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Innovate · Integrate · Deliver

Industry 4.0 - Success Story

From Manual to Machine: AI/ML Implementation Boosts Bioenergy Efficiency

- RemoteBridge™ (IoT)
- Nutrient Reckoner (AI/ML)

iProgrammer Success Story

A Quick Glimpse

Praj Industries

2024

BioEnergy | Praj Hi Purity Systems | Critical Process Equipments and Skid | Waste Water Treatment | Brewery and Beverages

Overview - Praj Industries

Today Praj is a globally leading company with a bouquet of sustainable solutions for bioenergy, high purity water, critical process equipment, breweries and industrial waste water treatment. Headquartered in Pune, India, Praj has spread its presence across the globe with 1000++ References in 100+ countries across all 5 continents.

Strength

90+ **PhDs** and **Technologists**.

R&D center

Certified by **Department of Scientific and Industrial Research, Government of India.**

Wide Spread

80,000 sq.ft. area covering labs, pilot plants and offices.

Bio Park

Private Sector Biotech Park status by Government of Maharashtra.

The Business Need

Praj Industries - A large industrial biotech company setting up ethanol bioenergy plants for its customers wanted to recommend products and recipes for improving the yield/output of its customers plant based on their blend's current composition.

Pain Point

Manual Delay, Lower Output

In the Bioenergy ethanol plant, the client has setup monitoring and measuring mechanism in place. It offers products that can be added at various stages of a yield to improve output. Some products are also used for preventive and corrective measures.

Despite meticulous monitoring and a diverse product arsenal, delays were caused by manual nature and manpower constraints create a frustrating lag.

By the time recommendations arrive, the composition has shifted, hindering yield potential. This manual approach leaves valuable gains on the table, impacting both profitability and sustainability goals.

Our Solution # 1
Nutrient Reckoner

Real-time Biofuel Insights

An **event-based IoT platform** that transmits composition data periodically **to a centralized system.**

AI Alchemist

An **AI/ML model** was **developed and trained** using rounds **generated by chemical scientists.**

Corrective Actions

As a next step, proactive actions are taken which enhance overall efficiency and optimize output.

IoT and AI Driven recommendations

On **breaching a threshold**, the **IoT engine calls the AI model,** which evaluates the composition and generates a product/recipe **recommendation.**

Automated Action

The recommendation is sent to the client, it's customer and distributor as a **SMS + Email alert** and also CRM as draft order on the customer's behalf.

Output

AI Unleashes 12% Yield Increase, 87% Recipe Accuracy, Automated Efficiency

In a nutshell, iProgrammer team built an algorithm using AI/ ML to analyze parameters and recommend the best catalyst in the composition and sell it further. This was a perfect **AI/ML** platform built on customized business requirements.

Nutrient Reckoner was designed, developed, and trained with the help of team of scientists from Praj Industries.

Recipe of Precision

87% accuracy of the predicted product recipe.

Surge In Yield

12% increase in yield across subscribing customer plants.

Data at Your Fingertips

Digitized record-keeping and report automation

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Our Solution # 2
Remote Bridge

We proposed an innovative platform that will leverage the **Industry 4.0 technologies, like Internet of Things (IOT), Cloud Computing, Networking, Open-Source Systems and Smart Customizable Applications** in a unique way for **delivering value to customer.**

Remote Monitoring

A system that will help Praj Industries to monitor, analyze, and control the performance of its customer sites remotely.

24x7 Availability

RemoteBridge(TM) will provide critical 24/7 remote monitoring, diagnostics & troubleshooting.

O & M Service Guarantees

We guarantee rapid response time, exceptional plant availability, optimized performance efficiencies, strict adherence to production plans, and zero lost time due to safety concerns.

Maintenance Services

A real time data figures that will enable **Preventive**, **Predictive** & **Corrective** Maintenance
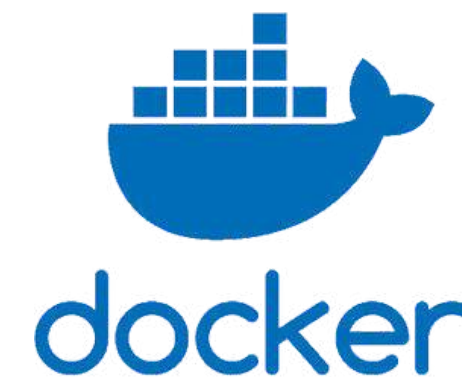
Operation Services

Performance Monitoring, Issue Detection, Curtailment, Developed SOP's, and Daily/Monthly/Annual Reporting.

Technologies Used

In-depth client discussions paved the way for a comprehensive Business Requirement Document, thoroughly prepared by our Solution Design and Business Analyst team.

