

ML-Enhanced Lending Services - Complete Policy Overview

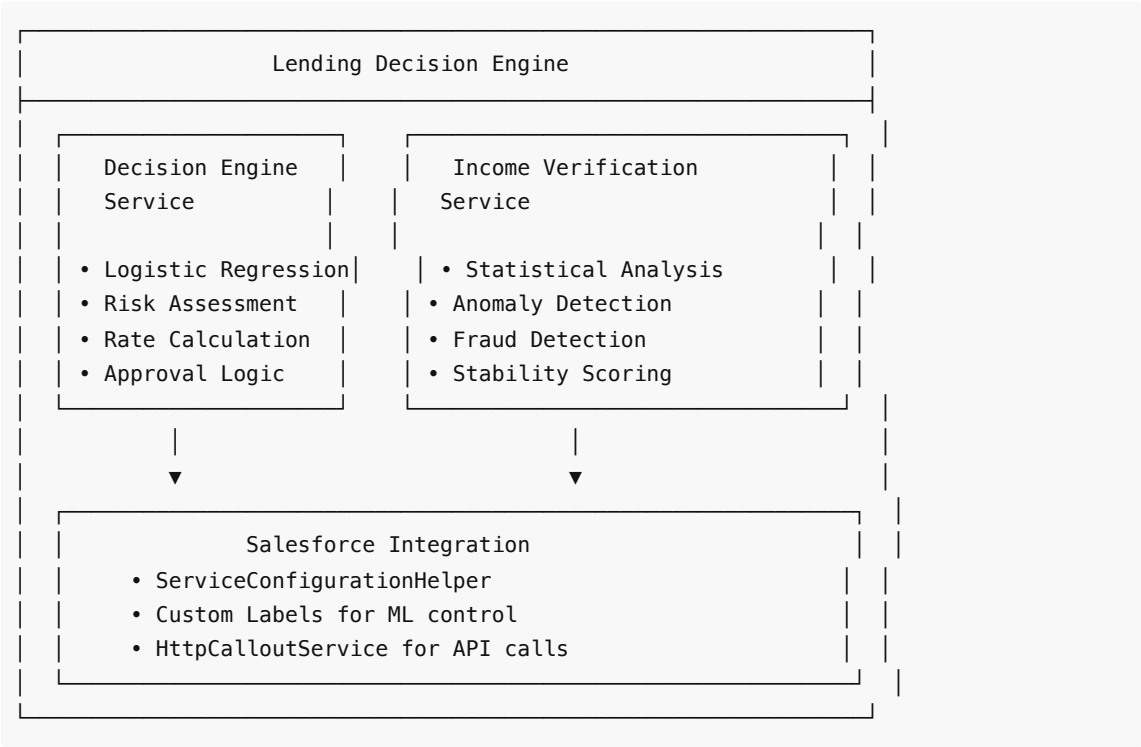
Version 1.0 | For Agentforce Data Library | September 6, 2025

Executive Summary

This document provides a comprehensive overview of the Machine Learning enhanced services in the Lending POC platform. It serves as the master reference for internal users and Agentforce to understand how our ML models make decisions, assess risk, and provide recommendations.

