft Detection and Management**

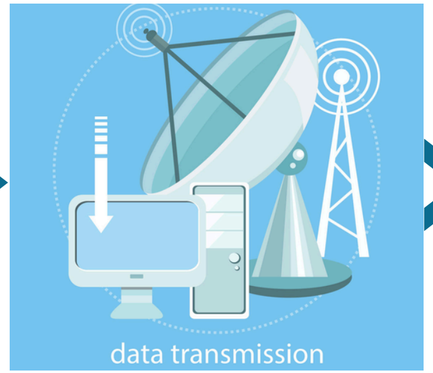
- To determine a phase unbalance



OVERVIEW

Installation

Deployment of smart meters equipped with sensors and communication modules.



Data Transmission

Establishing communication networks for data transmission, including wireless, cellular, and mesh networks.

Data Collection

Aggregation of data from multiple smart meters into centralized data management systems.

DATA ANALYSIS

Utilizing advanced algorithms and machine learning models to visualize and analyze the data to extract meaningful insights.

OUR PRODUCT

AMI DATA ANALYTICS PLATFORM

With our innovative systems, companies can remotely monitor and control energy usage, accurately and securely.

Data visualisation

Our data analytics platform features intuitive dashboards that visualize real-time and historical energy data from smart meters and report it in an accessible format.

Data-Driven Energy Management

Our system uses machine learning algorithms to provide companies with actionable insights to optimize energy distribution, detect anomalies, predict demand patterns, and improve overall grid efficiency.

OPTIMIZING ENERGY USAGE IN INDUSTRIAL SETTINGS

REDUCE COSTS, EFFICIENCY AND ACHIEVE SUSTAINABILITY

Real-Time Monitoring

- Tracks energy parameters (voltage, current, power factor);
- Identifies inefficiencies for timely adjustments.

Anomaly Detection

- Machine learning algorithms detect unusual patterns;
- Prevents energy losses form malfunctions or theft.

Sustainability & Cost Reduction

- Reduces waste and carbon footprints;
- Lowers energy costs, improving financial performance.

Predictive Insights

- Analyzes demand patterns for peak/off-peak planning;
- Optimizes scheduling for cost efficiency and renewables.

