

1978 called, it wants
its architecture back.



small tools, big brains - powering LLMs
with MCP

●●●○ Idea 3G

3:08 AM

⌚ 75% 🔋

< Messages

Marcin

Details

Po ile stoi Jen?

●●●○ Idea 3G

3:10 AM

74%

< Messages

Marcin

Details

Po ile stoi Jen?

Po 3,7468 pln



I was the LLM

Input: "Po ile stoi Jen?"

Tools: [pc] [currency exchange website] [response formatter]

Output: "Po 3,7468 pln"



I'm Adam



typescript
kotlin mongodb
javascript android
go zig
markdown postgresql java
 swift
 sql git



One task, one tool

```
# Human (2011)
Friend: "Po ile stoi Jen?"
Adam:
    → turnOnPc()
    → checkConversionRateOnline()
    → formatResponse()
```

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MCP (2024)

User: "Convert 100 USD to EUR"

Claude orchestrates:

→ fetch_exchange_rate()

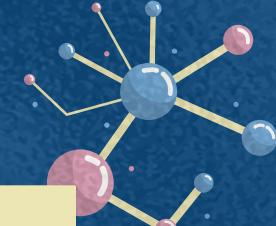
→ calculate_conversion()

→ format_response()



"Write programs that do one thing and do it well. Write programs to work together."

Doug McIlroy



One task, one tool

```
# Human (2011)
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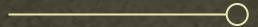
```
# Unix (1978)
```

