

# Smarterouter Scoping Project Plan

Last Updated: 2026-02-18 Status: In Progress

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## Overview

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Field	Details
<b>Project Name</b>	Smarterouter Scoping Project
<b>Start Date</b>	2026-02-18
<b>Target Completion</b>	TBD
<b>Owner</b>	TBD
<b>Status</b>	Planning

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## Goals & Success Criteria

### Purpose

Integrate Athia AI/ML into Deuna's payments service to optimize payment acceptance rates via AI/ML-driven decision-making directly within the payment processing flow. Enables experimentation for processor selection (routing), message configuration, and smart retries — all within Deuna's tech stack.

### Success Criteria

- Measurable approval lift
- Stability during PSP outages
- Latency target: p95 < 200ms

### In Scope (P0)

- Processor/Message selector
- Smart Retry logic
- Feedback Loop implementation

### Out of Scope

- 3DS optimization (Phase 2)
  - User-facing messaging (Phase 3)
  - Installment optimization
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## Stakeholders

See TEAMS.md for the full source of truth on all people and roles.

Name	Company	Role
Pablo	Deuna	CTO
Israel	Deuna	Data POC
Farhan	Deuna	Claude/LLM Access POC
Mark Walick	Deuna	PM Lead
Rakesh	Aidaptive	Engineer
Naoki	Aidaptive	Engineer

## Milestones & Timeline

Milestone	Duration	Status	Notes
Phase 0: Assess level of effort/complexity	2 days	In Progress	\$6K budget, started 2026-02-18
Phase 1: Model running in production for 2 processors with basic feature store	2 weeks	Pending	Core delivery
Phase 2: Add monitoring + integrate with experimentation	Week 3	Pending	Immediately after Phase 1
Phase 3: Drift detection, CI/CD, experiment ramp-up, additional model techniques	TBD	Pending	

## Key Use Cases (P0)

ID	Use Case	Description
P-01	Outage detection & failover	Fail over/back via persistent timeout codes; random sampling of down PSP to detect recovery
P-02	Overall transaction routing optimizer	Optimize Deuna's existing static rules based on historical outcomes
P-03	Per-transaction optimal route selection	Rank top 3 routes based on prior outcomes for fast retry

ID	Use Case	Description
P-04	Message manipulation	Toggle CIT/MIT, AVS, MCC variables in authorization requests; top 3 recommendations
P-05	Retry optimization	Subs/MIT focused; enterprise darktime reduction; delayed retry based on reputation

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## Work Breakdown / Task Tracking

### Backlog

- Confirm Claude access and LLM budget provisioned (Pablo → Farhan)
- Confirm Snowflake read access provisioned — Rakesh verified (2026-02-18, info from Israel)
- Naoki to test Snowflake access once online — coordinate with Rakesh
- Provision Deuna corp accounts for Rakesh and Naoki
  - Snowflake instance access for both accounts
  - Code (repo) access for both accounts
  - Claude Code credits for both accounts
- Complete Phase 0: assess level of effort/complexity (2 days, \$6K)
- Build training platform (currently prototype-only — see Technical Gaps)
- Deliver P-01 through P-05 use cases

### In Progress

- (nothing yet)

### Done

- (nothing yet)
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## Schema Understanding & Data Notes

Extracted 2026-02-18 from PAYMENT\_ML Snowflake database. Full schema reference: SCHEMA.md

### Overall Assessment

The schema is very well structured for the P0 use cases. The data is organized into clean source views in the SOURCES schema, and a massive denormalized flat table (ABTESTING.ALL\_VIEWS\_FLAT) that joins everything together — ideal for quick EDA and feature engineering without complex joins.

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## Key Tables for P0 Use Cases

**VW\_ATHENA\_PAYMENT\_ATTEMPT** — most important table for routing & retry - Tracks every individual attempt with sequence order, processor used, error code/category, hard/soft decline type, retry indicator, and approved status - **DYNAMIC\_ROUTING\_DETAIL** (VARIANT/JSON) column likely contains rich routing decision metadata — needs exploration - **PAYMENT\_ATTEMPT\_SEQUENCE\_ORDER** + **PAYMENT\_LAST\_ATTEMPT\_INDICATOR** make it easy to reconstruct the full retry chain per payment - Directly supports **P-03** (per-transaction route selection) and **P-05** (retry optimization)

**VW\_SMART\_ROUTING\_ATTEMPTS** — current routing engine event log - Captures per-attempt routing decisions: algorithm type, processor selected, process time, result status, skip reason - **PROPERTIES\_RESULT\_PROCESS\_TIME** is a direct latency signal for the p95 < 200ms target - **PROPERTIES\_RESULT\_SKIPPED\_REASON** tells us why processors were bypassed — key for **P-01** (outage detection) - **PROPERTIES\_ALGORITHM\_TYPE** reveals what routing strategies are already in use

**VW\_ROUTING\_MERCHANT\_RULE** + **related views** — existing rules engine - Deuna already has a rules-based routing system with conditions, members, options, and priority ordering - This is the foundation for **P-02** (optimize existing static rules) — we don't start from scratch - **SHADOW\_MODE** in **VW\_ROUTING\_MERCHANT\_RULE\_MEMBER** suggests there's already infrastructure for testing new processors without live traffic

