

# Agentic TCO Calculator v5.0 - Complete Documentation

## Executive Summary

The Agentic TCO Calculator provides **platform-specific Total Cost of Ownership estimates** for greenfield agentic AI implementations across four major enterprise platforms: UiPath, Microsoft Copilot Studio, ServiceNow, and Databricks. This tool combines implementation costs (one-time development) with runtime costs (ongoing operational expenses) to provide comprehensive Year 1 TCO projections.

**Key Innovation:** Unlike generic cost calculators, this tool accounts for platform-specific licensing models, API pricing structures, and infrastructure requirements unique to each vendor.

## Table of Contents

- 1. [Methodology Overview](#)
- 2. [T-Shirt Sizing Framework](#)
- 3. [Implementation Cost Model](#)
- 4. [Runtime Cost Model](#)
- 5. [Platform-Specific Configurations](#)
- 6. [Risk Factors & Modifiers](#)
- 7. [Validation & Calibration](#)
- 8. [Use Cases & Examples](#)
- 9. [Limitations & Assumptions](#)

## 1. Methodology Overview

### The TCO Equation



Year 1 TCO = Implementation Costs + Annual Runtime Costs

- Where:
- Implementation = Development Effort × Daily Rate × Risk Multipliers
  - Runtime = Platform Licenses + API Costs + Infrastructure + Support

### Why This Approach?

**Problem We Solve:** Traditional cost estimators fail for agentic systems because they don't account for:

- Multi-agent coordination complexity
- Tool development overhead
- Platform-specific licensing tiers
- Token-based API consumption patterns
- Ongoing infrastructure for vector databases, observability, and guardrails

**Our Solution:** A **two-dimensional cost model** that treats implementation and runtime as separate but interconnected calculations, each with platform-specific variables.

## 2. T-Shirt Sizing Framework

### Core Philosophy

We use **T-shirt sizing** (S/M/L/XL) as the primary estimating mechanism because:

- 1. **Familiarity:** Teams understand t-shirt sizing from Agile practices
- 2. **Speed:** Faster than detailed bottom-up estimation for early-stage planning
- 3. **Defensibility:** Based on scoring methodology, not arbitrary judgment
- 4. **Calibration:** Can be validated against actual project data over time

Size Definitions

Size	Agents	Tools	Complexity	Score	Base Days	Typical Use Case
Small (S)	1	0-1 simple	4-10		18 days	Single-purpose agent (FAQ bot, document summarizer)
Medium (M)	1-3	1-3	11-18		34 days	Multi-step workflow (invoice processing, research assistant)
Large (L)	3-6	3-6	19-25		55 days	Multi-agent orchestration (contract analysis, customer support)
XL	6-10+	6-10+	26-32		86 days	Complex multi-agent system (autonomous operations, strategic planning)

Complexity Scoring Dimensions

The score (4-32) comes from four weighted dimensions:

- 1. **Prompt Complexity** (1-8 points)
  - Single clear instruction (1-2)
  - Multiple related instructions (3-4)
  - Conditional logic and branches (5-6)
  - Complex decision trees with nested conditions (7-8)
- 2. **Context Grounding** (1-8 points)
  - Based on number of data sources the agent must coordinate
  - 1 source = 1-2 points
  - 2-3 sources = 3-4 points
  - 4-5 sources = 5-6 points
  - 6+ sources or requires complex transformations = 7-8 points
- 3. **Tool Requirements** (1-8 points)
  - Mapped from tool development effort (simple = 1-2 days, complex = 8-10 days)
  - Accounts for both quantity and complexity of tools
  - Includes API integrations, custom business logic, database queries
- 4. **Input/Output Complexity** (1-8 points)
  - Based on number of parameters and data transformations
  - 3-5 arguments = 1-2 points
  - 6-8 arguments = 3-4 points
  - 9-12 arguments = 5-6 points
  - 13+ arguments or complex transformations = 7-8 points

Scoring Example - Medium Invoice Processing Agent:

- Prompt Complexity: 4 (conditional logic for approval/rejection)
- Context Grounding: 3 (vendor database + historical invoices)
- Tool Requirements: 5 (ERP integration + PDF parser + approval workflow)
- I/O Complexity: 4 (vendor info, line items, approval status, audit trail)
- **Total Score: 16 → Medium (M)**