The same document empowered our technology team to identify the right mix of technology to bring this to life

What Praj Industries said about us

★★★★★

I was impressed with their enthusiastic team. I also liked their knowledge and team organization in the technology we required. Demonstrates good team work.
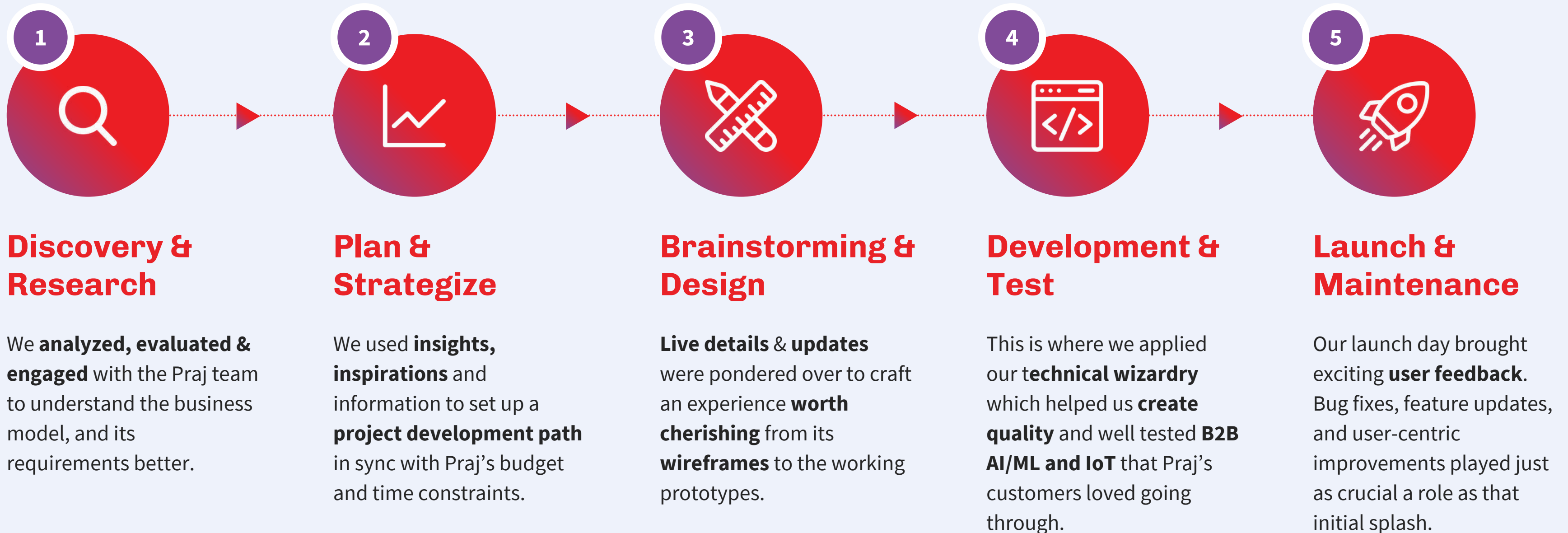
Quality ★★★★⯪

Schedule ★★★★⯪

Cost ★★★★★

Willing to refer ★★★★★

Vijay Ramchandran
Vice President
Praj Industries Ltd.

How did we do?
Our Approach

1 Discovery & Research

We **analyzed, evaluated & engaged** with the Praj team to understand the business model, and its requirements better.

2 Plan & Strategize

We used **insights, inspirations** and information to set up a **project development path** in sync with Praj's budget and time constraints.

3 Brainstorming & Design

Live details & **updates** were pondered over to craft an experience **worth cherishing** from its **wireframes** to the working prototypes.

4 Development & Test

This is where we applied our t**echnical wizardry** which helped us **create quality** and well tested **B2B AI/ML and IoT** that Praj's customers loved going through.

5 Launch & Maintenance

Our launch day brought exciting **user feedback**. Bug fixes, feature updates, and user-centric improvements played just as crucial a role as that initial splash.