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## Feature Richness for ML Models

The data has strong signal across multiple dimensions:

Feature Group	Key Columns	Usefulness
Retry history	NUM_ATTEMPTS_ORDER, PREVIOUS_ORDER_ERROR_CODE, PREVIOUS_ORDER_PROCESSOR, AVG_SEC_BETWEEN_PAYMENT_ATTEMPTS	Direct retry optimization signals
Error signals	ERROR_CODE, ERROR_CATEGORY, HARD_SOFT, EVENT_ERROR_STANDARD_ERROR_CODE	Distinguish hard vs soft declines; normalized error codes in events
Card signals	CARD_BIN, CARD_BRAND, BANK, CARD_COUNTRY	Processor affinity by card type
User behavior	TARGET_USER_FRAUD_RATE_COHORT, TARGET_USER_TENURE_IN_DAYS, TARGET_USER_FREQUENCY_VALUE, TOTAL_MINUTES_BROWSING, TOTAL_NUM_SESSIONS	User risk and engagement signals
RFM	TARGET_USER_FREQUENCY_VALUE, TARGET_USER_RECENCY_VALUE, TARGET_USER_MONETARY_VALUE	Customer value for routing priority
Geo	LATITUDE, LONGITUDE, ORDER_COUNTRY_CODE, WEATHER_MAIN	Geography-based processor routing

Feature Group	Key Columns	Usefulness
Device	TARGET_USER_BROWSER, TARGET_USER_OS, TARGET_USER_DEVICE	Device fingerprinting
Message config	MCI_MSI_TYPE, ORDER_MCI_MSI_TYPE, PAYMENT_ATTEMPT_METHOD_TYPE	CIT/MIT toggle tracking for <b>P-04</b>
3DS	CHALLENGE_3DS_INDICATOR, CHALLENGE_3DS_STATUS	Available now; scoped to Phase 2

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### Starting Point Recommendation

- Use `ABTESTING.ALL_VIEWS_FLAT` for initial EDA — everything is already joined
- Switch to individual `SOURCES` views for model training to avoid data leakage and redundancy
- Explore `DYNAMIC_ROUTING_DETAIL VARIANT` column in `VW_ATHENA_PAYMENT_ATTEMPT` early — may contain routing features not exposed elsewhere

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### Notable Data Quality Observations

- **Typo in source data:** `PATMENT_TIME` in `VW_ATHENA_PAYMENT` (should be `PAYMENT_TIME`) — minor but worth noting for pipelines
- **Airline-specific data:** `VW_ORDER_AIRLINE_DETAIL_ALL` and `VW_ORDER_AIRLINE_INFORMATION_DETAIL_ALL` suggest Volaris is a key merchant with rich flight/passenger metadata
- `SOURCES` schema has no raw tables — only views, meaning underlying raw tables are managed upstream by Deuna’s data team (Israel’s domain)

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### Technical Gaps (from SOW)

#### Testing/Experimentation Platform — Production Ready

- A/B testing infrastructure, multi-variant experiments, automated winner selection
- Model registry with versioning, real-time inference (FastAPI sidecar)
- Missing: canary deployments

#### Training Platform — Prototype Only (needs significant work)

- No automated retraining, no orchestration, no CI/CD
  - No data validation, no monitoring, no drift detection
  - No feature store, no lineage tracking, no rollback capability
  - No hyperparameter tuning, no algorithm comparison
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## Decisions Log

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Date	Decision	Rationale	Made By
2026-02-18	Latency target updated from p95 < 50ms to p95 < 200ms	Revised from original SOW spec	Rakesh (discussed with Pablo)

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## Open Questions

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#	Question	Owner	Status
1	TBD	TBD	Open

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## Risks & Issues

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ID	Description	Likelihood	Impact	Mitigation	Status
R1	TBD	Low/Med/High	Low/Med/High	TBD	Open

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## Notes & Meeting Log

### 2026-02-18

- Project plan file created. Details to be filled in.
  - Israel is the main POC for data and related topics.
  - Pablo is the CTO.
  - All data is in Snowflake database; we will get read access to all tables. Snowflake URL: VLTAXPW-RMONTES.snowflakecomputing.com
  - Need Claude access and budget for LLM. Farhan is the main POC; Pablo will be talking to Farhan to get this access.
  - Mark Walick is the PM lead for this project.
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## Project Plan Exports

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Date	File	Notes
2026-02-18	project-plan-2026-02-18.pdf	Initial export
2026-02-18	project-plan-2026-02-18-v2.pdf	Updated with schema notes, stakeholders, todos
2026-02-18	schema-2026-02-18.pdf	Initial Snowflake schema snapshot

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## Documents & SOW Snapshots

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Document	Date	Version	File
SOW: Athia Embedded into Acceptance - Phase 1	2026-02-16	v1	PDF

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## References & Links

- [CLAUDE.md](#) (project conventions)
- [Data Dictionary](#)
- [Athia Data Model](#)
- [Snowflake Login \(VLTAXPW-RMONTES.snowflakecomputing.com\)](#)