



Thousand Sunny - AI-Driven Level-2 Product Ops for PORTNET®

PSA CodeSprint 2025 | Problem Statement 3 - *Redefining Level 2 Product Ops*

1. Overview

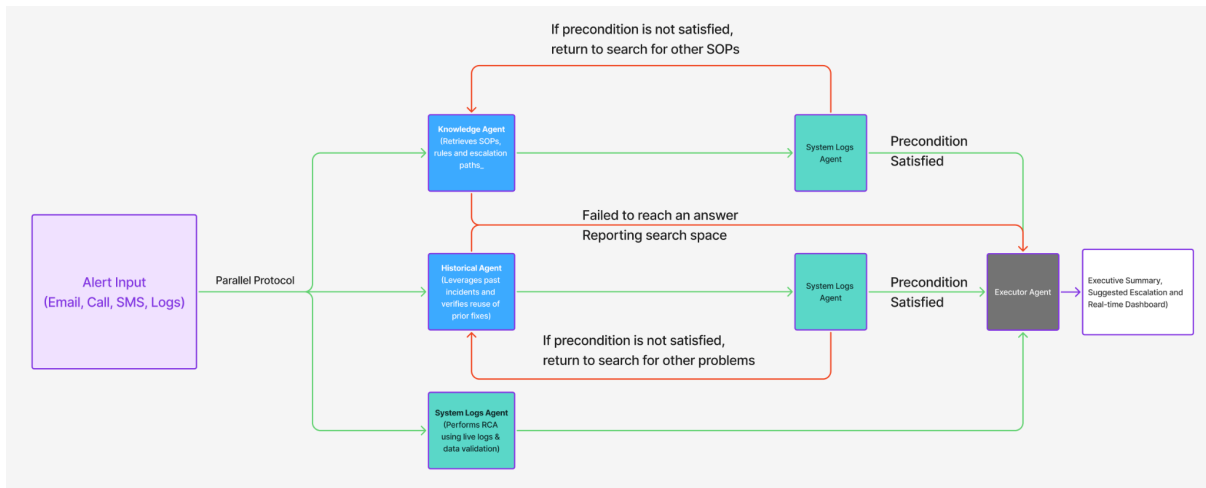
PORTNET®, the world's first nationwide B2B port community system, handles **350M+ transactions** annually and connects shipping lines, hauliers, freight forwarders, and government agencies across Singapore's maritime ecosystem.

Any incident in PORTNET® can cause cascading disruptions across this digital supply chain. Our solution - **Thousand Sunny AI** - is a **multi-agent system** designed to empower duty officers with faster, smarter, and more reliable incident management. It reduces resolution time, enhances operational resilience, and ensures business continuity for PSA's port operations.

2. Key Objectives

- **Accelerate incident resolution** through AI-driven root cause analysis and automated response generation.
- **Enhance reliability and foresight** using multi-agent collaboration across knowledge, historical, and system log data.
- **Automate ticketing and escalation** workflows for seamless digital operations.
- **Provide real-time monitoring** and actionable insights through an interactive dashboard.
- **Ensure scalability and data integrity** using cloud-native databases and modular architecture.

3. System Architecture



4. Agent Roles

Agent	Core Function
Knowledge Agent	Retrieves Standard Operating Procedures (SOPs), preconditions, and escalation contacts
Historical Agent	Mines similar past incidents and adapts solutions for the current case
System Logs Agent	Parses system logs for patterns and root cause validation
Executor Agent	Aggregates agent outputs and generates escalation summaries + auto ticket

5. Data & Infrastructure

- **Storage:** AWS-based cloud databases for historical data, system logs, and knowledge base
- **Data Pipelines:** Log data transformed into CSV and ingested into databases for analysis
- **Scalability:** Supports concurrent alerts and high-volume transaction logs
- **Embedding Models:** Utilized for semantic search across historical and knowledge datasets

6. Impact & Benefits

Benefit	Description
Faster Resolution	Significant reduction in Mean Time To Resolve (MTTR) for critical PORTNET® incidents
Operational Resilience	Minimises downtime, supports 24/7 maritime operations

Data-Driven Decisions	Intelligent prioritisation and pattern recognition
Scalable Architecture	Ready for cross-port deployment and future AI expansion
Seamless Integration	Plug-and-play with PSA's existing ticketing systems

7. Next Steps

- Integrate Executor Agent with PSA's internal ticketing APIs
- Deploy a conversational front-end for duty officer interaction
- Expand dashboard analytics and trend predictions
- Add adaptive learning using feedback from incident outcomes

8. How to use

- **Access via this link:** <https://psacompetition-66778899.streamlit.app/>
 - If the deployed Streamlit app is temporarily unavailable, you may run it locally using the following steps:
- **Local:**
 - Download and unzip the file
 - Go to the terminal, run these commands
 - `pip install -r requirements.txt`
 - `streamlit run main.py`
 - Access to the link in the terminal.
- **Access the Looker Dashboard here**
 - <https://lookerstudio.google.com/reporting/92fd24f6-779b-43ee-a9db-f374bbe811eb>