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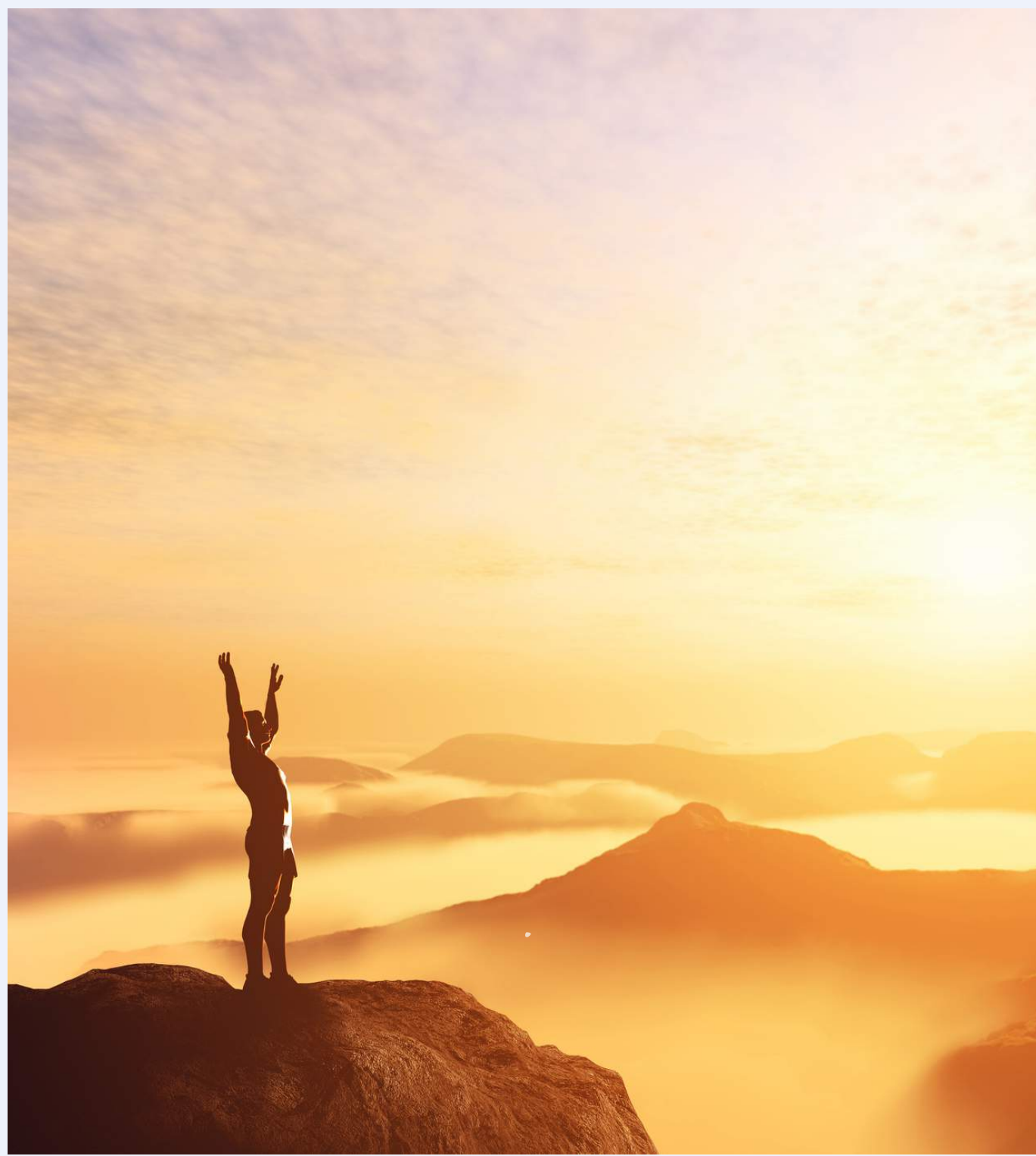
A Quick Glimpse

iProgrammer Solutions

2024

(+91) 879 621 9605

sales@iprogrammer.co

Our Business Summary

15 years in the technology world feels like we've gone through more updates than any app! We're not just experienced, we're practically vintage in the industry – think fine wine, but for IT expertise.

300+

Successful products across web & mobile delivered till now.

128 MN+

Around 128 million end users have used our developed applications.

Fortune 500

iProgrammer has been the technology partner to **Fortune India 500 - Hero Corp, Tata Communications and HDFC.**

4 Million

Our B2C mobile application developed for Vodafone-Idea currently has 4 million **daily active users (DAU).**

Our Assets, Our Customers

and many more...

What do we offer?
Our Services

Product Engineering

- UI/UX Engineering
- Web Application Development
- Mobile App Development
- Backend/Middleware Development
- Frontend Development
- QA / Test Engineering
- Legacy System Modernization

Data Analytics

- Data Science
- Data Visualization
- Data Security
- Infrastructure
- OCR Implementation

Cloud & DevOps

- Cloud Consulting
- DevOps Consulting
- DevSecOps Consulting
- CI/CD & Infrastructure Automation
- Kubernetes Adoption

Startup Consulting

- Product/MVP Development
- Statutory Compliance Consulting
- Technology Consulting
- Application Development
- UI/UX Design and Business Branding
- Customer Experience Strategy

LET'S BREW SOME COFFEE TOGETHER.

✉ Email us for inquiries or feedback
sales@iprogrammer.co

📱 Contact us on

India: +91 879 621 9605
USA: +1 678 999 2111
UK: +44 208 133 156
Australia: +61 430 808 102
Saudi Arabia: +971 581 078 987

🌐 Find more information
www.iprogrammer.com

Thank you!
We look forward to
working with you.