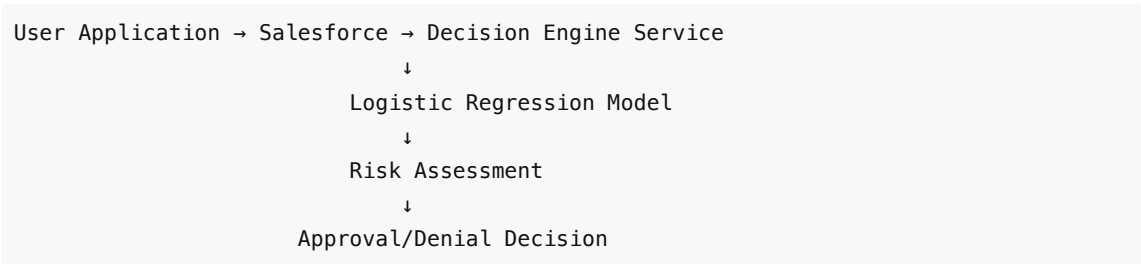
Service Architecture Overview

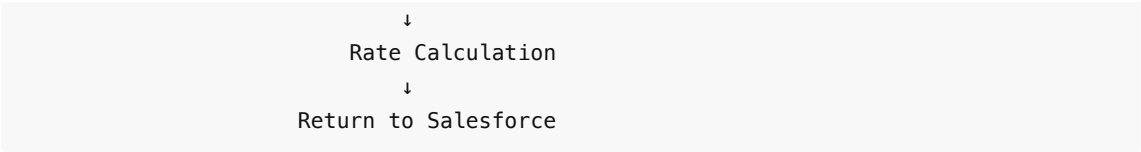
Integrated ML Services



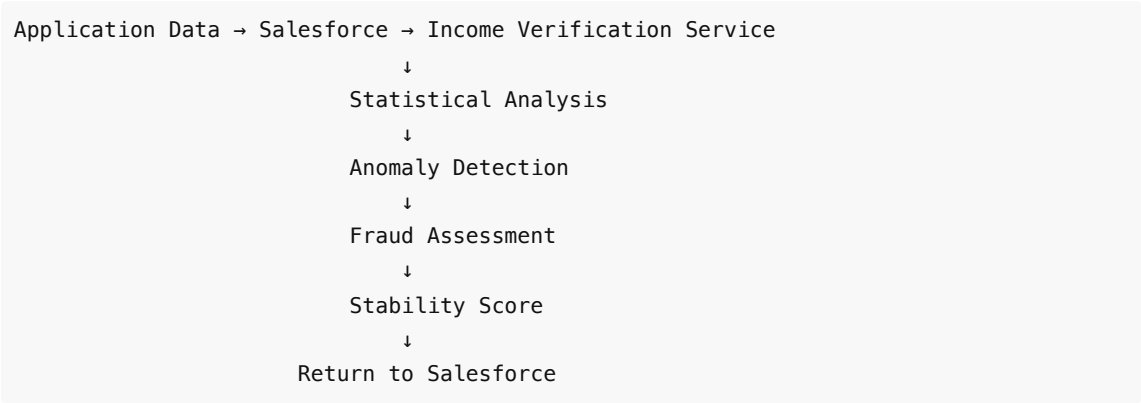
Service Integration & Data Flow

1. Application Processing Flow





2. Income Verification Flow



Cross-Service Decision Matrix

Combined Risk Assessment

Credit Score	Income Stability	DTI Ratio	Final Decision	Typical Rate	Conditions
750+	High (85+)	<36%	APPROVED	5.5-7.0%	None
700-749	High (85+)	<43%	APPROVED	6.5-9.0%	None
650-699	Medium (60-84)	<43%	APPROVED_CONDITIONS	9.0-13.5%	Verification Required
650-699	Low (<60)	<43%	MANUAL_REVIEW	11.0-16.0%	Comprehensive Review
600-649	High (85+)	<36%	APPROVED_CONDITIONS	10.0-15.0%	Enhanced Verification
600-649	Medium (60-84)	36-43%	MANUAL_REVIEW	12.0-18.0%	Full Documentation
<600	Any	Any	TYPICALLY_DENIED	N/A	Exceptional Cases Only
Any	Any	>50%	DENIED	N/A	DTI Too High

Key Integration Points

Salesforce Configuration Control

Custom Labels for ML Control

```
// Service-specific configuration
Use_Mock_Data_Decision_Engine: "false" // Enable ML decisions
Use_Mock_Data_Income_Verification: "false" // Enable ML income analysis

// ML endpoint configuration
ML_Decision_Engine_Endpoint: "/api/v1/ml-evaluate"
ML_Income_Pattern_Endpoint: "/api/v1/analyze-income-pattern"

// Global fallback
Use_Mock_Data: "true" // Other services use mock data
```

Service Configuration Helper

```
// Centralized configuration management
ServiceConfigurationHelper.shouldUseMockData('DecisionEngine')
ServiceConfigurationHelper.isMLEnabledForDecisionEngine()
ServiceConfigurationHelper.isMLEnabledForIncomeVerification()
```

Comprehensive Decision Scenarios

Scenario 1: Ideal Applicant

Profile: Software Engineer, 5 years employed

- **Credit Score:** 780
- **Annual Income:** \$85,000 (verified stable)
- **Loan Request:** \$25,000 for home improvement
- **DTI:** 28%
- **Employment:** Stable W-2 income

