

Project Overview – *Agentic AI DevOps Automation with ServiceNow Integration*

1. Project Overview

You are tasked with building an agentic AI system in the form of a FastAPI microservice that integrates with the ServiceNow platform via REST API. This system processes free-form IT service requests, generates incident records in ServiceNow, and executes intelligent agent flows to either remediate the problem automatically or await manual approval before execution.

Core Workflow Summary

- On receiving a request, the system creates a new ServiceNow incident via the Table API (incident table).
- If require_approval: false:
→ the full agentic remediation flow is triggered immediately, and the system updates the incident with results.
- If require_approval: true:
→ the system pauses after incident creation and responds with: "The incident has been reported. Awaiting approval before initiating automation."
- Admin can then choose to:
 - POST /plans/{id}/approve: Approve the plan and trigger agents
 - POST /plans/{id}/reject: Reject the automation and mark the incident for manual resolution

2. Technical Architecture

API Layer (FastAPI)

Endpoint	Functionality
POST /api/v1/execute	Submit a new request (create incident + trigger/await)
POST /api/v1/plans/{id}/approve	Approve a plan and start agentic automation
POST /api/v1/plans/{id}/reject	Reject the plan; no automation is performed
GET /api/v1/tasks/{id}	Query task (incident) status and updates

3. Agent & Flow Logic

The system consists of modular AI agents coordinated via LangGraph, supporting approval-based workflows.

Agent	Purpose
CoordinatorAgent	Parses user requests and orchestrates the agentic flow
DiagnosticAgent	Performs root-cause analysis using prompt-based reasoning
AutomationAgent	Generates & validates remediation scripts (PowerShell/Bash/CLI)
WriterAgent	Drafts human-readable summaries, emails, and SOPs
IncidentReportAgent	Handles ServiceNow REST API logic: create/update/query incidents

4. Flow Logic (Approval-Driven Execution)

Approval Required	ServiceNow Incident	Agentic Flow	System Response
false	Created immediately	Triggered	Diagnosis, script, summary, incident updated
true	Created immediately	Paused	"Awaiting approval" message
POST /approve	Updated with logs	Triggered	Results posted to incident
POST /reject	Marked manually	Skipped	"Incident will be handled manually" message

5. Advanced Techniques

- ServiceNow REST API integration using the incident table
- LangGraph for execution flow orchestration
- DSPy router for prompt specialization
- MCP context pruner for compact context construction
- Incident sys_id used as internal task_id

6. API Flow Examples

Example A – Auto Execution (No Approval)

POST /api/v1/execute

```
{
  "request": "Diagnose high CPU usage on VM-node1 and generate a mitigation script.",
  "require_approval": false
}
```

Response:

```
{
  "incident_sys_id": "abc123",
  "status": "resolved",
  "diagnosis": "...",
  "script": "...",
  "email_draft": "...",
  "servicenow_updated": true
}
```

Example B – With Approval

POST /api/v1/execute

```
{
  "request": "Limit inbound RDP traffic on production VMs to 10.0.0.0/24",
  "require_approval": true
}
```

Response:

```
{
  "incident_sys_id": "xyz456",
  "status": "awaiting_approval",
  "message": "The incident has been reported. Awaiting approval before initiating automation."
}
```

Then:

```
curl -X POST /api/v1/plans/xyz456/approve
```

Triggers flow → updates incident

Rejection Flow:

```
curl -X POST /api/v1/plans/xyz456/reject
```

Response:

```
{
  "status": "manual_intervention_required",
  "message": "The incident was unable to be solved automatically. A service agent will assist you shortly."
}
```

7. Task Status API (GET /api/v1/tasks/{id})

Returns current status and any updates for a given task/incident.

```
{
  "incident_sys_id": "xyz456",
  "status": "awaiting_approval",
  "updates": [
    "Incident created",
    "Waiting for admin approval"
  ]
}
```

8. Deliverables

- GitHub repo with modular agent code and ServiceNow integration
- IncidentReportAgent handles all interaction with Now Platform
- FastAPI + LangGraph orchestration
- README + Mermaid diagram + architecture PNG
- Postman or curl API collection
- Screen recording of both flows (auto and approval-based)