```
cat application.log | grep ERROR | awk '{print $4}' | sort | uniq -c
```



Glossary





Glossary

LLM

Large Language Model

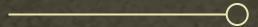
Glossary

LLM

Large Language Model

Token

Basic unit of text processing



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Information available to llm
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Agent

Single purposed scoped llm
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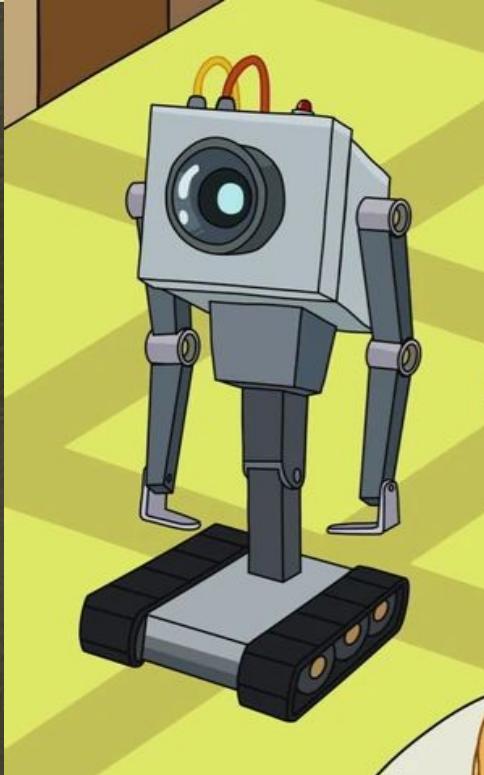
Glossary

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Allows llm to call external tools



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Glossary

LLM

