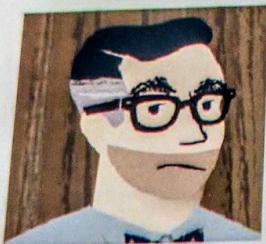




# From Discovery to API with AI

Mike Amundsen (@mamund)



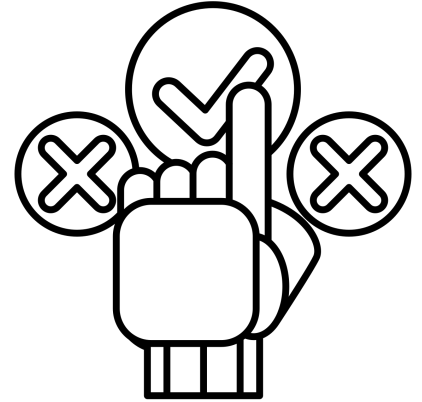
**Mike Amundsen**  
**@mamund**



# Generative AI and Users

# How people use generative AI

- **Generator** : to get answers
- **Surrogate** : to get advice
- **Instrument** : to support/challenge thinking



**A position on how people use generative AI, and why it matters**

- Author: Mike Amundsen (w/ genAI contributions)
- Date: 2026-FEB-07

**Summary**

In practice, people tend to use generative AI to produce text, code, or answers. A smaller but highly leaning on the system for explanation, reassurance as a cognitive instrument, a tool for thinking, reflection. These modes differ less in technical sophistication but have different implications for learning, supervision, and

**Where this framing comes from**

This framing did not originate as a formal study with generative AI systems themselves.

By asking the system to reflect on the patterns in its interactions, it can provide insights into both

**Understanding AI Usage Patterns:**  
*An Observational Analysis of How People Use Claude*

Position Paper

**Introduction**

This paper emerged from thousands of interactions with Claude. While we lack of approaches, goals, and locate themselves within considered.

The analysis presented but the patterns are considered current state of AI interaction

**Methodology Note**

These observations come from analytics. The percentage useful for understanding categories themselves reflect

**How AI Impacts Skill Formation**

Judy Hanwen Shen\*      Alex Tamkin†

January 29, 2026

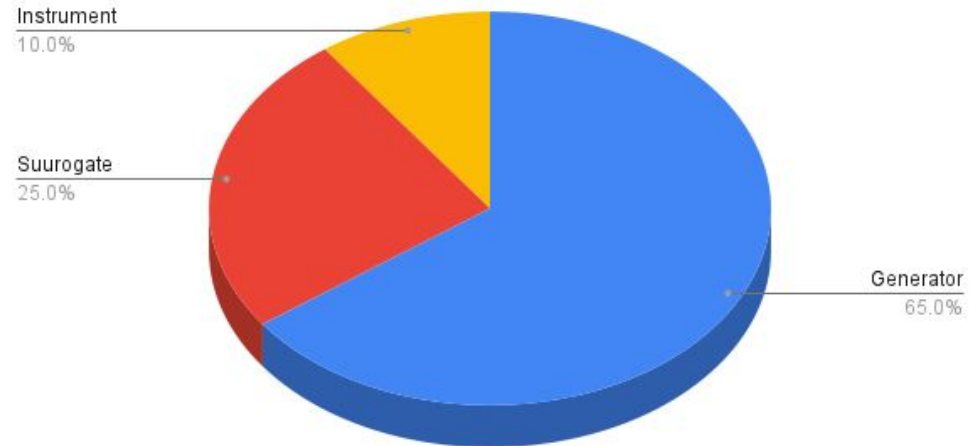
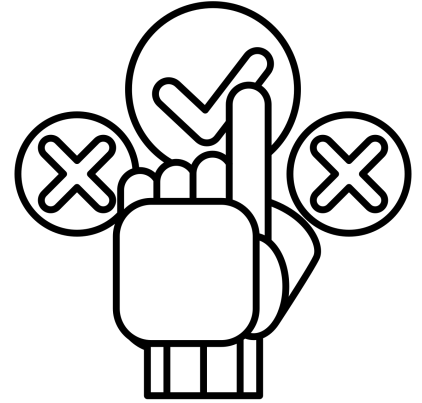
**Abstract**

AI assistance produces significant productivity gains across professional domains, particularly for novice workers. Yet how this assistance affects the development of skills required to effectively supervise AI remains unclear. Novice workers who rely heavily on AI to complete unfamiliar tasks may compromise their own skill acquisition in the process. We conduct randomized experiments to study how developers gained mastery of a new asynchronous programming library with and without the assistance of AI. We find that AI use impairs conceptual understanding, code reading, and debugging abilities, without delivering significant efficiency gains on average. Participants who fully delegated coding tasks showed some productivity improvements, but at the cost of learning the library. We identify six distinct AI interaction patterns, three of which involve cognitive engagement and preserve learning outcomes even when participants receive AI assistance. Our findings suggest that AI-enhanced productivity is not a shortcut to competence and AI assistance should be carefully adopted into workflows to preserve skill formation – particularly in safety-critical domains.

# How people use generative AI

- **Generator** : ~60–70%
- **Surrogate** : ~20–30%
- **Instrument** : ~5–10%

- Judgment shifts  
*From humans to machines*
- Skill formation weakens  
*Disrupting learning culture*





**Andrej Karpathy**

@karpathy



There's a new kind of coding I call "vibe coding", where you fully give in to the vibes, embrace exponentials, and forget that the code even exists. It's possible because the LLMs (e.g. Cursor Composer w Sonnet) are getting too good. Also I just talk to Composer with SuperWhisper so I barely even touch the keyboard. I ask for the dumbest things like "decrease the padding on the sidebar by half" because I'm too lazy to find it. I "Accept All" always, I don't read the diffs anymore. When I get error messages I just copy paste them in with no comment, usually that fixes it. The code grows beyond my usual comprehension, I'd have to really read through it for a while. Sometimes the LLMs can't fix a bug so I just work around it or ask for random changes until it goes away. It's not too bad for throwaway weekend projects, but still quite amusing. I'm building a project or webapp, but it's not really coding - I just see stuff, say stuff, run stuff, and copy paste stuff, and it mostly works.