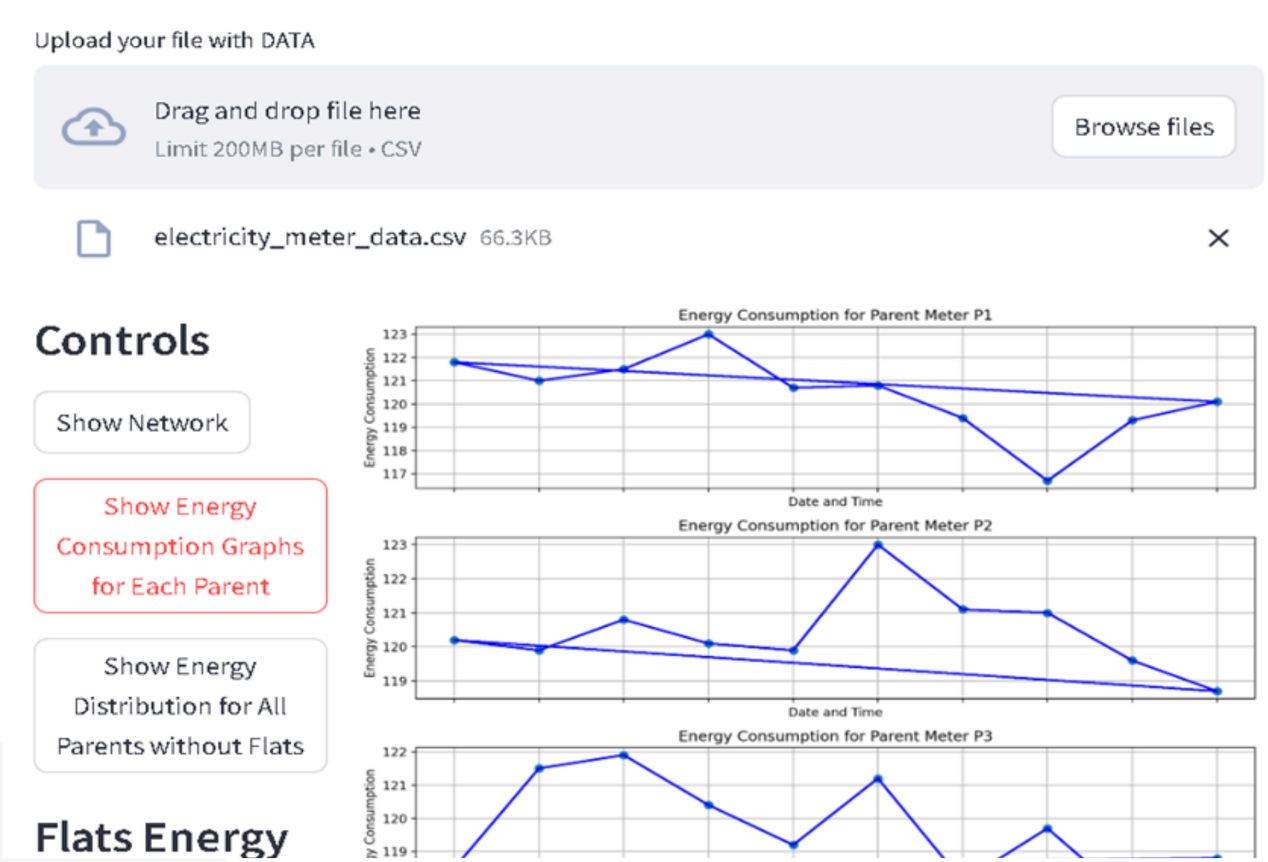
Energy Theft Prevention

- Detects imbalances and anomalies to minimize losses.

TECHNOLOGY

Kirchhoff's 1 law:
The sum of all currents entering a junction must equal the sum of all currents leaving the junction.

We will use open source machine learning algorithms to define the standard measurements.



We will patent, algorithms used to find the measurements from more profound research.

During the piloting, we **decreased the energy consumption from 21% to 3%.** The results are prepared for publication.

Smart Energy Solutions

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БИН 230140033145

Генеральному директору
ТОО «Kazakhmys Smelting»
Байгабелову Жанибек Алтынбековичу

Предложение о проведении пилотного проекта по оптимизации энергопотребления и внедрению системы мониторинга и предиктивной аналитики в рамках Smart Industrial решений

ТОО «Smart Energy Solutions» специализируется на разработке и внедрении передовых, инновационных решений в области повышения энергоэффективности и надежности электросетей.

В продолжение разговора с главным энергетиком Байтоковым Габит Жакыповичем, **ТОО «Smart Energy Solutions»** предлагает реализовать пилотный проект *в одном из цехов* заводов **ТОО «Kazakhmys Smelting»**, который станет важным шагом в направлении внедрения решений **Smart Industrial** (Приложение 1).

Проект предполагает использование передовых технологий для мониторинга и оптимизации процессов на предприятии, что позволит повысить эффективность и устойчивость работы.

В рамках пилота будет реализована система, включающая:

Установку постоянных анализаторов электроэнергии и датчиков для сбора данных о токе, напряжении, температуре и состоянии оборудования.

Интеграция датчиков вибрации и температуры на критических узлах оборудования. Организация передачи данных в облачное хранилище с использованием IoT-шлюзов.

Интеграцию облачного решения с искусственным интеллектом и машинным обучением для прогноза отказов оборудования, оптимизации потребления энергии и выявления аномалий в реальном времени.

Визуализация данных и аналитики будет предоставлена через интерактивные дэшборды. Реализация рекомендаций по балансировке нагрузки, улучшению качества электроэнергии и настройке оборудования.