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Allows llm to call external tools

Agent

Single purposed scoped llm interaction

MCP

Model Context Protocol

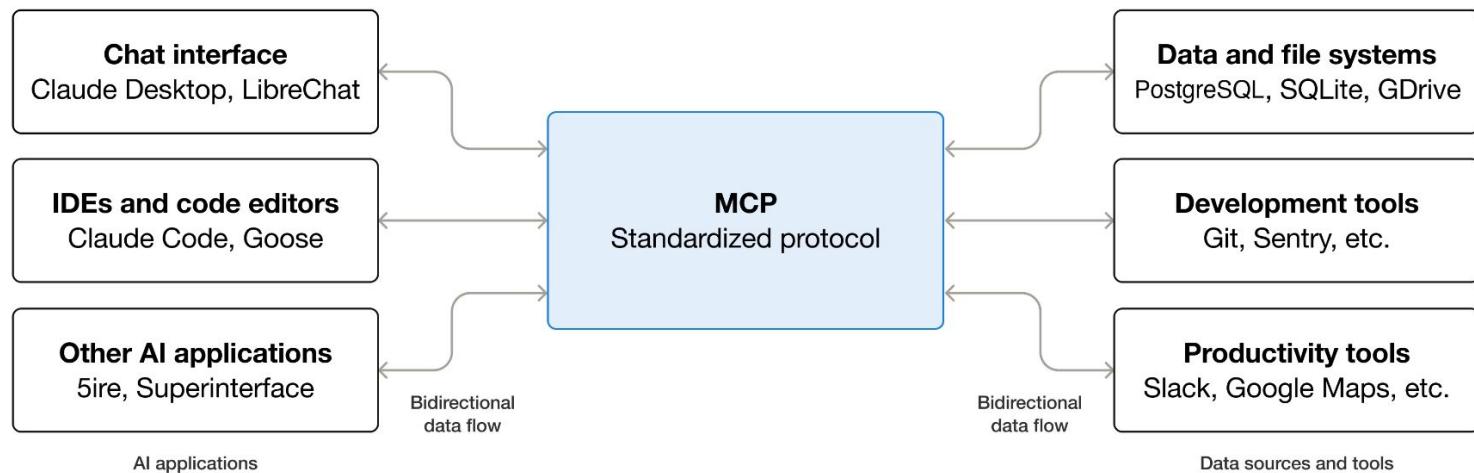


MCP

Model Context Protocol

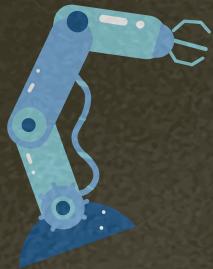


MCP





MCP

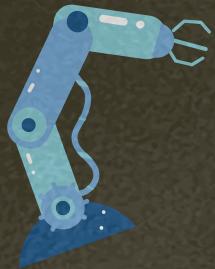


Tools

Functions



MCP



Tools

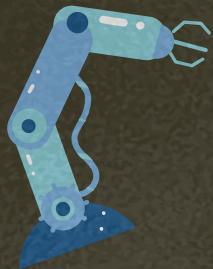
Functions

Resources

Files, data from db etc.



MCP



Tools

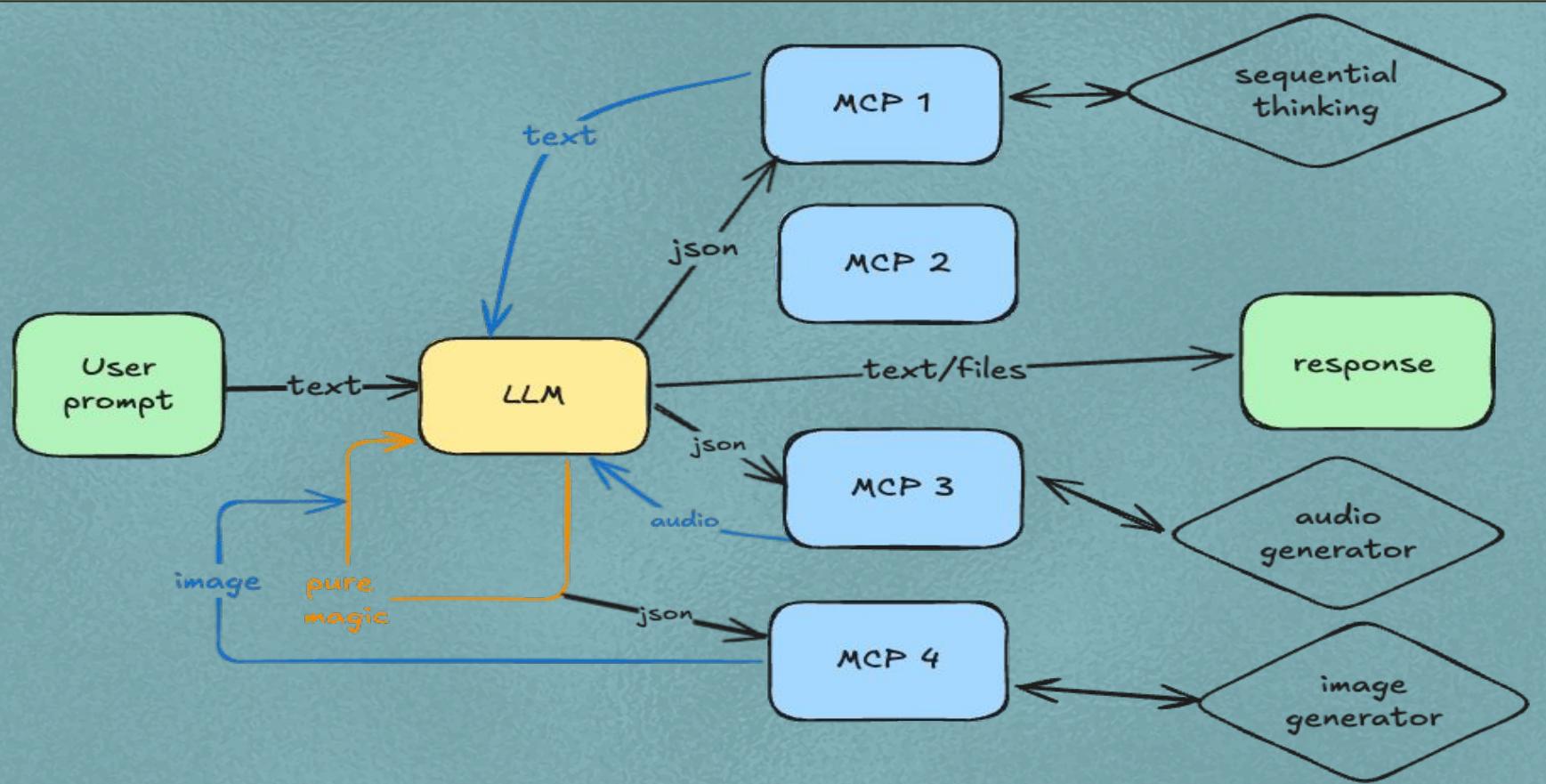
Functions

Resources

Files, data from db etc.

Prompts

Templates



Let's build the thing

Available SDKs



TypeScript



Python



Go



Kotlin



Swift



Java



C#



Ruby



Rust



PHP



Let's build the thing