6:17 PM · Feb 2, 2025 · **4.9M** Views



## Signals from Our Futures Past

# The cost of always having the answer

The erosion of persistence



MIKE AMUNDSEN

MAY 11, 2026



5



Share

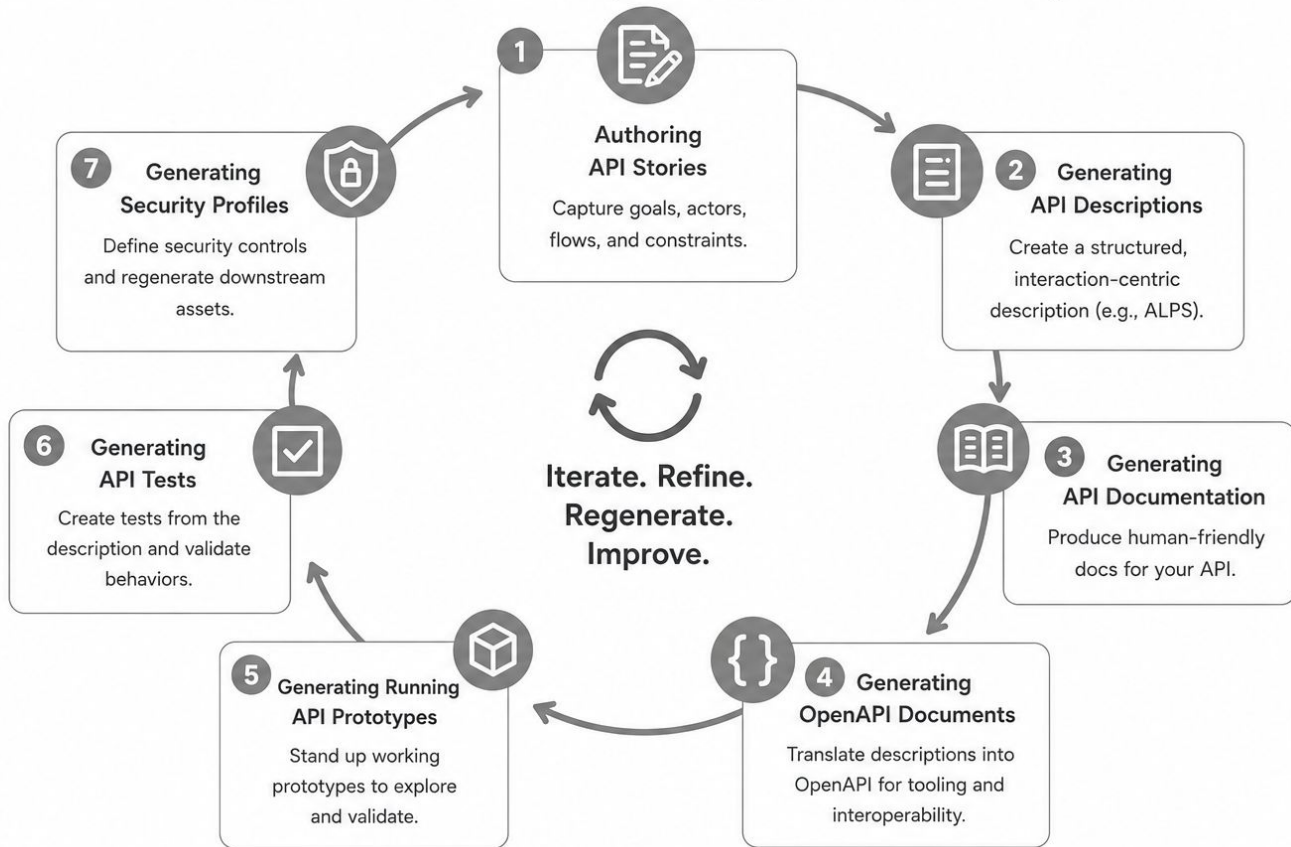


A recent [paper](#) makes a simple but unsettling claim: AI assistance improves performance in the moment but reduces persistence and weakens independent thinking almost immediately.



# The AI-Driven API Design Loop

Iterate from ideas to secure, testable, APIs—and back again.



