# Public Report: Modulo 3 – Integrated AI Management Solution for Foodservice SMEs

## Introduction

Modulo 3 builds upon the foundation established in Modulo 2, advancing the vision of an AI-powered management platform tailored for small and medium-sized foodservice businesses in Brazil. While Modulo 2 focused on market validation, user journey mapping, and strategic positioning, Modulo 3 transitions the project from concept to working prototype, delivering tangible software artifacts and demonstrating technical feasibility.

## Sprint Execution & Decisions

Modulo 3 was executed over five agile sprints, each targeting a critical phase of solution development:

### S1. Wireframe Development

- Created initial wireframes to visualize the user experience and core dashboard flows.
- Decisions focused on simplicity, prioritizing the most essential KPIs and business health metrics for the restaurant owner persona.

### S2. Mockup Development

- Refined wireframes into high-fidelity mockups using modern UI libraries.
- Validated design choices with stakeholders, ensuring the interface remained intuitive and actionable.

### S3. Frontend Development

- Implemented the dashboard UI in Next.js and TypeScript, leveraging reusable components and responsive design.
- Integrated charting libraries and UI frameworks to support data visualization and user interaction.

### S4. Backend Development

- Developed a FastAPI backend with PostgreSQL, modeling core business entities (sales, orders, inventory, users, restaurants).
- Implemented RESTful endpoints for key metrics (revenue, orders, inventory alerts) and

ensured secure, scalable architecture.

### S5. Solution Integration

- Connected frontend and backend, enabling live data flow for KPIs and dashboard metrics.
- Added CORS support, environment variable management, and Docker-based deployment for seamless local and cloud development.
- Validated the solution with real data, demonstrating the ability to deliver actionable insights in real time.

## Comparison to Modulo 2

- Modulo 2 focused on market research, user pain points, and strategic design decisions. No working software was produced.
- Modulo 3 delivers a functional prototype: a full-stack web application with integrated frontend and backend, real-time KPI dashboard, and production-ready deployment scripts.
- The transition from Modulo 2 to Modulo 3 marks a shift from theoretical validation to practical implementation, proving the technical viability of the AI-powered management concept.

## Insights & Conclusion

Modulo 3 confirms that the core requirements identified in Modulo 2 can be addressed with modern web technologies and agile development practices. The project now offers:

- A user-friendly dashboard for business health monitoring
- Live integration of financial and operational KPIs
- Scalable architecture ready for future AI and conversational features

By delivering a working solution, Modulo 3 validates the initial hypothesis and sets the stage for further enhancements, including advanced AI integration, multi-tenancy, and expanded business intelligence capabilities. The project continues to focus on empowering small business owners with intuitive, actionable tools, bridging the gap between operational complexity and strategic decision-making.