```
fun main() = runBlocking {
    runSseMcpServerUsingKtorPlugin( port = 3000)
}

1 Usage
suspend fun runSseMcpServerUsingKtorPlugin(port: Int) {
    println("Starting sse server on port $port")
    println("Use inspector to connect to the http://localhost:\$port/sse")

    embeddedServer( factory = CIO, host = "0.0.0.0", port = port) {
        mcp {
            return@mcp createServer()
        }
    }.startSuspend(wait = true)
}
```

Server

```
val server = Server(  
    serverInfo = Implementation(  
        name = "smart-currency-assistant", version = "1.0.0"  
        capabilities = ServerCapabilities(  
            tools = ServerCapabilities.Tools(  
                listChanged = true,  
            ), prompts = ServerCapabilities.Prompts(  
                listChanged = true,  

```

Tool

```
server.addTool(  
    name = "echo", description = "Echoes back the input message", inputSchema = Tool.Input(  
        properties = buildJsonObject {  
            putJsonObject( key = "message") {  
                put("type", "string")  
                put("description", "Message to echo back")  
            }  
        })  
    ) { request ->  
        val message = request.arguments["message"]?.jsonPrimitive?.content ?: return@addTool CallToolResult(  
            content = listOf(TextContent( text = "No message provided"))  
        )  
        CallToolResult(content = listOf(TextContent( text = "Echo: $message")))  
    }  
}
```