3. Implementation Cost Model

Base Effort Calculation



Base Effort Days = T-Shirt Size Base Days

- Small (S): 18 days
- Medium (M): 34 days
- Large (L): 55 days
- Extra Large: 86 days

## Phase Breakdown

Base days are distributed across SDLC phases:

Phase	% of Total	Description
Definition	8–10%	Requirements gathering, use case validation, success criteria
Design	15–20%	Agent architecture, prompt engineering, tool design, data flow
Development	40–45%	Agent implementation, tool development, integration, prompt tuning
Testing	8–10%	Unit tests, integration tests, evaluation set creation
UAT	15–18%	User acceptance testing, stakeholder demos, feedback integration
Hypercare	12–15%	Post-launch support, monitoring setup, issue resolution

### Why These Percentages?

- **Higher Development %:** Agentic systems require more iteration on prompts and tool integrations than traditional software
- **Significant UAT/Hypercare:** Non-deterministic behavior requires extensive validation and post-launch monitoring
- **Based on:** Analysis of 15+ completed agentic projects across UiPath, Microsoft, and custom LangChain implementations

## Daily Rate Assumptions



Blended Rate = \$1,400/day

Typical Pod Composition:

- Business Analyst: \$800-1,000/day
- Solution Architect: \$1,200-1,500/day
- Developer(s): \$1,000-1,400/day
- Project Manager: \$1,200-1,500/day (part-time)

Weighted Average: ~\$1,400/day for 5-person pod

## Team Size & Velocity

We model three pod configurations:

Team Size	Composition	Velocity Multiplier	When to Use
3-person	1 BA, 1 SA, 1 Dev	1.0x (baseline)	Simple agents, budget-constrained
5-person	1 BA, 1 SA, 2 Dev, 1 PM	1.5x	<b>Standard</b> – most projects
7-person	1 BA, 1 SA, 3 Dev, 1 PM, 1 QA	2.0x	Complex, high-risk, or time-sensitive

### Velocity Impact on Timeline (not effort):

- Effort = 34 days for Medium
- Timeline with 3-person:  $34 / 5 / 1.0 = \mathbf{6.8 \text{ weeks}}$
- Timeline with 5-person:  $34 / 5 / 1.5 = \mathbf{4.5 \text{ weeks}}$
- Timeline with 7-person:  $34 / 5 / 2.0 = \mathbf{3.4 \text{ weeks}}$

### Why Velocity ≠ Linear?

- Coordination overhead increases with team size
- Parallel work enables faster delivery but not 1:1 with headcount
- Based on empirical data from multi-agent development projects

## 4. Runtime Cost Model

### Cost Components

Annual runtime costs consist of three categories:

- 1. **Platform Licenses:** Vendor-specific subscriptions and per-user/per-agent fees
- 2. **API Costs:** LLM token consumption (input + output tokens)
- 3. **Infrastructure:** Vector databases, observability, content safety, compute

### API Cost Calculation



Monthly API Cost = (Monthly Requests × Avg Tokens/Request / 1,000,000) × Price per 1M Tokens

Assumptions:

- Avg Tokens per Request: 2,000 (conservative)
- Input: ~1,200 tokens (prompt + context)
- Output: ~800 tokens (agent response)
- Monthly Requests: User-defined (default: 50,000)

### Why 2,000 Tokens?

- Based on analysis of production agentic workloads
- Includes context retrieval from RAG (if applicable)
- Conservative to avoid under-estimating
- Real-world range: 1,500-3,500 depending on use case

### Infrastructure Costs

Component	Annual Cost	Justification
Vector Database	\$900–1,500	Pinecone/Weaviate/Qdrant for RAG, scales with data volume
Observability	\$720–1,200	LangSmith, Weights & Biases, or custom logging
Content Safety	\$180–300	Azure Content Safety, AWS Comprehend, or similar
Compute/Storage	\$600–1,200	Cloud compute for orchestration, storage for audit logs

### Platform-Specific Adjustments:

- UiPath: Higher infra costs (\$6K/year) due to Orchestrator + custom monitoring
- MS Copilot: Lower (\$2.4K/year) due to native Azure integration
- ServiceNow: Moderate (\$3.6K/year) with Now Assist infrastructure
- Databricks: Moderate (\$4.8K/year) with DBU-based compute model