Прогнозирование пиков нагрузки и автоматическую корректировку работы оборудования для минимизации потерь энергии и повышения общей эффективности.

Ожидаемые результаты пилота (при выполнении всех рекомендаций) включают:

Снижение потерь электроэнергии на 10-20%.

Уменьшение аварийных ситуаций и внеплановой остановке производства, благодаря предиктивной аналитике.

Повышение эффективности работы оборудования и снижение эксплуатационных затрат.

Успешная реализация пилотного проекта создаст основу для дальнейшего масштабирования на другие цехи и объекты **ТОО «Kazakhmys Smelting»** и **Корпорации Казахмыс**, открывая возможности для повышения конкурентоспособности и привлечения инвестиций в устойчивое и технологичное производство (Приложение 2).

С уважением,
Директор **Германов О.К.**

Smart Energy Solutions

ОТПРАВИТЬ ДАННЫЕ

Спасибо за Ваше сообщение.
Оно успешно отправлено.

ALATAU SPECIAL ECONOMIC ZONE TECHNOPARK

О нас | Инвесторам | Резиденты | Новости | Контакты | Вступить в ПИТ | Рус Қаз

Управляющая компания Специальной экономической зоны «Парк инновационных технологий»

Наша задача состоит в создании современных высокопроизводительных и конкурентоспособных производств.

Формирование качественно нового уровня предоставления услуг, привлечения инвестиций, внедрения новых технологий в отрасли экономики и региона.

Подробнее о компании

CERTIFICATE OF COMPLETION

PRESENTED TO:

SMART ENERGY

TO CERTIFY COMPLETION OF

4-WEEK ONLINE PRE-ACCELERATION PROGRAM

PROGRAM DURATION: JULY 16 – AUGUST 8, 2024

This intensive program covered key areas in entrepreneurship, innovation, and doing business in the US, equipping participants with essential skills for business growth and development.

SILKROAD INNOVATION HUB

ASSET ABDUALIYEV
Founder & CEO

ASROR ARABJANOV
Co-Founder

IGTIC GCIP NGIN NETWORK FOR GLOBAL INNOVATION UNIDO gef

GCIP KAZAKHSTAN 2024

this is to certify that startup

Smart Energy Solutions

has successfully completed

INNOVATION ACCELERATION PROGRAM

in the frame of Global Cleantech Innovation Programme in Kazakhstan - Promoting cleantech innovation and entrepreneurship in SMEs for green jobs in Kazakhstan

August 22 – November 21, 2024

Karimsakov D.N.
Chairman of the Board
"International Green Technologies and Investment Projects Center" NCJSC

01.12.2024 | Astana

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СЕРТИФИКАТ

Energy Smart

Курсы сәтті аяқтағаны үшін
Startup Academy

МАГЖАН МАДИЕВ

«Astana Hub» АТ – Стартаптар халықаралық технопаркі» корпоративтік қорының бас Директоры