Inspector

MCP Inspector localhost:5173

Transport Type: STDIO

Command: src/puppeteer/dist/index.js

Arguments: Arguments (space-separated)

Environment Variables

Connect (Connected)

Resources Resource Templates Select a resource or template

List Resources List Templates

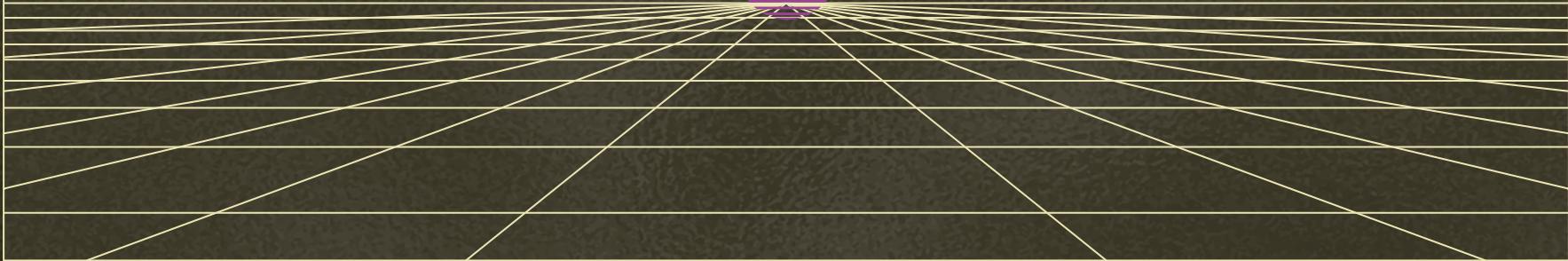
Select a resource or template from the list to view its contents

History: No history yet

Server Notifications: No notifications yet



Demo





I need more MCPs

3,048 Integrations

Connect with tools built by the community.

All

Memory

Academic Research

Browser Automation

Platform APIs

Database

Finance

Agentic Tools



Airtable ⚡

airtable

Airtable merges spreadsheet functionality with database power, ...

Remote

73



Linkup ⚡

@LinkupPlatform/linkup-mcp-...

Search the web in real time to get trustworthy, source-backed answers....

Remote

2.90k



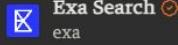
Todoist ⚡

todoist

Todoist is a task management tool allowing users to create to-do lists, s...

Remote

91



Exa Search ⚡

exa

Fast, intelligent web search and web crawling. New mcp tool: Exa-code is ...

Remote

710.65k



Bright Data ⚡

@luminati-io/brightdata-mcp

One MCP for the Web. Easily search, crawl, navigate, and extract websites...

Remote

635

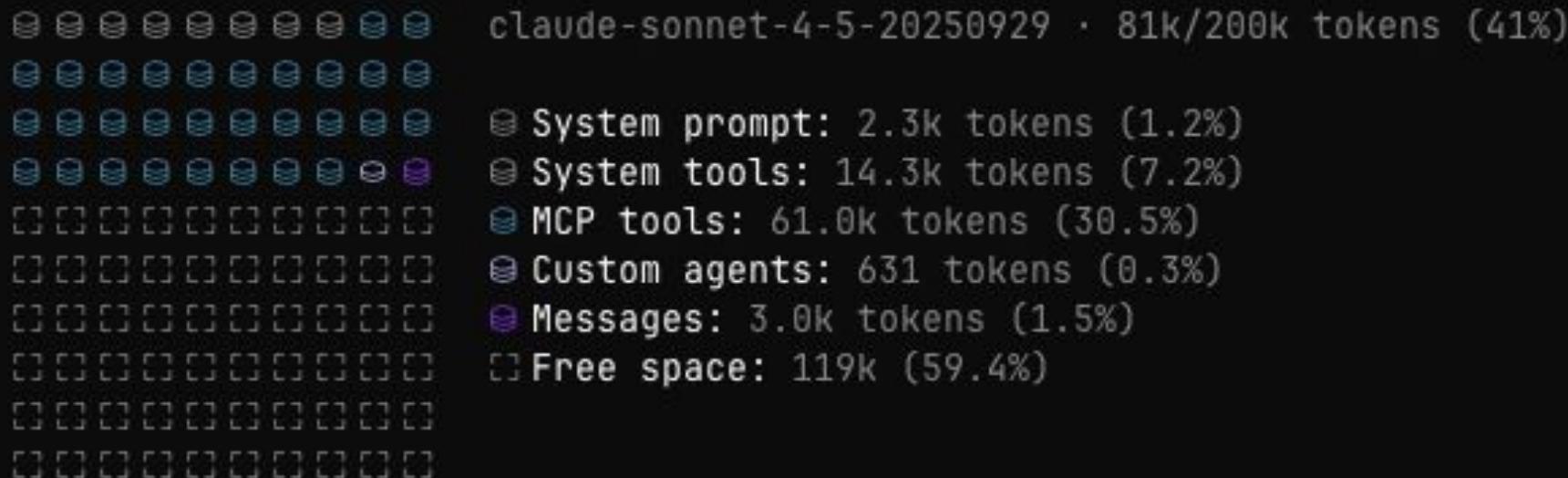
[View all integrations](#)





How not to build mcps

Context Usage



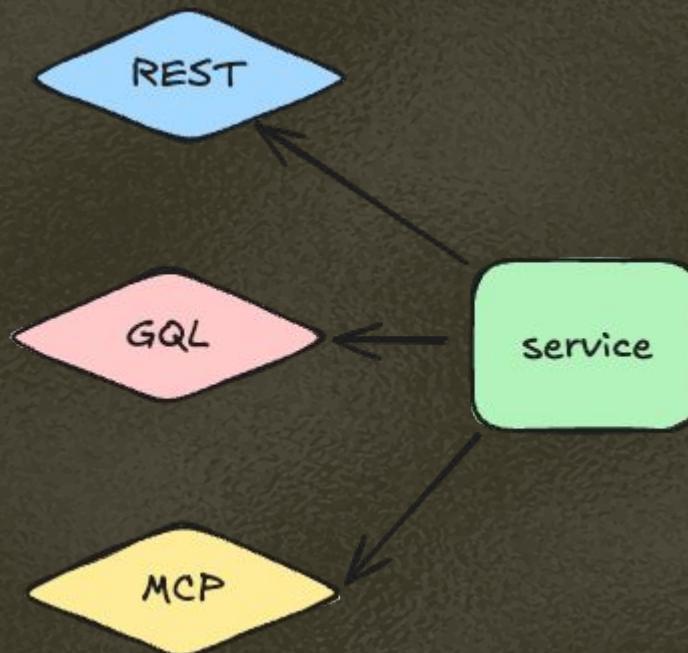
How not to build mcps