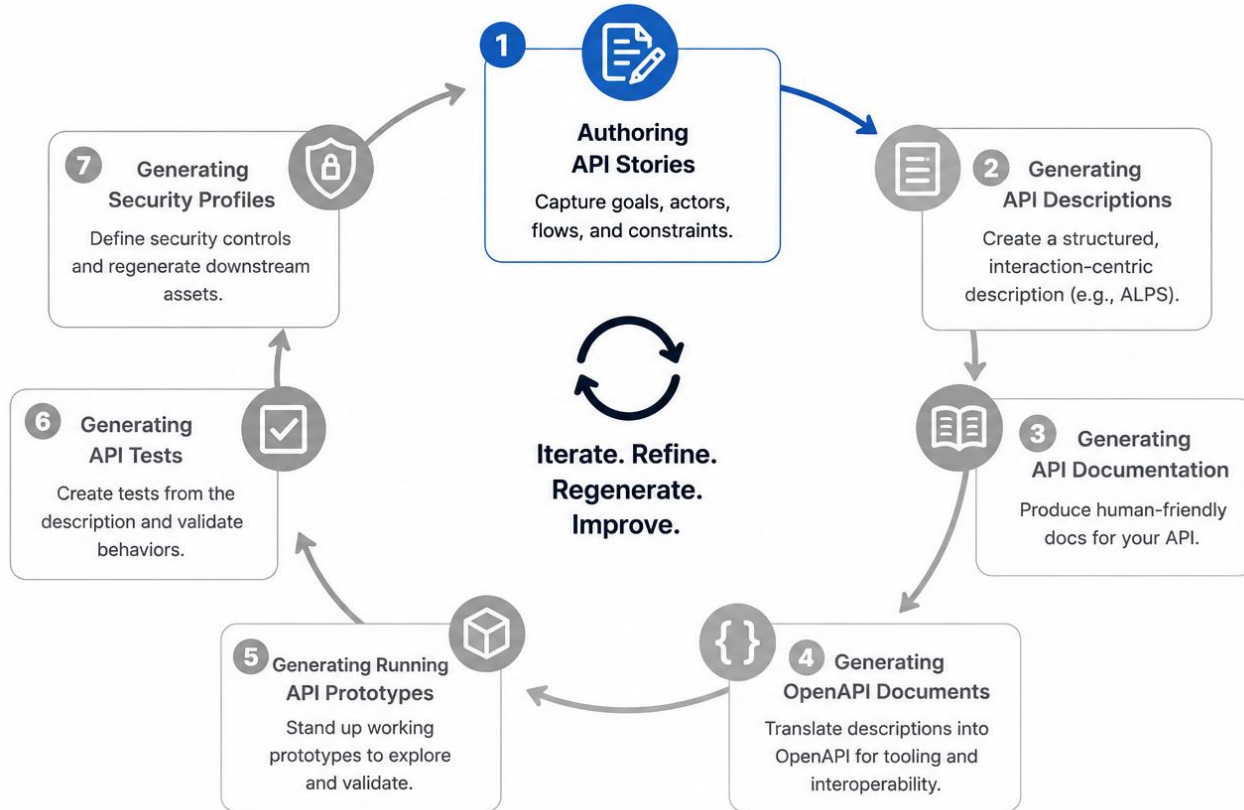
***Let's get started ...***



# Authoring API Stories

# The AI-Driven API Design Loop

Iterate from ideas to secure, testable, APIs—and back again.



# Authoring API Stories



- APIs start with a story
  - "We need..."
  - "Our customers requested..."
  - "I have an idea..."
- Stories are shared understanding
  - Our brains are wired for stories, not data
  - Stories are accessible
  - Stories are repeatable

# Authoring API Stories : Story Parts



- Purpose
  - Sentence or two
- Data Properties
  - All data fields (`id`, `givenName`, etc.)
- Resources
  - All "resting states" (`home`, `list`, `item`)
- Actions
  - All actions (`save`, `share`, `filter`, etc.)
- Rules
  - Constraints (`id` must be unique, etc.)

raw.githubusercontent.com/mamund/2025-05-ai-apis-design-with-alps/refs/heads/main/01-api-stories-to-alps/tasks-api-story.md

```
## Resources
The following are resources, or states, of the API. Each state has one or more possible Actions.

* **Home** : The home or landing page of the API. Users typically start here.
* Actions: **GetTaskList**, **GetFilteredTaskList**, **ShowHomePage**
* **TaskCollection** : The list of tasks in the system are displayed here.
* Actions: **ShowHomePage**, **GetTaskList**, **GetFilteredTaskList**, **CreateNewTask**, **GetTaskItem**
* **TaskItem** : This resource shows a single task (selected from the TaskCollection)
* Actions: **EditExistingTask**, **UpdateStatusOfTask**, **SetDueDateOfTask**, **AssignUserToTask**, **GetTaskList**, **GetFilteredTaskList**, **ShowHomePage**

## Actions
This edition of the application needs to support the following operations. Each action has zero or more input properties and always has one return value (to another state). Each action is also marked as either Safe (GET), Unsafe (POST), Idempotent (PUT/PATCH), or Delete (DELETE)

* **ShowHomePage** : Use this action to display the `home` resource
* Inputs: None
* Returns: **Home**
* Type: Safe
* **GetTaskCollection** : Use this action to return a list of all Task records in the system
* Inputs: None
* Returns: **TaskCollection**
* Type: Safe
* **GetTaskItem** : Use this action to get a single existing task record.
* Inputs: id
* Required: id
* Returns: **TaskItem**
* Type: Safe
* **CreateNewTask** : Use this action to add a new Task record to the system
* Inputs: id, title, description, dueDate, status, priority, assignedUser
* Required: id, title, status
* Returns: **TaskCollection**
* Type: Unsafe
* **EditExistingTask** : Use this action to modify an existing Task record to the system
* Inputs: id, title, description, dueDate, status, priority, assignedUser
* Required: id, title, status
* Returns: **TaskItem**
* Type: Unsafe
* **UpdateStatusOfTask** : Use this action to update the `status` of a single record
* Inputs: id, status
* Required: id, status
* Returns: **TaskItem**
* Type: Idempotent
* **SetDueDateOfTask** : Use this action to set the `dueDate` of a single record
* Inputs: id, dueDate
* Required: id, dueDate
* Returns: **TaskItem**
* Type: Idempotent
```

May 20 12:51

# Authoring API Stories : Iterating

- This is a multi-pass loop
- Get something now, improve later
- Know when to stop



# AI-Driven API Design Stack



**Authoring API Stories**



# Generating API Descriptions

# The AI-Driven API Design Loop

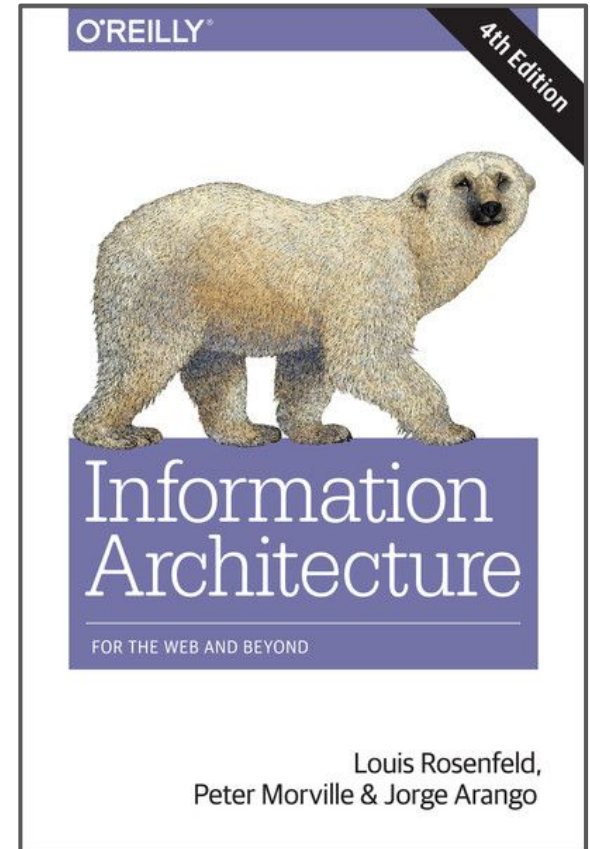
Iterate from ideas to secure, testable, APIs—and back again.