## 5. Platform-Specific Configurations

### UiPath

#### Licensing Model:

- **Orchestrator Base:** \$15,000/year (cloud, standard tier)
- **Agent Builder License:** \$12,000/agent/year
- **Platform Fee:** \$2,000/year (support, maintenance)

### Why These Costs?

- Based on UiPath published pricing (Oct 2024)
- Agent Builder is separate from traditional RPA Studio

- Orchestrator required for agent deployment and monitoring

**API Costs:** \$0 (UiPath uses Azure OpenAI or Anthropic under the hood, bundled in license)

**Best For:** Organizations already invested in UiPath ecosystem, need tight RPA+Agent integration

**Typical Year 1 TCO (Medium):** ~\$95K

- Implementation: \$48K
- Runtime: \$47K (licenses + infra)

---

## Microsoft Copilot Studio + AI Studio

**Licensing Model:**

- **Copilot Studio:** \$200/user/month
- **AI Studio Credits:** Variable, pay-as-you-go
- **Platform Fee:** \$0 (included in Microsoft 365 subscription)

**Why These Costs?**

- Copilot Studio required for agent building and deployment
- Per-user pricing (not per-agent)
- AI Studio for custom model access if needed

**API Costs:** \$10/1M tokens (Azure OpenAI GPT-4 pricing)

**Best For:** Microsoft 365 shops, need Copilot integration, existing Azure infrastructure

**Typical Year 1 TCO (Medium):** ~\$72K

- Implementation: \$48K
- Runtime: \$24K (licenses \$14.4K + API \$7.2K + infra \$2.4K)

---

## ServiceNow

**Licensing Model:**

- **Now Assist Base:** \$25,000/year (platform license)
- **User License:** \$150/user/month
- **Platform Fee:** \$5,000/year

**Why These Costs?**

- Now Assist required for agentic capabilities
- User licenses on top of base platform
- Higher platform fee due to ServiceNow's premium positioning

**API Costs:** \$15/1M tokens (ServiceNow typically uses Azure OpenAI)

**Best For:** ServiceNow ITSM/ITOM customers, need tight integration with CMDB/incidents

**Typical Year 1 TCO (Medium):** ~\$86K

- Implementation: \$48K
- Runtime: \$38K

---

## Databricks

**Licensing Model:**

- **Compute (DBU):** \$0.55/DBU
- **Typical Monthly Consumption:** 1,000 DBU
- **Platform Fee:** \$0

Why These Costs?

- Databricks charges per DBU (compute unit)
- Agentic workloads estimated at 1,000 DBU/month based on medium usage
- No platform fee - pay only for what you use

**API Costs:** \$8/1M tokens (Databricks Model Serving with DBRX or Azure OpenAI)

**Best For:** Data-heavy use cases, need integration with data lakehouse, ML workloads

**Typical Year 1 TCO (Medium):** ~\$67K

- Implementation: \$48K
- Runtime: \$19K (compute \$6.6K + API \$7.2K + infra \$4.8K)

## 6. Risk Factors & Modifiers

### Implementation Risk Multipliers

These are **additive** to the base effort:

Risk Factor	Multiplier	Justification
Human-in-the-Loop Required	+20%	Additional UI, approval workflows, state management
Complex Guardrails	+20%	Multiple validation layers, escalation logic, audit requirements
First-Time Agentic Team	+15%	Learning curve, pattern discovery, tooling setup
Regulatory Compliance	+20%	SOC2, HIPAA, GDPR requirements add validation and documentation

### Cumulative Effect Example:

- Base: 34 days (Medium)
- HITL (+20%):  $34 \times 1.20 = 40.8$  days
- Complex Guardrails (+20%):  $40.8 \times 1.20 = 48.96$  days
- First-Time Team (+15%):  $48.96 \times 1.15 = 56.3$  days
- **Final: 56 days** (65% increase from base)

Why These Percentages?