```
L mcp_miottid-todoist-mcp_add-project (miottid-todoist-mcp): 744 tokens
L mcp_miottid-todoist-mcp_get-projects (miottid-todoist-mcp): 585 tokens
L mcp_miottid-todoist-mcp_get-project (miottid-todoist-mcp): 601 tokens
L mcp_miottid-todoist-mcp_update-project (miottid-todoist-mcp): 734 tokens
L mcp_miottid-todoist-mcp_delete-project (miottid-todoist-mcp): 601 tokens
L mcp_miottid-todoist-mcp_get-project-collaborators           608 tokens
(miottid-todoist-mcp):
L mcp_miottid-todoist-mcp_add-task (miottid-todoist-mcp): 999 tokens
L mcp_miottid-todoist-mcp_quick-add-task (miottid-todoist-mcp): 706 tokens
L mcp_miottid-todoist-mcp_get-task (miottid-todoist-mcp): 606 tokens
L mcp_miottid-todoist-mcp_get-tasks (miottid-todoist-mcp): 594 tokens
L mcp_miottid-todoist-mcp_get-tasks-completed-by-completion-date 836 tokens
(miottid-todoist-mcp):
L mcp_miottid-todoist-mcp_get-tasks-completed-by-due-date 841 tokens
(miottid-todoist-mcp):
L mcp_miottid-todoist-mcp_get-productivity-stats             643 tokens
(miottid-todoist-mcp):
L mcp_miottid-todoist-mcp_update-task (miottid-todoist-mcp): 981 tokens
| -- mcp_miottid-todoist_mcp_update_task (miottid-todoist-mcp): 981 tokens
```

How not to build MCPs

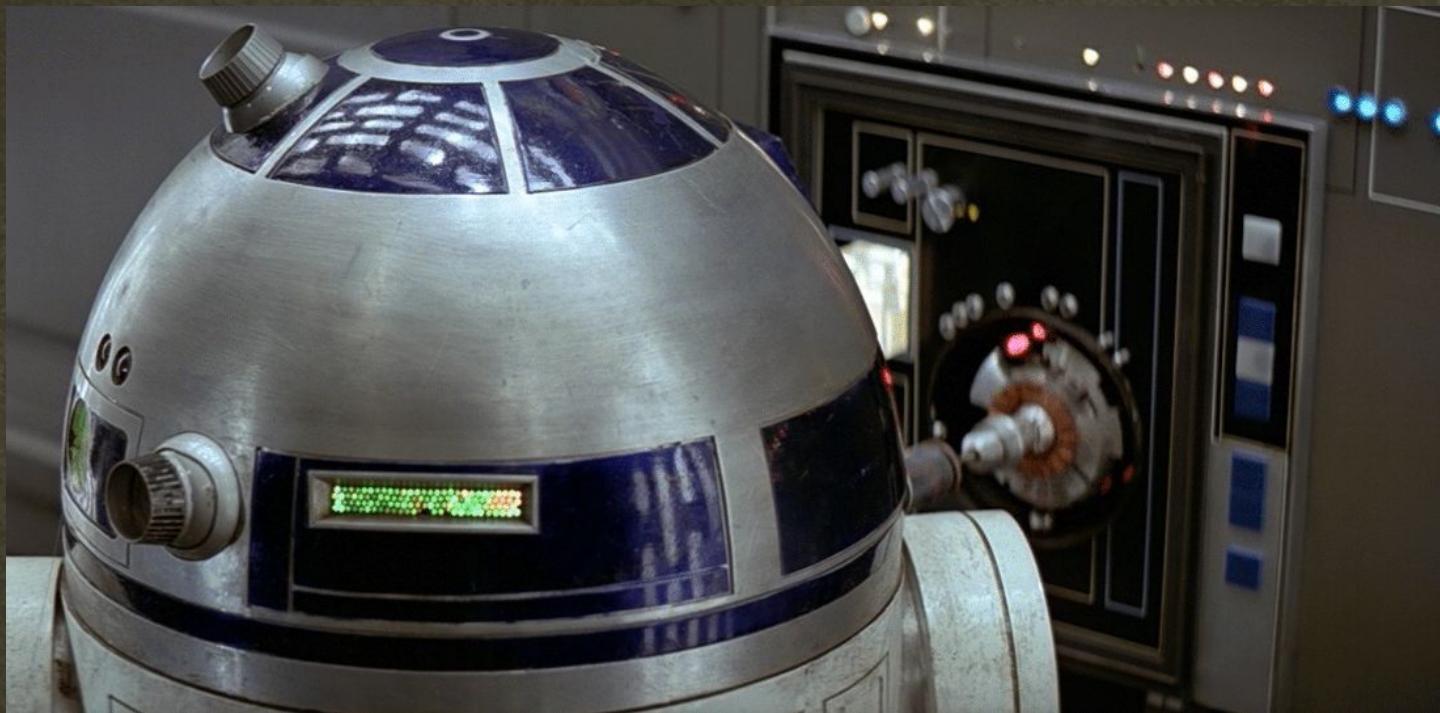


How to build MCPs





How to build mcps

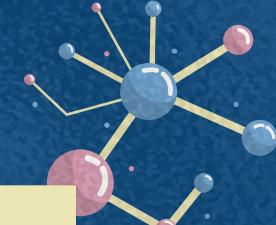


• • •



LLM is a f#####g tool,
save the context at all
times.

Some random dude





How to build mcps

calculate (githejie-mcp-server-calculator)

Tool name: calculate

Full name: mcp__githejie-mcp-server-calculator__calculate

Description:

Calculates/evaluates the given expression.

Parameters:

- **expression** (required): string

S in MCP stands for security

- `githejie-mcp-server-calculator - calculate (MCP)(expression: "386.95 / 3")`

Tool use