# Generating API Descriptions

Information Architecture

- Content, structure, and intent
- Richard Saul Wurman, Peter Morville, Lou Rosenfeld, and Don Norman
- Used in library science and web UI design
- Ontology, Taxonomy, Choreography



ALPS Online Editor

```

1 - {
2   "$schema": "https://alps-io.github.io/schemas/alps.json",
3   "alps": {
4     "version": "1.0",
5     "descriptor": [
6       {
7         "id": "id",
8         "type": "semantic",
9         "title": "Identifier",
10        "doc": {
11          "value": "A globally unique identifier for each task record."
12        },
13        "tag": "task-management"
14      },
15      {
16        "id": "title",
17        "type": "semantic",
18        "title": "Title",
19        "doc": {
20          "value": "Short title or name of the task."
21        },
22        "tag": "task-management"
23      },
24      {
25        "id": "description",
26        "type": "semantic",
27        "title": "Description",
28        "doc": {
29          "value": "Detailed description of the task."
30        },
31        "tag": "task-management"
32      },
33      {
34        "id": "dueDate",
35        "type": "semantic",
36        "title": "Due Date",
37        "doc": {
38          "value": "Deadline by which the task should be completed."
39        },
40        "tag": "task-management"
41      },
42      {
43        "id": "status",
44        "type": "semantic",
45        "title": "Status",
46        "doc": {
47          "value": "Current state of the task (active or completed)."
48        },
49        "tag": "task-management"
50      }
51    ]
52  }
53 }

```

## ALPS Profile

```

graph TD
    Home[Home] -- goShowHomePage --> Home
    Home -- goGetTaskCollection --> TaskCollection[TaskCollection]
    Home -- goGetFilteredTaskCollection --> TaskCollection
    TaskCollection -- goShowHomePage --> Home
    TaskCollection -- goCreateNewTask --> TaskItem[TaskItem]
    TaskCollection -- goGetTaskCollection --> TaskItem
    TaskCollection -- goGetFilteredTaskCollection --> TaskItem
    TaskItem -- goGetTaskItem --> TaskCollection
    TaskItem -- goEditExistingTask --> TaskItem
    TaskItem -- goUpdateStatusOfTask --> TaskItem
    TaskItem -- goSetDueDateOfTask --> TaskItem
    TaskItem -- goAssignUserToTask --> TaskItem

```

Semantic  
 Safe  
 Unsafe  
 Idempotent

**Label:**  ID    Title

**Size:**  Original    Fit to width

**Tags:**  navigation    task-management


# AI-Driven API Design Stack



**Generating API Descriptions**



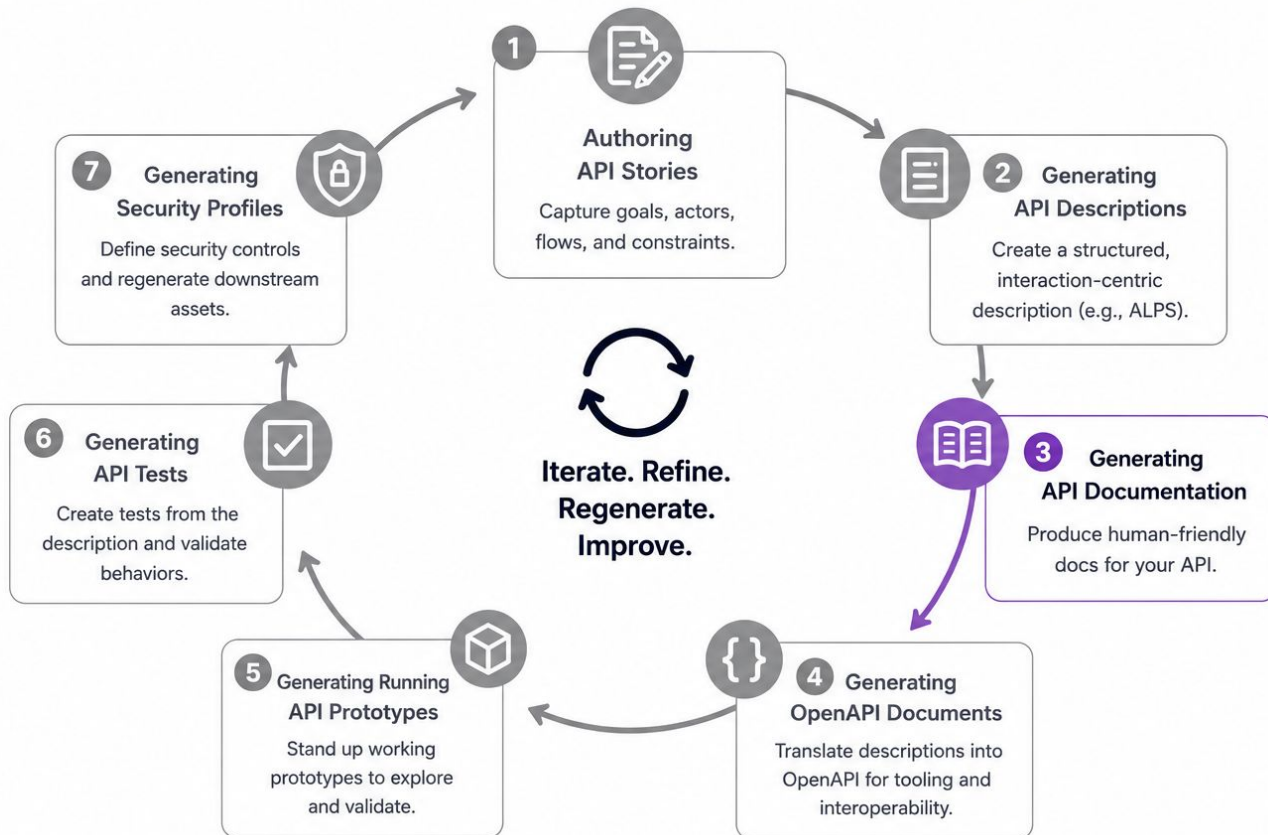
**Authoring API Stories**



# Generating API Documentation

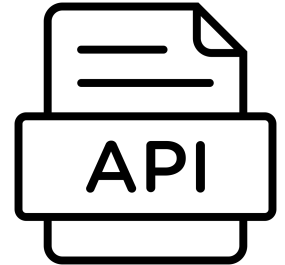
# The AI-Driven API Design Loop

Iterate from ideas to secure, testable, APIs—and back again.