NAZARBAYEV UNIVERSITY SOCIAL DEVELOPMENT FUND

SIT Foundation

NAZARBAYEV UNIVERSITY RESEARCH AND INNOVATION SYSTEM

CUSTOMER SEGMENTATION

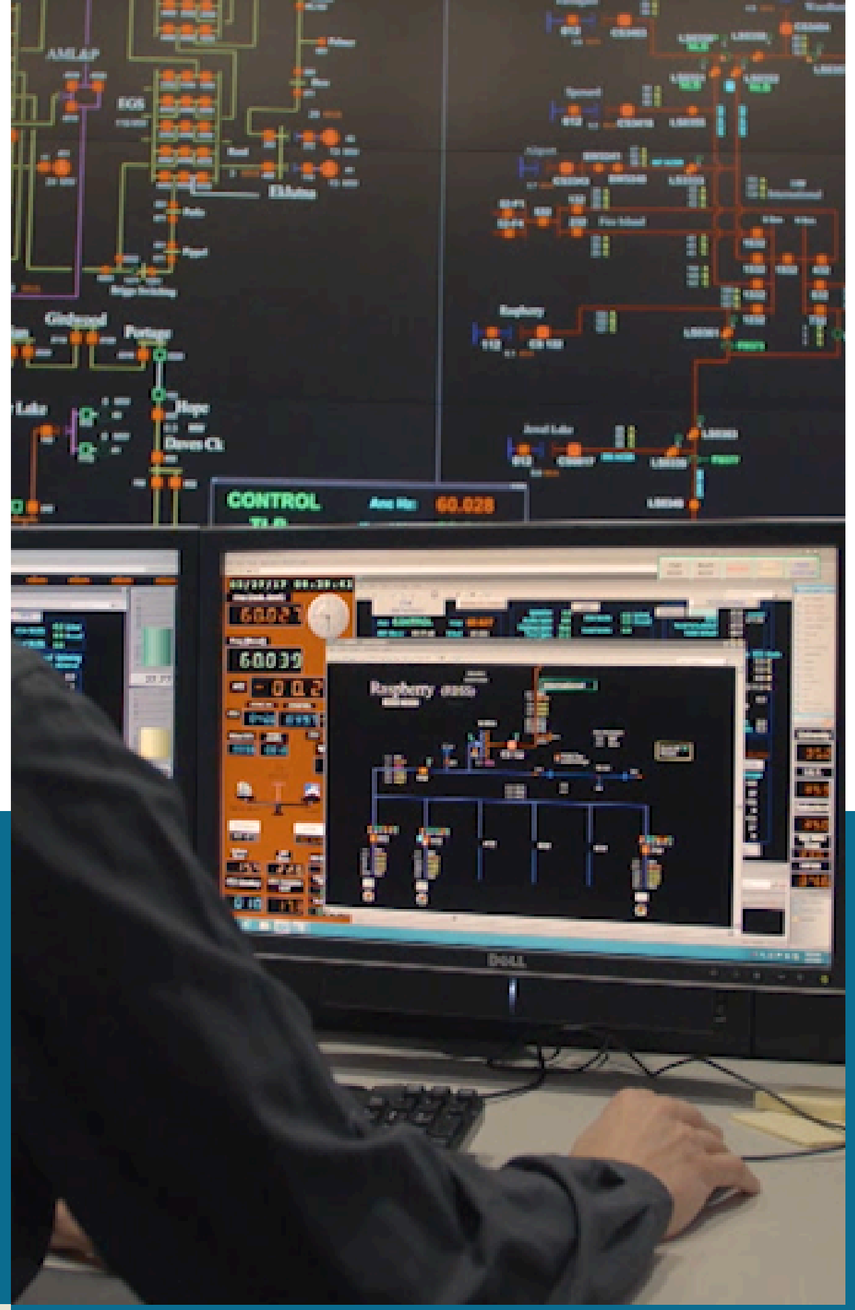
Industrial Factories

Energy Distribution Companies

- Dispatching service
- Department of “Automated systems for monitoring and accounting of electricity”

ADJACENT SEGMENTATION

- Utility Companies
- Smart Meter Manufactures
- Water Distribution Companies
- Gas Distribution Companies



GO TO MARKET TACTICS

- Consulting
- 1-3 months of trial usage for distribution (or utility) companies

DISTRIBUTION CHANNELS

- Internet, short educational videos
- Trade (industrial) conferences
- Organizing educational seminars