```
githejie-mcp-server-calculator - calculate(expression: "365.35 / 3") (MCP)
Calculates/evaluates the given expression.
```

Do you want to proceed?

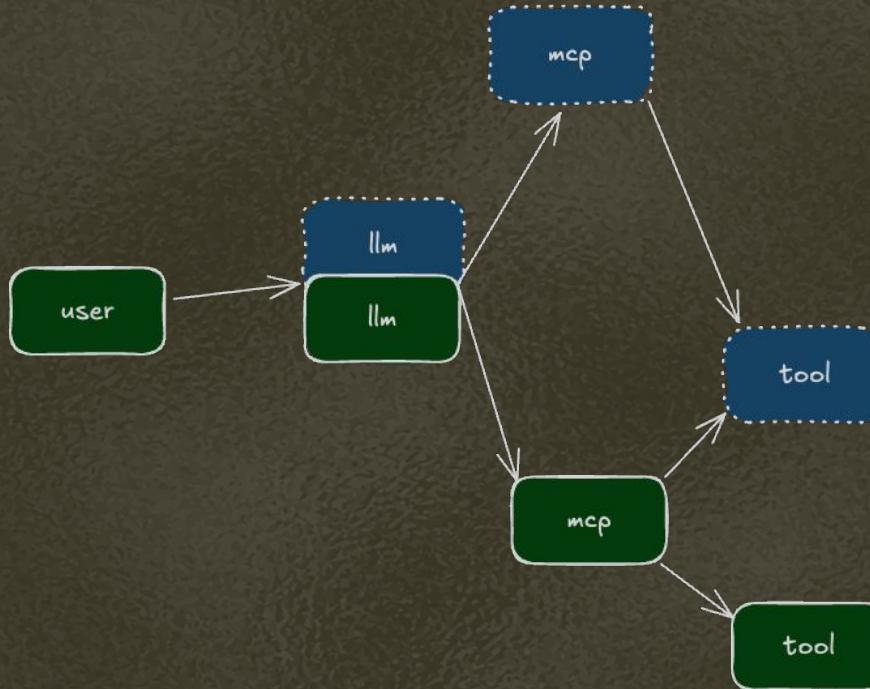
- › 1. Yes
- 2. Yes, and don't ask again for `githejie-mcp-server-calculator - calculate` commands in [`/Users/asvid/repo/mcp-test`](#)
- 3. No, and tell Claude what to do differently (esc)



S in MCP stands for security