# Generating API Documentation : Summary

- What are Docs?
  - Design, implementation, operation
- Who uses them?
  - Developers, customers, operators
- Basic Elements of API Docs
  - Purpose, properties, resources, actions



## Metadata

- Title: Task Management API Profile
- Version: 1.0
- Last Modified: 2025-06-16 00:06:38 UTC

## Application States

ID	Title	Tag	Contains
Home	Home State	navigation	<a href="#">goShowHomePage</a> , <a href="#">goGetTaskCollection</a> , <a href="#">goGetFilteredTaskCollection</a>
TaskCollection	Task Collection State	task-management	<a href="#">goShowHomePage</a> , <a href="#">goGetTaskCollection</a> , <a href="#">goGetFilteredTaskCollection</a> , <a href="#">doCreateNewTask</a> , <a href="#">goGetTaskItem</a>
TaskItem	Task Item State	task-management	<a href="#">doEditExistingTask</a> , <a href="#">doUpdateStatusOfTask</a> , <a href="#">doSetDueDateOfTask</a> , <a href="#">doAssignUserToTask</a> , <a href="#">goGetTaskCollection</a> , <a href="#">goGetFilteredTaskCollection</a> , <a href="#">goShowHomePage</a>

## Transitions (Affordances)

ID	Title	Type	HTTP	Return	Tag	Example
goShowHomePage	Go to Home	safe	GET	<a href="#">Home</a>	navigation	

# AI-Driven API Design Stack



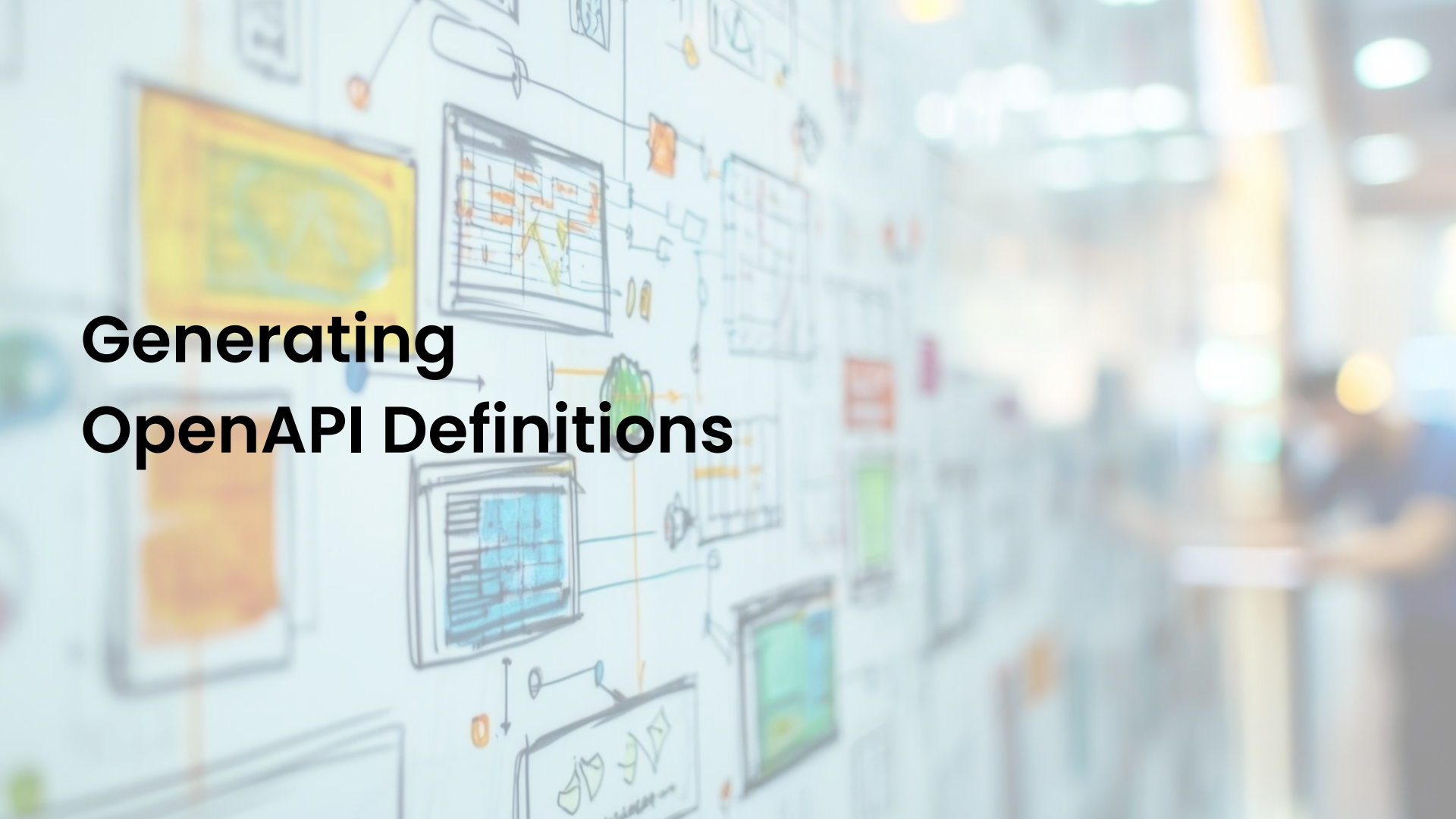
**Generating API Documentation**



**Generating API Descriptions**



**Authoring API Stories**



# Generating OpenAPI Definitions

# The AI-Driven API Design Loop

Iterate from ideas to secure, testable, APIs—and back again.