- Derived from post-project analysis of actual vs. estimated effort
- Validated against 20+ projects where these factors were present
- Conservative to ensure estimates hold up in practice

### When to Split an Agent

**Rule of Thumb:** If complexity score > 25 (Large+), consider splitting into multiple agents

### Benefits of Splitting:

- Parallel development (faster delivery)
- Easier testing and debugging
- Better separation of concerns
- Lower individual agent complexity

### Trade-offs:

- Requires orchestration layer
- Increased inter-agent communication complexity
- Higher infrastructure costs (more agents to run)

## 7. Validation & Calibration

### Data Sources

This calculator is based on:

- 1. **Historical Project Data** (n=23 projects)
  - 8 UiPath Agent Builder projects
  - 7 Microsoft Copilot Studio projects
  - 5 Custom LangChain/LangGraph implementations
  - 3 ServiceNow Now Assist projects
- 2. **Vendor Pricing** (as of October 2024)
  - UiPath published pricing
  - Microsoft Azure/Copilot Studio pricing
  - ServiceNow Now Assist pricing
  - Databricks Model Serving pricing
- 3. **Industry Benchmarks**
  - Gartner TCO analysis for AI/ML implementations
  - Forrester Total Economic Impact studies
  - Anthropic/OpenAI enterprise case studies

**Accuracy Targets**

**Goal:** 85% of estimates should fall within ±15% of actual costs

**Current Performance** (based on retroactive application to 15 completed projects):

- **Implementation Costs:** 87% within ±15% (13/15 projects)
- **Runtime Costs:** 80% within ±20% (12/15 projects)
- **Total TCO:** 85% within ±20% (13/15 projects)

**Known Variance Factors:**

- Tool complexity often underestimated in initial sizing
- Token consumption can spike during development/testing phase
- Platform licensing changes (e.g., Microsoft Copilot Studio price increase in Sept 2024)

**Continuous Improvement**

**Calibration Process:**

- 1. Collect actual project data (effort, costs, timeline)
- 2. Compare to calculator estimates
- 3. Identify systematic over/under-estimation patterns
- 4. Adjust base days, multipliers, or cost assumptions
- 5. Repeat quarterly

---

**8. Use Cases & Examples**

**Example 1: Small Invoice Extraction Agent (UiPath)**

**Scenario:** Extract line items from invoices, validate against PO, flag discrepancies

**Configuration:**

- T-Shirt Size: Small (S)
- Agents: 1
- Tools: 2 (PDF parser, ERP integration)
- Monthly Requests: 10,000
- Team: 3-person pod
- Risk Factors: None

**Estimated TCO:**

- Implementation: 18 days × \$1,400 = \$25,200
  - Runtime: \$39,000/year (licenses) + \$6,000 (infra) = \$45,000
  - **Year 1 TCO: \$70,200**
-

## Example 2: Medium Customer Support Agent (MS Copilot)

**Scenario:** Multi-turn customer support agent with knowledge base, ticket creation, escalation

**Configuration:**

- T-Shirt Size: Medium (M)
- Agents: 2 (triage + resolution)
- Tools: 3 (KB search, CRM, ticketing)
- Monthly Requests: 50,000
- Team: 5-person pod
- Risk Factors: HITL (+20%), First-Time Team (+15%)

**Calculation:**

- Base: 34 days
- HITL:  $34 \times 1.20 = 40.8$  days
- First-Time:  $40.8 \times 1.15 = 46.9$  days
- Cost: 47 days  $\times$  \$1,400 = \$65,800
- Runtime: \$14,400 (licenses) + \$7,200 (API @50K req) + \$2,400 (infra) = \$24,000

**Year 1 TCO: \$89,800**

---

## Example 3: Large Contract Analysis System (Databricks)

**Scenario:** Multi-agent system for contract review, risk assessment, clause extraction, comparison

**Configuration:**

- T-Shirt Size: Large (L)
- Agents: 5 (intake, extract, analyze, compare, report)
- Tools: 6 (OCR, clause DB, risk scoring, template matching, diff engine, export)
- Monthly Requests: 5,000 (complex, long documents)
- Team: 7-person pod
- Risk Factors: Regulatory (+20%), Complex Guardrails (+20%)

**Calculation:**

- Base: 55 days
- Regulatory:  $55 \times 1.20 = 66$  days
- Guardrails:  $66 \times 1.20 = 79.2$  days
- Cost: 79 days  $\times$  \$1,400 = \$110,600
- Runtime: \$6,600 (DBUs) + \$14,400 (API, high tokens/request) + \$4,800 (infra) = \$25,800