MARKET SIZE

$ 30 000 000

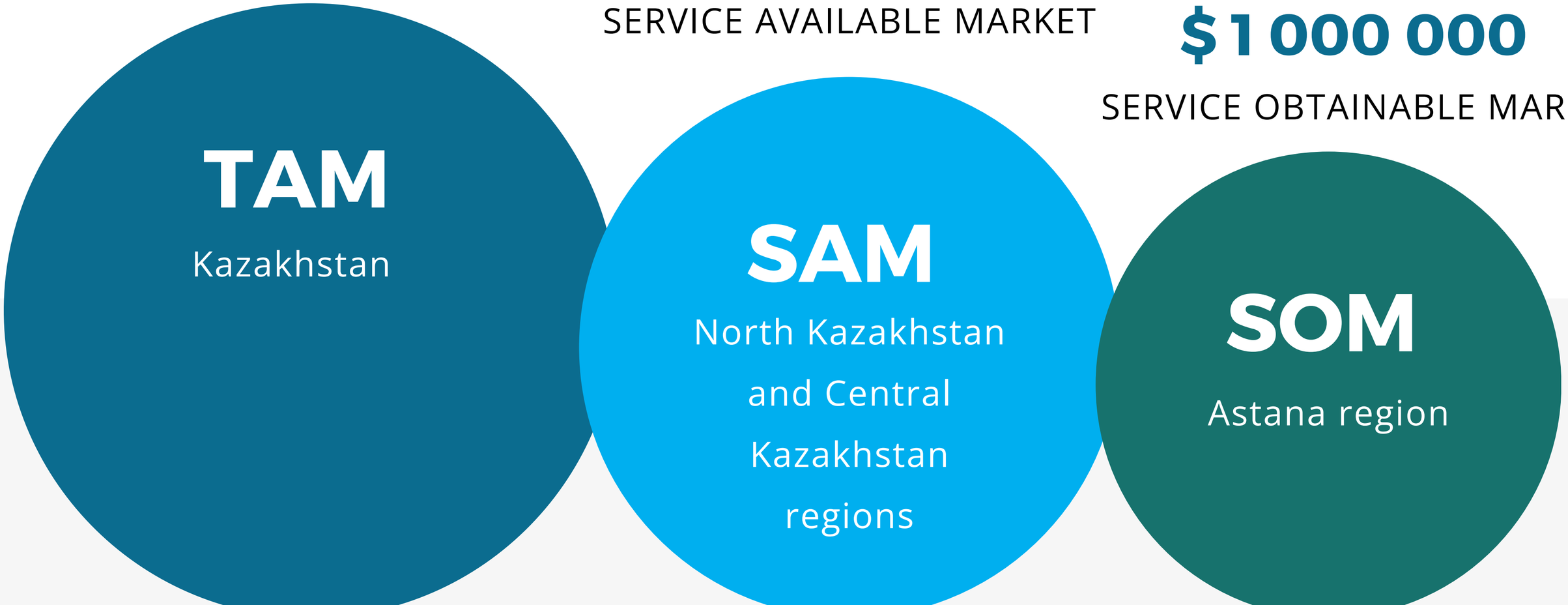
TOTAL AVAILABLE MARKET

$ 8 000 000

SERVICE AVAILABLE MARKET

$ 1 000 000

SERVICE OBTAINABLE MARKET



BUSINESS MODEL

LICENSING

Description: We will charge the licensor for usage to access and use the platform.

Advantages: Provides a steady revenue stream, encourages customer loyalty, and allows for ongoing feature updates and support.

Annual Technical support

SUSTAINABILITY & IMPACT

7 AFFORDABLE AND CLEAN ENERGY

Aligned with UN SDG 7

- Goal 7.3.1: Energy Efficiency Improvement
  - Drives industrial energy efficiency and cost savings.
  - Promotes cleaner energy integration and compliance with climate goals.

Smart Energy Solutions's total impa	Carbon footprint CO_2eq.	eco-costs of human health euro	eco-costs of eco-toxicity euro	eco-costs of resource depletion euro	eco-costs of carbon footprint euro
Impact per changed user	-17879 kg	144	714.2	328	-2378
Impact of Smart Energy Solutions in total	-161t	1296	6428	2952	-21401

GOVERNMENT REGULATIONS: KAZAKHSTAN

Opportunities

Decarbonization Commitment by 2060

- driving demand for energy-efficient technologies in industries.
- Policies promote the adoption of smart meters, energy analytics, and renewable integration.