# Generating Open API Documents

## Why Open API

- The OpenAPI Specifications provide a formal standard for describing HTTP APIs.
- Common way to describe implementations
- Common platform for tooling
- Shared practice for building



<https://www.openapis.org/what-is-openapi>

Swagger Editor interface showing an OpenAPI 3.1 definition for a Task Management API. The left pane displays the JSON definition, and the right pane shows the rendered API documentation.

```
147 ... $ref: '#/components/schemas/taskitem'
148 ... '400':
149 ...   description: Invalid input
150 ... '404':
151 ...   description: Resource not found
152 ... tags:
153 ... - task-management
154 ... parameters:
155 ... - name: id
156 ...   in: path
157 ...   required: true
158 ...   schema:
159 ...     type: string
160 ...     format: uuid
161 ...     description: A globally unique identifier for each task record.
162 ... /taskitem:
163 ... post:
164 ...   operationId: doEditExistingTask
165 ...   summary: Edit Task
166 ...   description: 'Required: id, title, status'
167 ...   responses:
168 ...     '200':
169 ...       description: Successful response
170 ...       content:
171 ...         application/json:
172 ...           schema:
173 ...             $ref: '#/components/schemas/TaskItem'
174 ...     '400':
175 ...       description: Invalid input
176 ...     '404':
177 ...       description: Resource not found
178 ... tags:
179 ... - task-management
180 ... requestBody:
181 ...   required: true
```

## Task Management API 1.0.0 OAS 3.1

OpenAPI 3.1 definition derived from ALPS profile for managing tasks.

### navigation

- GET /home Go to Home

### task-management

- GET /taskcollection Filter Task Collection
- POST /taskcollection Create Task
- GET /taskitem/{id} Get Task Item
- POST /taskitem Edit Task
- PUT /taskitem Assign User

### Schemas

# AI-Driven API Design Stack



**Generating OpenAPI**




**Generating API Documentation**



**Generating API Descriptions**



**Authoring API Stories**



# Generating Running API Prototypes

# The AI-Driven API Design Loop

Iterate from ideas to secure, testable, APIs—and back again.

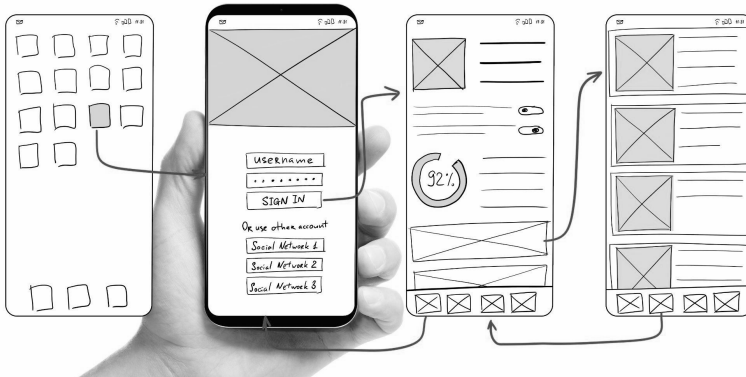
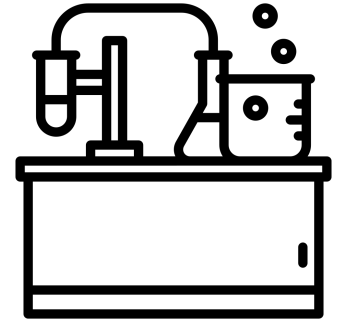


# Generating Running Prototypes

What is a prototype?

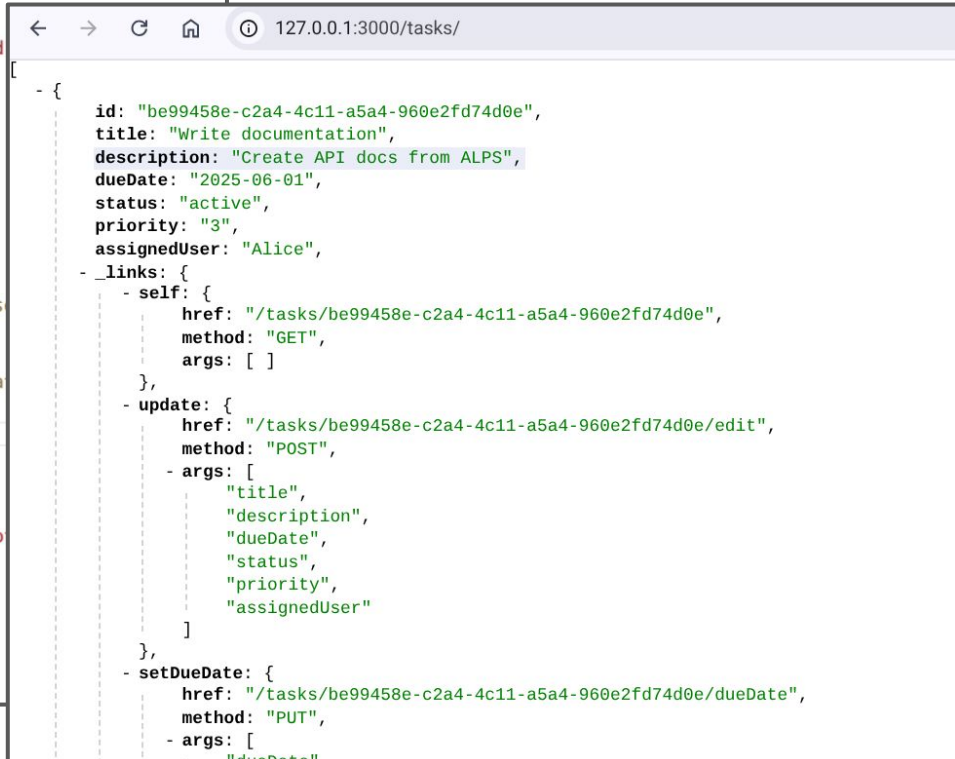
*A first, typical or preliminary model of something, especially a machine, from which other forms are developed or copied.*