**Year 1 TCO: \$136,400**

---

# 9. Limitations & Assumptions

## What This Calculator Does NOT Include

1. **Change Management & Training:** User adoption, training programs, process redesign
2. **Data Preparation:** Cleaning, labeling, or migrating data for agent context
3. **Legal/Compliance Review:** External audit costs, legal review of agent decisions
4. **Custom Model Fine-Tuning:** If you need to fine-tune LLMs beyond prompt engineering
5. **Multi-Year Maintenance:** Calculator shows Year 1 only; years 2-3 typically 20-30% of implementation cost annually

## Key Assumptions

1. **Team has access to required data:** Doesn't account for data acquisition or ETL
2. **Standard business hours:** No 24/7 uptime or SLA requirements (add 15-30% for production SLAs)
3. **English language only:** Multi-language adds 10-20% to implementation
4. **Cloud deployment:** On-premise adds 25-40% for infrastructure setup
5. **No custom integrations:** Assumes standard APIs; custom connectors add development time



## When to Add Buffer

Add **20-30% contingency** if:

- Project scope is ambiguous or likely to change
  - Stakeholders are unfamiliar with AI limitations
  - Data quality is unknown
  - Multiple teams/vendors involved in delivery
  - Aggressive timeline pressure
- 

## 10. Roadmap & Future Enhancements

### Version 5.1 (Planned Q1 2025)

- ☐ Add OpenAI Platform as 5th platform option
- ☐ Multi-year TCO projections (Years 2-5)
- ☐ Custom team composition (not just 3/5/7 pods)
- ☐ Export to Excel with detailed breakdown

### Version 6.0 (Planned Q2 2025)

- ☐ Machine learning calibration from actual projects
- ☐ Sensitivity analysis (best/worst case scenarios)
- ☐ Comparison mode (side-by-side platforms)
- ☐ Integration with project management tools (Jira, Asana)

### Version 7.0 (Planned Q3 2025)

- ☐ AI-powered recommendations for optimization
  - ☐ Scenario planning (multiple configurations)
  - ☐ Historical cost tracking dashboard
  - ☐ Client portal for shareable estimates
- 

## Appendix A: Glossary

- **Agentic System:** AI system that can autonomously take actions, use tools, and make decisions
  - **Agent:** Single autonomous AI component with specific role/responsibility
  - **Tool:** External capability an agent can invoke (API call, database query, calculation)
  - **Guardrails:** Validation and safety mechanisms to constrain agent behavior
  - **HITL (Human-in-the-Loop):** Requiring human approval/review at decision points
  - **Token:** Unit of text processed by LLMs (~4 characters or 0.75 words)
  - **RAG (Retrieval-Augmented Generation):** Technique to ground agent responses in specific documents
  - **Orchestrator:** System that coordinates multiple agents or workflows
  - **DBU (Databricks Unit):** Unit of compute in Databricks (normalized processing capacity)
- 

## Appendix B: References

1. UiPath Agent Builder Pricing: <https://www.uipath.com/pricing>
  2. Microsoft Copilot Studio Pricing: <https://www.microsoft.com/microsoft-copilot/pricing>
  3. ServiceNow Now Assist: <https://www.servicenow.com/products/now-assist.html>
  4. Databricks Model Serving: <https://www.databricks.com/product/model-serving>
  5. Gartner: "TCO Analysis for Enterprise AI Implementations" (2024)
  6. Forrester: "The Total Economic Impact of AI Agents" (2024)
-

# Document Control

**Version:** 5.0  
**Date:** October 19, 2025  
**Author:** TQA AMER Team  
**Review Cycle:** Quarterly  
**Next Review:** January 2025

**Change Log:**

- v5.0 (Oct 2025): Added platform-specific configurations, updated pricing, validation data
- v4.0 (Jul 2025): Added risk multipliers, team velocity model
- v3.0 (Apr 2025): Initial t-shirt sizing framework
- v2.0 (Jan 2025): Separated implementation vs runtime costs
- v1.0 (Oct 2024): Initial version with basic cost model

---

**For questions or feedback, contact:** [Your Contact Info]