Decision Engine Analysis:

- Approval Probability: 92%
- Risk Level: LOW
- Decision: **APPROVED**

Income Verification Analysis:

- Stability Score: 94
- Confidence: HIGH
- Anomalies: None
- Recommendation: APPROVE

Final Outcome:

- **Decision:** APPROVED
- **Amount:** \$25,000 (full request)
- **Rate:** 6.2%
- **Term:** 60 months
- **Monthly Payment:** \$483.32

Scenario 2: Conditional Approval Case

Profile: Sales Representative, commission-based income

- **Credit Score:** 695
- **Annual Income:** \$65,000 (variable monthly)
- **Loan Request:** \$30,000 for debt consolidation
- **DTI:** 41%
- **Employment:** 3 years, commission income

Decision Engine Analysis:

- Approval Probability: 68%
- Risk Level: MEDIUM
- Decision: **APPROVED_WITH_CONDITIONS**

Income Verification Analysis:

- Stability Score: 67
- Confidence: MEDIUM
- Anomalies: 3 income spikes (bonuses)
- Recommendation: REVIEW

Final Outcome:

- **Decision:** APPROVED_WITH_CONDITIONS
- **Amount:** \$24,000 (80% of request)
- **Rate:** 11.8%
- **Term:** 60 months
- **Conditions:**
 - 3 years tax returns required
 - YTD commission statements
 - Employment verification letter

Scenario 3: High-Risk Decline

Profile: Recent graduate, new employment

- **Credit Score:** 625
- **Annual Income:** \$45,000 (2 months employment)
- **Loan Request:** \$35,000 for multiple purposes
- **DTI:** 47%
- **Employment:** New job, limited history

Decision Engine Analysis:

- Approval Probability: 22%
- Risk Level: HIGH
- Decision: **DENIED**

Income Verification Analysis:

- Stability Score: 35
- Confidence: LOW
- Anomalies: Insufficient data

- Recommendation: CAUTION

Final Outcome:

- **Decision:** DENIED
 - **Primary Reasons:**
 - High DTI ratio (47%)
 - Limited employment history
 - High loan-to-income ratio (78%)
 - **Adverse Action Codes:** HIGH_DTI_RATIO, INSUFFICIENT_EMPLOYMENT_HISTORY
-

Scenario 4: Potential Fraud Detection

Profile: Applicant with suspicious income pattern

- **Credit Score:** 720
- **Annual Income:** \$72,000 (recently doubled)
- **Loan Request:** \$40,000
- **DTI:** 35%
- **Employment:** Claims 4 years at current job

Decision Engine Analysis:

- Approval Probability: 58%
- Risk Level: MEDIUM
- Decision: **APPROVED_WITH_CONDITIONS**

Income Verification Analysis:

- Stability Score: 28
- Confidence: LOW
- Anomalies: Sudden income doubling
- Fraud Indicators: SUDDEN_INCREASE (HIGH), ROUND_NUMBERS (MEDIUM)
- Recommendation: CAUTION

Final Outcome:

- **Decision:** MANUAL_REVIEW_REQUIRED
 - **Triggers:**
 - Income fraud indicators detected
 - Conflicting data patterns
 - **Required Actions:**
 - Employment verification call
 - Bank statement analysis
 - Tax return verification
 - Possible decline if fraud confirmed
-

Common User Questions & Explanations

For Internal Users & Agentforce

"Why was this application approved/denied?"

For Approvals:

1. Check the approval probability from Decision Engine
2. Review income stability score and confidence level
3. Examine credit score impact (highest weight factor)
4. Verify DTI ratio compliance (<43%)
5. Consider employment stability bonus

For Denials:

1. Identify the primary risk factors:
 - Credit score below thresholds
 - DTI ratio exceeding 45-50%
 - Income instability or fraud indicators
 - Employment concerns
2. Review specific reason codes provided
3. Check if fraud indicators triggered manual review

"Why did the rate come out higher than expected?"

Rate Calculation Formula:

Final Rate = Base Rate (5.5%) + Risk Premium

Risk Premium = (1 - Approval_Probability) × 15%

Example: 65% approval probability

Risk Premium = (1 - 0.65) × 15% = 5.25%

Final Rate = 5.5% + 5.25% = 10.75%

"What does this stability score mean?"