*-- Oxford Dictionary*



# Generating Running API Prototypes

```
43 // Root endpoint
44 app.get('/', (req, res) => {
45   res.json({
46     _links: {
47       tasks: { href: "/tasks", method: "GET", args: [] },
48       create: { href: "/tasks", method: "POST", args: ["id"] }
49     }
50   });
51 });
52
53 // GET all tasks or filter
54 app.get('/tasks', (req, res) => {
55   const filters = req.query;
56   let filtered = tasks.filter(task =>
57     Object.entries(filters).every(([key, value]) =>
58       (task[key] || "").toLowerCase() === value.toLowerCase()
59     )
60   );
61   res.json(filtered.map(task => ({ ...task, _links: generateLinks(task) })));
62 });
63
64 // GET single task
65 app.get('/tasks/:id', (req, res) => {
66   const task = tasks.find(t => t.id === req.params.id);
67   if (!task) return res.status(404).json({ error: "Task not found" });
68   res.json({ ...task, _links: generateLinks(task) });
69 });
70
71 // POST create new task
72 app.post('/tasks', (req, res) => {
73   const input = req.body.task;
```

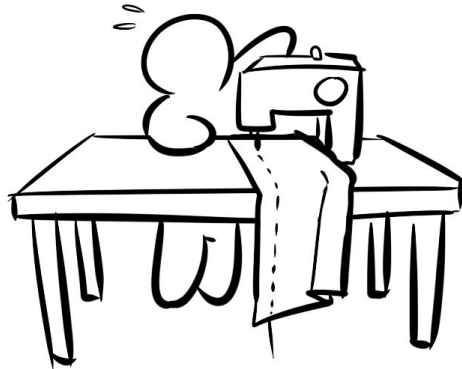
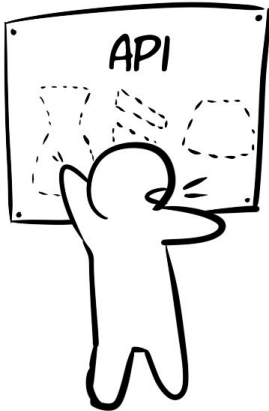
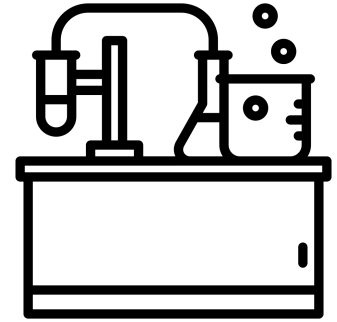


The screenshot shows a web browser window with the address bar displaying "127.0.0.1:3000/tasks/". The browser content area shows a JSON response for a task. The response is a list containing one object with the following fields: id, title, description, dueDate, status, priority, and assignedUser. Additionally, there are two links: a self-link for GET and an update link for POST with arguments for title, description, dueDate, status, priority, and assignedUser.

```
[
  - {
    id: "be99458e-c2a4-4c11-a5a4-960e2fd74d0e",
    title: "Write documentation",
    description: "Create API docs from ALPS",
    dueDate: "2025-06-01",
    status: "active",
    priority: "3",
    assignedUser: "Alice",
    - _links: {
      - self: {
        href: "/tasks/be99458e-c2a4-4c11-a5a4-960e2fd74d0e",
        method: "GET",
        args: [ ]
      },
      - update: {
        href: "/tasks/be99458e-c2a4-4c11-a5a4-960e2fd74d0e/edit",
        method: "POST",
        - args: [
          "title",
          "description",
          "dueDate",
          "status",
          "priority",
          "assignedUser"
        ]
      }
    }
  },
  - setDueDate: {
    href: "/tasks/be99458e-c2a4-4c11-a5a4-960e2fd74d0e/dueDate",
    method: "PUT",
    - args: [
      "dueDate"
    ]
  }
]
```

# Generating Running API Prototypes

- Inexpensive experiments
- Explore the details
- Prototypes are made to be tested



# AI-Driven API Design Stack



**Generating Running API Prototypes**



**Generating OpenAPI**



**Generating API Documentation**




**Generating API Descriptions**



**Authoring API Stories**

# Generating API Tests



# The AI-Driven API Design Loop

Iterate from ideas to secure, testable, APIs—and back again.



# Generating API Tests

- "Outside-In" testing
  - Test the interface, not the code
- Validating inputs/outputs
  - URLs, methods, inputs, response bodies
- Confirming Interface Behavior
  - Happy path (200 OK) & sad path (400 Bad Request)





main

2026-05-tram / runner / api-tests.json

[↑ Top](#)

Code

Blame



Raw



```
148     },
149     {
150       "path": "$",
151       "each": {
152         "path": "$._links",
153         "eachProperty": {
154           "hasProperties": ["href", "method"]
155         }
156       }
157     },
158     {
159       "path": "$",
160       "each": {
161         "path": "$._links",
162         "eachProperty": {
163           "path": "$.method",
164           "oneOf": ["GET", "POST", "PUT", "PATCH", "DELETE"]
165         }
166       }
167     },
168     {
169       "path": "$",
170       "each": {
171         "property": "status",
172         "oneOf": [
173           "active",
174           "pending",
175           "completed"
176         ]
177     }
```

# AI-Driven API Design Stack



**Generating API Tests**



**Generating Running API Prototypes**



**Generating OpenAPI**



**Generating API Documentation**



**Generating API Descriptions**



**Authoring API Stories**



# Generating Security Profiles

# The AI-Driven API Design Loop

Iterate from ideas to secure, testable, APIs—and back again.



# Generating Security Profiles

RBAC to the rescue



- Role-Based Access Control
  - RBAC
- Define Roles
  - anon, user, admin, etc
- Assign users to one or more roles
  - user:mike, roles:user, admin
- Secure API resources and actions
  - /tasks/, /tasks/:id, addTask, updateStatus, etc.

Edit Preview

## Resources

The following are resources, or states, of the API. Each state has one or more possible Actions.