```
  "miottid-todoist-mcp": {
    "type": "http",
    "url": "https://server.smithery.ai/@miottid/todoist-mcp/mcp?api_key=0026207e-4950-45e7-8f2d-1a2a2a2a2a2a"
  },
  "smithery-ai-github": {
    "type": "http",
    "url": "https://server.smithery.ai/@smithery-ai/github/mcp?api_key=0026207e-4950-45e7-8f2d-1a2a2a2a2a2a"
  },
}
```

S in MCP stands for security





S in MCP stands for security

ⓘ Details

Quality Score ⓘ

57/100

Monthly Tool Calls

1,345

Deployed from

main → d00b146

Local

Yes

Published

2/11/2025

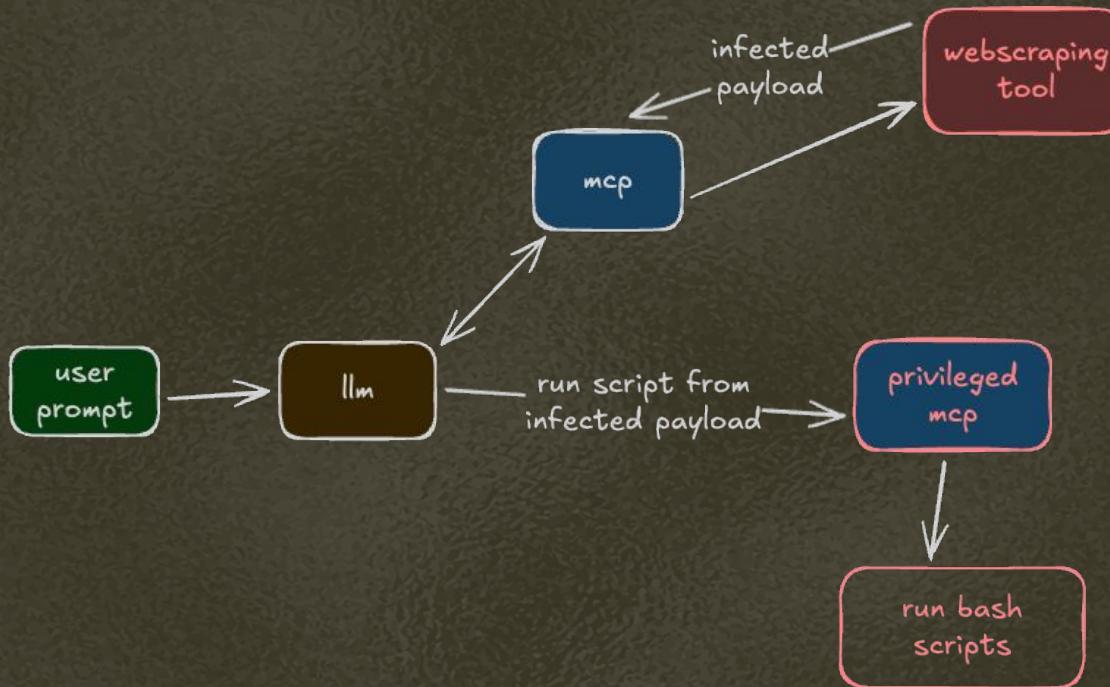
Source Code

miottid/todoist-mcp

Homepage

www.todoist.com

S in MCP stands for security





...

R in MCP stands for reliability

Quality Score ⓘ

79/100

Monthly Tool Calls

249

Uptime ⓘ

87.95%

Local

No

Published

11/19/2025



R in MCP stands for reliability

ⓘ Details

Quality Score ⓘ

83/100

Monthly Tool Calls

3,375

Uptime ⓘ

83.91%

Local

No

Published

11/26/2025

Homepage

gmail.com

S in MCP stands for standards

Tools 20

1 / 4

GMAIL_ADD_LABEL_TO_EMAIL

Adds and/or removes specified gmail labels for a message; ensure `message_id` and all `label_ids` are valid (use 'listlabels' for custom label ids).

GMAIL_CREATE_EMAIL_DRAFT

Creates a gmail email draft, supporting `to/cc/bcc`, `subject`, plain/html body (ensure `is_html=true` for html), attachments, and threading.

GMAIL_CREATE_LABEL

Creates a new label with a unique name in the specified user's gmail account.

GMAIL_DELETE_DRAFT

Permanently deletes a specific gmail draft using its id; ensure the draft exists and the user has necessary permissions for the given `user_id`.

GMAIL_DELETE_MESSAGE

Permanently deletes a specific email message by its id from a gmail mailbox; for `user_id`, use 'me' for the authenticated user or an email address to which the authenticated user has delegated access.

Tools 4

fun1

Divides the first number by the second

fun2

Multiplies two numbers together

fun3

Subtracts the second number from the first

fun4

Adds two numbers together



S in MCP stands for standards

▷ Tools 4

add

두 숫자의 합을 반환합니다.

multiply

두 숫자의 곱을 반환합니다.

subtract

두 숫자의 차를 반환합니다.

divide

두 숫자의 나눗셈 결과를 반환합니다.



Alternatives



Alternatives

Scripts

If you can run script, so can
LLM



Alternatives

Scripts

If you can run script, so can
LLM

CLI

Scripts but wrapped in a
single tool



Alternatives

Scripts

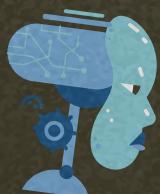
If you can run script, so can
LLM

Skills

Progressive Disclosure for
saving context

CLI

Scripts but wrapped in a
single tool



	MCP	CLI	Scripts	Skills
Agent Invoked	Yes	No	No	Yes
Context Window Consumption	High	Medium (Depends)	Low (w/incr)	Low (w/incr)
Customizable	No (unless you own)	Yes	Yes	Yes
Portability	Low	Medium	High	High
Composability	Yes (MCP Prompts)	Yes but requires local prompts	Yes but requires local prompts	Yes but requires local prompts
Simplicity	High	Medium	Medium	Medium
Engineering Investment	Low if external, Medium if custom	Medium	Medium	Low if external, Medium if custom
Feature Set	Tools, Resources, Prompts, Elicitation, Completion, Sampling, Logging, Auth. etc	Whatever you build	Whatever you build	Whatever you build

One task, one tool - right tool

```
# Human (2011)
```

```
Friend: "Po ile stoi Jen?"
```

```
Adam:
```

- turnOnPc()
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Claude orchestrates:
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```
# Unix (1978)
```

```
cat application.log | grep ERROR | awk '{print $4}' | sort | uniq -c
```

• • •

What part of MCP did you not understand?

