# Engineering Requirements Document – Approvals Agent

## 1. Overview

The Approvals Agent manages procurement approvals by creating Approval Cards within the Review Actions Hub.   
Decisions are guided via lightweight pop-ups where users approve, reject, or escalate.   
The Approvals Agent orchestrates rules and thresholds in the background while surfacing simple review actions to the user.

## 2. Scope

In-Scope:  
- Approval Cards injected into Review Actions Hub.  
- Configurable policies for auto-approval, conditional approval, escalation.  
- Review pop-ups providing context (supplier, PO, savings, risk).  
- Audit trail generated automatically.  
  
Out-of-Scope (MVP):  
- Standalone approval inbox/dashboard.  
- Complex multi-country tax/regulatory approval layers.  
- Integration with external approval systems.

## 3. Functional Requirements

3.1 Approval Routing  
- Policies determine whether to auto-approve or require Approval Card creation.  
- Escalation rules applied if approver does not act within SLA.  
  
3.2 Pop-up Interaction  
- User clicks action row in Review Actions Hub → sees Approval pop-up.  
- Context shown: supplier, PO/Invoice/Quote, value, savings, risk score.  
- Buttons: Approve, Reject, Escalate.  
  
3.3 Escalation  
- If SLA breached, Approval Card flagged in Review Actions Hub.  
- System notifies next-level approvers automatically.  
  
3.4 Audit  
- Each decision generates immutable record.  
- Linked to Procurement Knowledge Graph.

## 3.7 Acceptance Criteria

1. All approvals surfaced as Approval Cards in Review Actions Hub.  
2. No standalone Approval Inbox or dashboard exists.  
3. Pop-up must display supplier, value, related PO/Invoice, policy fit, and action buttons.  
4. Decisions logged immutably and exportable in CSV/PDF.  
5. SLA breaches flagged within Review Actions Hub.

## 4. Non-Functional Requirements

- Scalability: 10,000+ concurrent approvals.  
- Latency: <2s to load Approval pop-up.  
- Security: RBAC enforced for decisions.  
- Reliability: 99.9% uptime target.  
- Auditability: Immutable records.

## 5. Data Model (Core Entities)

ApprovalRequest  
- request\_id, requester\_id, type (PO/Invoice/Quote), linked\_entity\_id, value, category, risk\_score, status, created\_at.  
  
ApprovalPolicy  
- policy\_id, trigger\_type, condition\_expression, approver\_roles, escalation\_rule\_id.  
  
ApprovalDecision  
- decision\_id, request\_id, approver\_id, decision, justification, timestamp.

## 6. Workflows

1. Opportunity Agent flags PO needing approval.  
2. Approvals Agent injects Approval Card into Review Actions Hub.  
3. User clicks → Approval pop-up with context opens.  
4. User selects Approve/Reject/Escalate.  
5. Result logged in immutable audit trail.  
6. Global Dashboard shows approval history.

## 7. Integration Points

- Opportunity Agent → triggers approvals for savings > threshold.  
- Supplier Ranking Agent → risk score included in Approval Card.  
- Quote Comparison Agent → provides context for approval.  
- Review Actions Hub → main UI surface for approvals.  
- Procurement Knowledge Graph → stores approval metadata.

## 8. Security & Compliance

- All approvals tied to authenticated users.  
- RBAC enforces authority levels.  
- Immutable audit trail.  
- GDPR-compliant.