- **Home** : The home or landing page of the API. Users typically start here.
  - Actions: **GetTaskList, GetFilteredTaskList, ShowHomePage**
  - AllowedRoles: anon, user, admin
- **TaskCollection** : The list of tasks in the system are displayed here.
  - Actions: **ShowHomePage, GetTaskList, GetFilteredTaskList, CreateNewTask, GetTaskItem**
  - AllowedRoles: user, admin
- **TaskItem** : This resource shows a single task (selected from the TaskCollection)
  - Actions: **EditExistingTask, UpdateStatusOfTask, SetDueDateOfTask, AssignUserToTask, GetTaskList, GetFilteredTaskList, ShowHomePage**
  - AllowedRoles: user, admin

## Actions

This edition of the application needs to support the following operations. Each action has zero or more input properties and always has one return value (to another state). Each action is also marked as either Safe (GET), Unsafe (POST),








## Action Access Matrix

Action	Type	Allowed Roles
AssignUserToTask	Idempotent	admin
CreateNewTask	Unsafe	user, admin
EditExistingTask	Unsafe	user, admin
GetFilteredTaskCollection	Safe	user, admin
GetTaskCollection	Safe	user, admin
GetTaskItem	Safe	user, admin
SetDueDateOfTask	Idempotent	admin
ShowHomePage	Safe	anon, user, admin
UpdateStatusOfTask	Idempotent	user, admin

## Verification Summary

- All roles used in actions and resources are defined.
- No undefined roles were found in the policy.
- No orphan roles detected: every role is used in at least one context.
- All resources specify valid AllowedRoles.
- All actions specify valid AllowedRoles and valid action types.
- Markdown sections and format comply with security documentation standards.

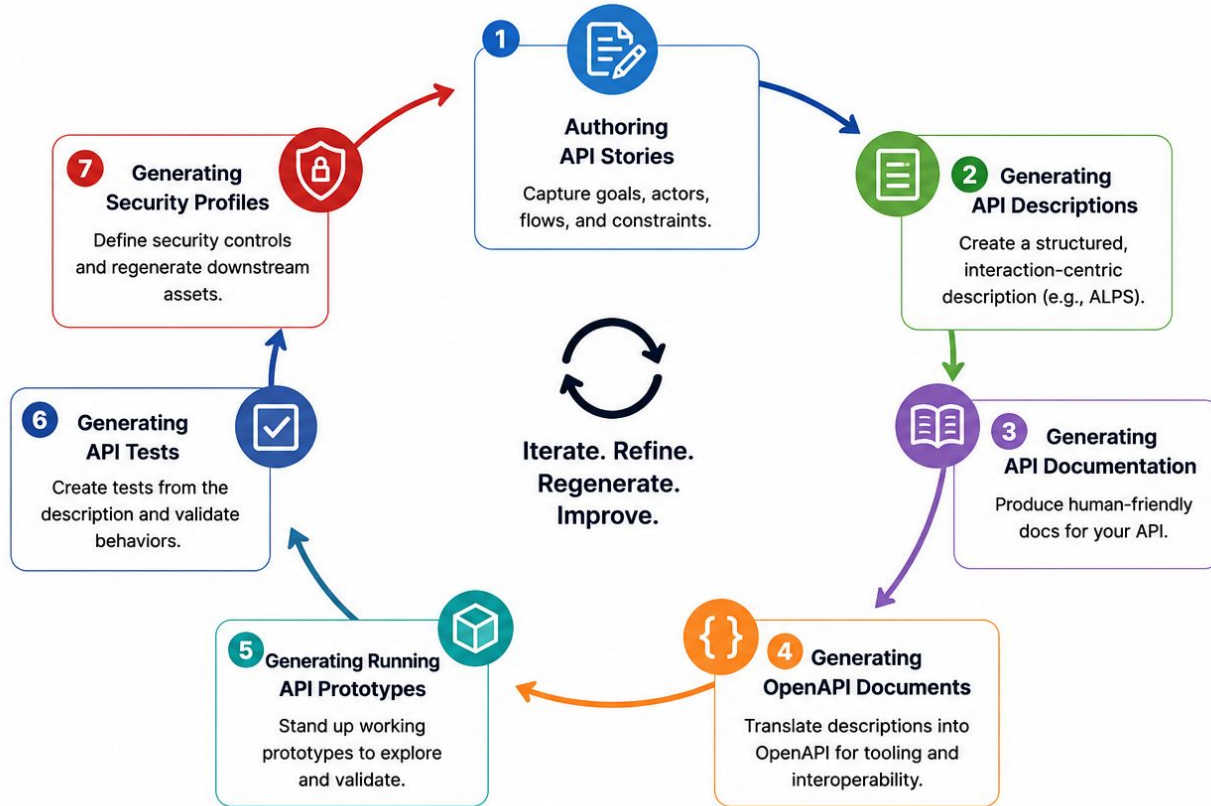
# AI-Driven API Design Stack

-  **Generating Security Profiles**
-  **Generating API Tests**
-  **Generating Running API Prototypes**
-  **Generating OpenAPI**
-  **Generating API Documentation**
-  **Generating API Descriptions**
-  **Authoring API Stories**

***And So ...***

# The AI-Driven API Design Loop

Iterate from ideas to secure, testable, APIs—and back again.



# Andrej Karpathy

*"Ultimately, vibe coding full web apps today is kind of messy and not a good idea for anything of actual importance."*

— Andrej Karpathy (Apr 2025)



O'REILLY®

Early  
Release

RAW &  
UNEDITED



# AI-Driven API Design

Augment, Amplify, and Accelerate with AI

Mike Amundsen

**Q&A**

The background is a blurred whiteboard in a meeting room. It is covered with various hand-drawn diagrams, charts, and notes. There are several rectangular boxes, some containing text or small drawings, and lines connecting them, suggesting a flowchart or process diagram. The colors used in the drawings include yellow, orange, blue, green, and red. The overall scene is out of focus, with the foreground elements being sharp and the background elements being soft and indistinct.



# From Discovery to API with AI

Mike Amundsen (@mamund)