Brief Summary of the Use Case Model for Value Momentum

Use Case Title	Agentic AI-Based Underwriting Decision Support System for Indian Insurance Market
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Tech Stack used	Python, Flask, Scikit-Learn, OpenAI API, HTML, CSS, JavaScript, Pandas, NumPy, Joblib
Category	Generative AI - AI Agent
Brief Summary of Model	The proposed system is an Agentic AI-powered underwriting decision support platform designed specifically for the Indian insurance market. It combines actuarial scoring, machine learning classification, and generative AI reasoning to automate and explain risk evaluation for new insurance applicants. The workflow begins when a user inputs applicant details such as age, income, CIBIL score, occupation, premium amount, and claim history through a Flask-based web interface. The backend first applies actuarial weighted scoring, where predefined weights are assigned to key factors like credit score, claims, affordability, and age to generate an initial numerical risk score. This processed data is then passed to a Random Forest classification model built using Scikit-Learn, which predicts the applicant's risk category as *Low, Medium,* or *High* with corresponding confidence levels. The Generative AI reasoning layer, powered by the OpenAI API, interprets this result and generates a natural language explanation of the decision, highlighting critical factors influencing the risk level. An Agentic AI module further analyzes the profile to determine eligibility, recommend suitable policy structures, and list required documents based on the assessed risk. The output is displayed on the interface through structured sections, including risk score visualization, model confidence, AI-generated explanation, and recommended policy insights. This hybrid design ensures the system is accurate, interpretable, and domain-aligned with Indian underwriting standards. The solution aims to reduce manual evaluation time, enhance decision consistency, and ensure transparency enabling insurers to adopt AI responsibly while maintaining regulatory compliance

Indian Underwriting Agentic AI - Balanced Workflow Diagram

User & Data Inputs

C A1

Applicant Data
(Age, Income, CIBIL, Occupation, Claims)

C A2

Policy Details
(Premium, Coverage Amount)

Underwriting Intelligence Engine

C B1

Actuarial Weighted Scoring
(Rule-Based Engine)

C B2

Machine Learning Model
(Random Forest Classifier)

C B3

Risk Classification
(Low / Medium / High)

User Interface & Output

C D1

Flask Web Interface
(User Dashboard)

C D2

Results & Visuals
(Risk Score, Confidence, Explanation)

Generative & Agentic AI Layer

C C1

Generative AI Reasoning
(Natural Language Justification)

C C2

Agentic AI Decision Engine
(Eligibility, Policy Suggestion, Document List)

Continuous
Learning Loop

Risk Data
Transfer

Explainable
Output