Practical Guide to Enterprise GenAI Engineering with MCPs

GenAI Enterprise Engineering with MCPs

A Practical Guide to exposing Enterprise data and APIs to GenAI Agents.

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# Title

GenAI Enterprise Engineering with MCPs

A Practical Guide to exposing Enterprise data and APIs to GenAI Agents.

# Abstract

**Hope:** Enterprises are seeing GenAI as a key for their effectiveness and growth.

**Reality:** Early investments are proving harder. Although GenAI companies are wildly successful in the consumer space, their effectiveness in Enterprises is lagging.

There is a growing sentiment in Enterprises: “GenAI is hard”. That, it is academic. That, training the staff for ai adoption is hard. That, like the previous Web and Mobile transformations, this AI penetration also will take time.

**Missteps:** By understanding how GenAI is different and how GenAI offers a never-before opportunity for quick implementation, Enterprises can avoid the missteps whereby even smaller investments can garner significant value.

**Solution:** The 3 key technologies in GenAI that make this possible are the horizontal GenAI UX like Chats, MCPs, and Agents in that order. Among these MCPs (a newer form of APIs) is where most of the development cost and time is spent.

**The book:** This book shows why MCPs are unique in the industry in their value proposition. Shows how MCPs fit into an Enterprise GenAI architecture and propels it. Shows how MCPs are the industry standard and empowers your chatbots, Agents, and other GenAI applications. Shows how MCPs present the Enterprise assets, namely data and APIs, to GenAI. This book thereby shows how even small investments in organizations can gain enormous value from GenAI. Today!

# Table of Contents

# Goals of the Book

1. Pre-requisites
2. Simplicity
3. Usefulness

# An Enterprise Architecture for GenAI

This chapter covers the following

1. A pictorial representation of parts of GenAI
2. LLM Infrastructure
3. Introduction to RAG
4. RAG Modules
5. Agentic Modules
6. Key LangChain modules and concepts

# RAG Architecture for unstructured data

# Agentic Architecture for APIs

# What are MCP Servers an Introduction

# GenAI Architecture redefined with MCPs

# GenAI Discernment: Some are more important, namely MCPs

# A Quick Detour: What is the best way to learn and stay relevant in the GenAI Space

# Developing your first MCP Server

1. Source code for a simple server
2. Useful Links
3. Testing with Test Inspector

# Testing a public MCP Server with Claude

1. Links where public MCP Servers are located
2. Caution
3. How to setup Claude
4. How to test an Excel MCP Server with Claude desktop

# Developing a series of Healthcare MCP Servers

1. Claims
2. A RAG pharmacy example
3. Providers
4. Prompts

# Developing a Test Harness for MCP Servers with Assistant UI

1. What is assistant UI
2. Updated Assistant UI repo
3. Getting Keys for an LLM
4. Configuring healthcare MCP servers
5. Testing
6. Looking at log messages
7. Understanding completion API

# HuggingChat V2 with MCP Server Support

Download

Install

Hook up MCP servers

Test

# Tools and Resources for MCP Development

tbd