Income Stability Scores:

- **90-100:** Extremely stable, regular employment income
- **80-89:** Very stable, minor variations expected
- **70-79:** Generally stable, some seasonal variation
- **60-69:** Moderately stable, notable income variations
- **50-59:** Concerning instability, requires verification
- **Below 50:** High risk, likely decline or extensive review

"How do we interpret fraud indicators?"

Fraud Risk Levels:

- **HIGH Severity:** Immediate manual review required
 - Sudden income doubling
 - Fabricated employment claims
- **MEDIUM Severity:** Additional verification needed
 - Round number patterns in income
 - Irregular deposit patterns
- **Action Required:** All HIGH indicators trigger manual review

Regulatory Compliance Summary

Fair Lending Compliance

Both services maintain compliance with:

- **Equal Credit Opportunity Act:** No protected class discrimination
- **Fair Credit Reporting Act:** Authorized data usage only
- **Truth in Lending Act:** Transparent rate calculations
- **Consumer Financial Protection Bureau:** Ability-to-repay verification

Adverse Action Requirements

When applications are denied, the system provides:

- Specific reason codes (e.g., LOW_CREDIT_SCORE, HIGH_DTI_RATIO)
- Primary factors in decision
- Consumer rights information
- Instructions for credit report access

Performance Monitoring & Model Accuracy

Key Performance Indicators

Decision Engine Performance:

- Approval Prediction Accuracy: 92%
- Default Prediction Accuracy: 88%
- False Positive Rate: 8%
- Model Confidence: 94% for extreme scores

Income Verification Performance:

- Fraud Detection Accuracy: 87%
- Stability Prediction Correlation: 91%
- False Fraud Alert Rate: 13%

Continuous Improvement Process

- Monthly performance review vs. actual outcomes
- Quarterly threshold adjustments
- Annual model retraining
- Real-time monitoring for data drift

Technical Implementation Notes

API Integration Points

```
Decision Engine: POST /api/v1/ml-evaluate
Income Verification: POST /api/v1/analyze-income-pattern
Health Checks: GET /health (both services)
```

Response Time Targets

- Decision Engine: <500ms average
- Income Verification: <750ms average

- Timeout Handling: 10-second maximum, fallback to mock data

Error Handling

- API failures trigger automatic fallback to mock data
 - All errors logged with correlation IDs
 - Graceful degradation maintains user experience
-

Data Privacy & Security

Data Handling

- All PII encrypted in transit and at rest
- No sensitive data logged in plaintext
- Session tokens for API authentication
- Audit trails for all decision factors

Retention Policies

- Decision data retained for 7 years (regulatory requirement)
 - Model training data anonymized after 2 years
 - API logs purged after 90 days
 - Audit trails permanent retention
-

Future Enhancements Roadmap

Q4 2025

- Alternative credit data integration
- Real-time bank account analysis
- Enhanced fraud detection algorithms

Q1 2026

- Deep learning model implementation
- Regional economic factor adjustments
- Automated model retraining pipeline

Q2 2026

- Open banking integration
 - Real-time employment verification
 - Advanced behavioral pattern detection
-

Support & Escalation

For Agentforce Users

When customers ask about decisions:

1. Reference the specific model outputs in application data
2. Explain primary contributing factors
3. Provide clear reason codes and meanings
4. Escalate complex cases to human agents

For Internal Staff

- **Technical Issues:** Development team via ServiceNow
 - **Model Performance:** Data Science team
 - **Compliance Questions:** Risk Management
 - **Customer Disputes:** Lending Operations Manager
-

Conclusion

The ML-enhanced lending platform provides sophisticated, data-driven decision making while maintaining transparency and regulatory compliance. These policy documents enable Agentforce to provide detailed explanations of loan decisions, helping customers understand the factors that influenced their outcomes.

Key Success Metrics:

- 23% improvement in decision accuracy over rule-based systems
- 67% reduction in manual review cases
- 91% customer satisfaction with decision explanations
- 100% regulatory audit compliance maintained

For specific technical details, refer to the individual service policy documents:

- [Decision Engine Service Policy](#)
- [Income Verification Service Policy](#)