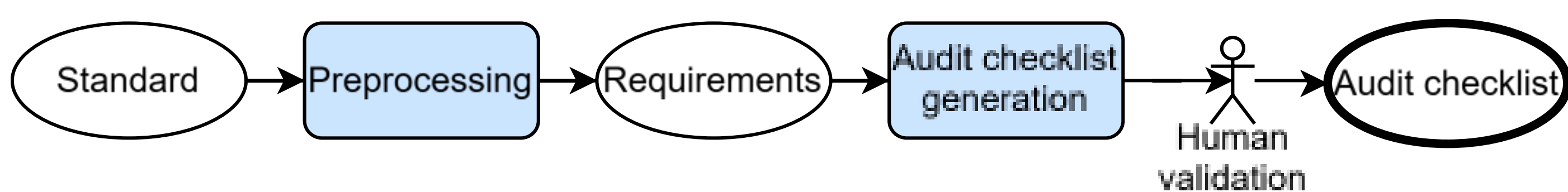


A Two-Stage LLM System for Automated Compliance Checking

Objectives

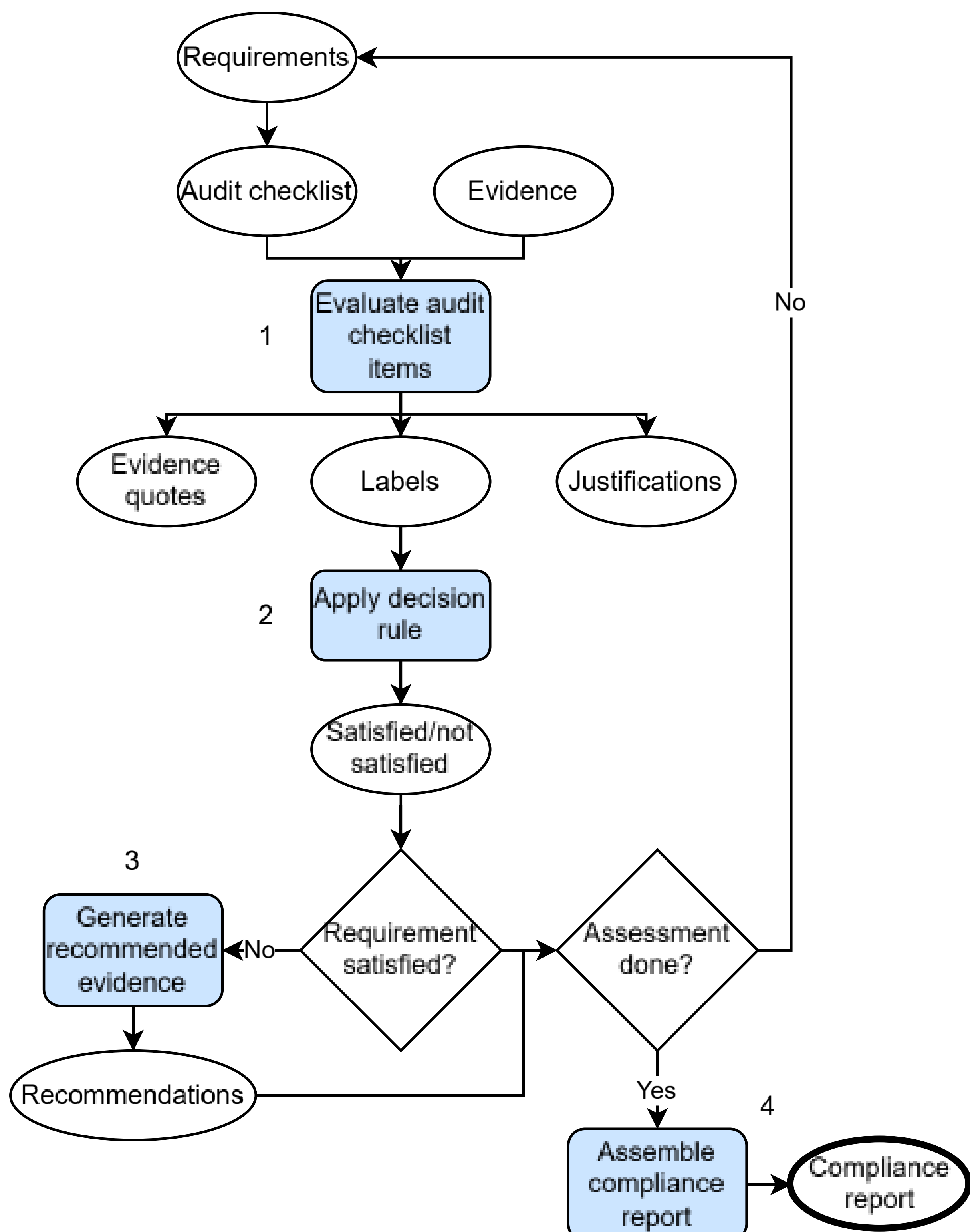
- Design an LLM-based system for automated compliance checking to reduce manual effort in internal audits
- Support evidence gathering through evidence recommendations

Step 1: Audit checklist generation



- The generated audit checklists are reusable across products.
- Human validation ensures coverage of essential requirement aspects.

Step 2: Requirement checking



For each requirement

1. Evaluate audit checklist items against relevant evidence using an LLM
2. Apply a deterministic decision rule to the output labels
3. Generate recommended evidence for unmet requirements

Assemble a compliance report based on the compliance assessment (4).

Experimental setup

Evaluated on EN IEC 62443-4-2/AA:2026 [1] requirements and audit evidence from two SL-2 certified IoT components with GPT 5 mini.

Initial results and observations

- Generated requirement assessments tend to be stricter than human auditors and stricter than direct LLM evaluation
- Checklist label agreement across runs: 99%
- Recommended evidence is usually relevant but often overly comprehensive and detailed