Energy Efficiency Regulations

- Law on Energy Saving (2012): Mandates energy-saving measures for industrial enterprises.
- Our Advantage: Platform aligns with compliance and cost-saving goals.

Green Economy Strategy (2050):

- Target: Reduce energy intensity by 50%.
- Our Edge: Assists industries in achieving energy efficiency and carbon reduction targets.

Digital Kazakhstan Program:

- Promotes digital transformation across industries.
- Opportunity: Potential subsidies for adopting smart technologies.

Carbon Emission Reporting:

- Emissions Trading Scheme (ETS) compliance tool for enterprises.
- Our Role: Help track and optimize emissions to reduce penalties

Challenges

Data Privacy & Cybersecurity

- Strict regulations on personal data protection.
- Mitigation: Robust cybersecurity and transparent data handling policies.

Regulatory Barriers for Tech Adoption

- Bureaucratic delays in approving new technologies.
- Mitigation: Partner with government bodies to streamline adoption.

Electricity Pricing Controls

- Regulated tariffs may limit cost-saving incentives.
- Mitigation: Emphasize operational efficiency and compliance benefits.

COMPETITIVE LANDSCAPE

Features	AMI Data Analytics Platform	SIEMENS energy	Itron	Honeywell Smart Energy	Schneider Electric
Interactive Dashboards	Yes, adaptible for industries	Yes, grid-focused	Yes, utility-focused	Yes, building-focused	Yes, industrial and commercial
Anomaly detection	Energy theft detection	Grid-scale diagnostics	Fraud detection	Focus on buildings	Fault detection
Network Optimization	Cost-effective industrial optimization	Grid-focused	Distribution optimization	Integrated systems	Large industrial setups
AI/ML Integration	Tailored ML models for industrial data	Predictive and prescriptive AI	Demand and fraud AI	Smart building AI	Operational efficiency AI
Affordability	Accessible to mid-sized industries	High-cost, enterprise	Scalable for utilities	Mid- to high-cost	Premium segment
Kazakhstan Focus	Localized for compliance and needs	Global approach	Minimal localization	Global tools	Limited regional alignment

FINANCIAL MODEL

Category	Year 1	Year 2	Year 3
Revenue			
Licensing Fees	$200,000	$500,000	$1,000,000
Data Analytics Service	$100,000	$150,000	$200,000
Total Revenue	**$300,000**	**$650,000**	**$1,200,000**
CapEx			
Data Center Setup	$100,000	$25,000	$0
Hardware Procurement	$30,000	$20,000	$20,000
Total CapEx	**$130,000**	**$45,000**	**$20,000**
OpEx			
Employee Salaries	$100,000	$150,000	$250,000
Cloud Services	$25,000	$50,000	$75,000
Sales and Marketing	$30,000	$50,000	$70,000
Total OpEx	**$155,000**	**$250,000**	**$395,000**
Net Profit	**$15,000**	**$355,000**	**$785,000**

Revenue Growth:

- Licensing fees increase due to scaling with more customers adopting the AMI platform.
- Data analytics service fees rise with enhanced insights and predictive modeling demand.

