

The current version is #ident "@(#) \$Format:LocalFoodAI\_lanfr144:Final\_Report.md:Francois Lange:lanfr144@school.lu:2026/06/16 09:25:09:Francois Lange:lanfr144@school.lu:2026/06/16 09:25:09:1e316d1030d64b01b8cbc5cdb3a3a272a963caff:: \$"

# Final Project Report (Living Document)

## What Has Been Done

- **Core Architecture:** Deployed a resilient 8-container local fallback Docker Compose stack (MySQL, Streamlit UI, local Ollama LLM, anonymous SearXNG search, secure Nginx proxy, and local Zabbix Server/Web/Agent observability suite).
- **Database Optimization:** Successfully loaded OpenFoodFacts records and utilized advanced vertical partitioning and FULLTEXT indices.
- **Clinical Subquery Strategy:** Refactored the core Pandas/SQL query pipeline to use subquery limiting, resolving Cartesian join explosions and reducing query latency to ~0.04s.
- **Monitoring & Security:** Nginx securely proxies traffic on Port 80. Zabbix actively monitors proxy and server health, dynamically handling SNMP/alert loops in local/offline fallback mode.
- **Git Versioning:** Implemented Git `.gitattributes` to push #ident "@(#) \$Format: {projectName}:{fileName}:{tags}\$" tracking directly into the Python Application UI.

## What Needs To Be Done (Day 2 Operations)

- **SSL/TLS Certificates:** The Nginx proxy is functional on HTTP port 80. Port 443 (HTTPS) must be configured with a Let's Encrypt certificate for true production encryption.
- **User Acceptance Testing (UAT):** Clinical dietitians should rigorously test the AI Chat constraints and Plate Builder to ensure edge cases are handled safely.
- **Advanced Rate Limiting:** Limit the number of AI requests per user using a sliding window algorithm in `app.py`.

## What Is The Next Step

- Execute the `data_sync.sh` cron job monthly.
- Maintain the automated `backup_db.sh` 7-day retention cycle.
- Begin the hand-off to the operational team for Phase 2 feature requests.