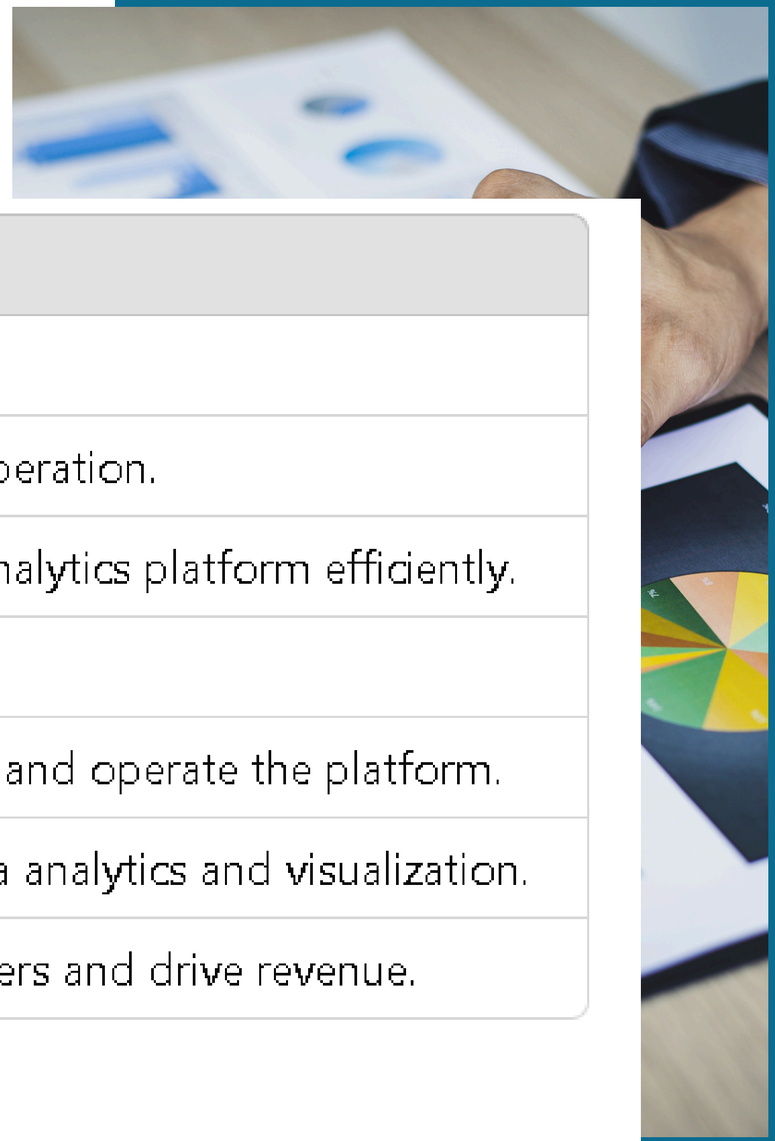
CAPEX:

- High initial costs for infrastructure installation reduce significantly in later years.
- Includes investments in compliance with Kazakhstan's regulatory requirements.

OPEX:

- Costs grow with increased usage and operational scale.
- Incorporates compliance, cybersecurity, and localized marketing campaigns.

INVESTMENT REQUEST



Category	Amount	Description
CapEx	**$130,000**	
- Data Center Setup	$100,000	Essential infrastructure for platform operation.
- Hardware Procurement	$30,000	Equipment required for running the analytics platform efficiently.
OpEx	**$120,000**	
- Employee Salaries	$80,000	Initial lean team to develop, maintain, and operate the platform.
- Cloud Services	$20,000	Hosting and computing costs for data analytics and visualization.
- Sales and Marketing	$20,000	Targeted efforts to attract early adopters and drive revenue.

Total Investment Request: $250,000

TEAM

Energy – 12 years
Management – 3 years
Data analytics – 2 years

Experties

OLZHAS TURMANOV

FOUNDER, CEO,
PRODUCT MANAGER

2021 - Sheffield University
MSc International Management,
2014 - MEng Power Engineering

Machine learning – 7 years
Visualisation – 7 years
Data science and analytics – 2 years

Experties

NAZERKE RAKHYMBAYEVA

CO-FOUNDER, CTO
SOFTWARE DEVELOPER

2024 - Nazarbayev University
PhD Science, Engineering & Technology,
2013 - BSc Computer Science

Energy – 17 years
Management – 12 years

ADIL KABZHANOV

PARTNER

17 years of experience in the Power Industry.
12 years in managerial positions.
5 years of experience in energy consulting in five Central Asian countries

KEGOC

University of Sheffield

CMI

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The University of Manchester

NAZARBAYEV UNIVERSITY

2024

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