

# An AI agent revolution is afoot

How can the next generation of software engineers thrive?

Adam Marcus | <https://marcua.net>  
November 18, 2025

Thank you to our amazing team, experts,  
advisors, and investors who make B12 what it is

# @marcua

- Co-Founder / CTO @ B12
- Director of Data @ Locu
- Ph.D. MIT CSAIL: Databases | Human computation

## Generate a free AI website in 60 seconds

Share your business name and a description of your website...

↔ Enhance Prompt



B12 may make mistakes. Please use with discretion.

Consulting firm site with scheduling ↑

Software agency site with client intake ↑

Personal website with a blog ↑

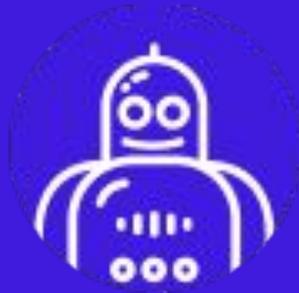
Café site with cat imagery ↑

Marketing agency site in French ↑

Personal trainer site with booking ↑

Drone videography site with a portfolio ↑

B12 helps people do meaningful work



# AI is changing knowledge work

What will change for you

What skills will remain valuable

World-changing  
or  
Hype?



## KEY POINTS

- Global AI spending is projected to reach \$375 billion in 2025 and \$500 billion by 2026, fueling GDP growth and market optimism.
- Economists warn that without AI-driven investment, the U.S. may already be in a recession, raising concerns about economic dependency.
- Unlike the dot-com era, when most internet startups were unprofitable, today's AI giants generate substantial cash flow and earnings.

A surge in artificial intelligence infrastructure spending is lifting GDP and driving market optimism, but some experts warn the boom could be concealing underlying economic weakness.

Global AI investment is forecast to reach \$375 billion in 2025 and top \$500 billion by 2026, [according to UBS](#). That flood of capital is reshaping how and where money is flowing across the economy.

"It's the start of trillions being spent in this build out of the fourth Industrial Revolution," said Dan Ives, managing director at Wedbush Securities.

"Big tech right now is doing the equivalent of building Vegas in the 1950s where there was just sand. Dubai 30 years ago. That's what's happening with this AI infrastructure build out from the chips to the data centers to the grid. You're really building out the future economy for consumers and enterprises," he added.

But some experts are skeptical of the sustainability of the AI-driven momentum.



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# MIT study on AI profits rattles tech investors



Madison Mills



Add Axios on Google



Illustration: Brendan Lynch/Axios

Wall Street's biggest fear was validated by a recent MIT study indicating that [95% of organizations studied get zero return on their AI investment](#).

N=1: Generative AI changed B12's trajectory

# Orchestra

- Open source workflow manager for teams of experts and machines
- <https://orchestra.b12.io>
- Research: CHI 2019, CSCW 2020



Workflows



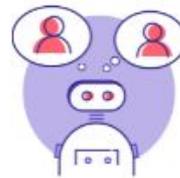
Project  
distribution



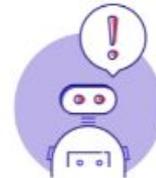
Hierarchical  
view



Worker  
certification



StaffBot



SanityBot

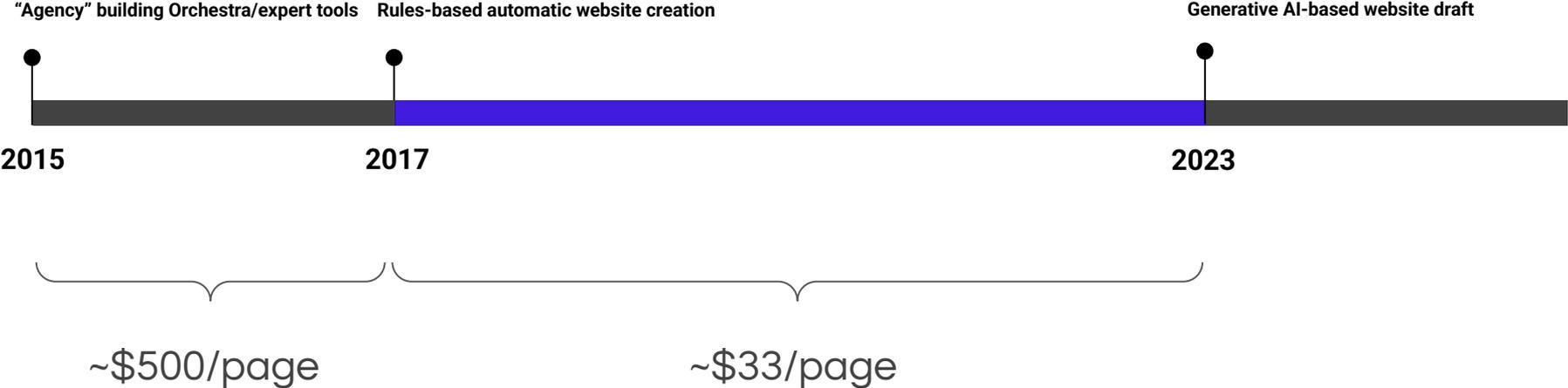


Nested  
self-  
pruning  
checklists

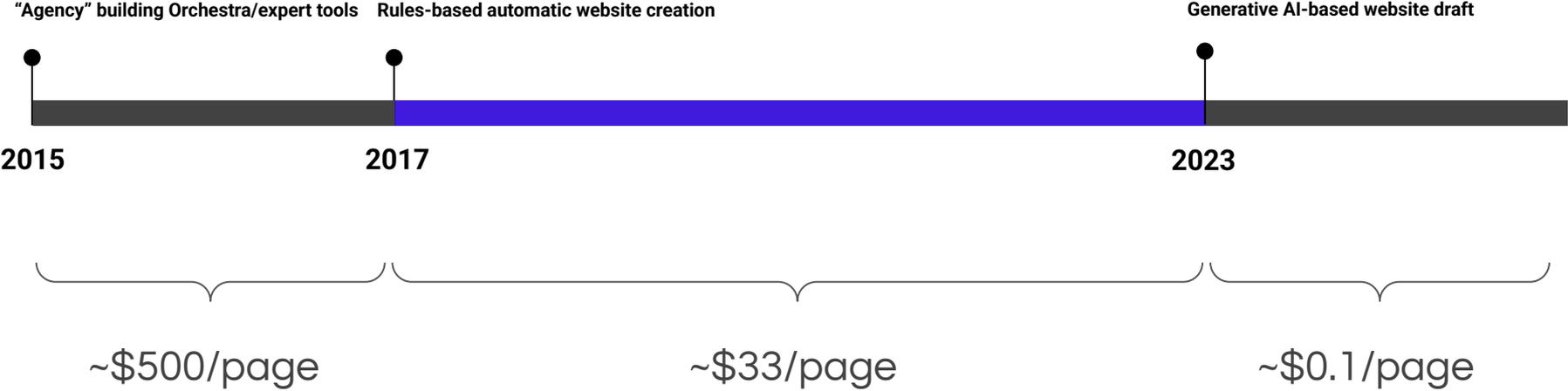


Time  
tracking

# Generative AI as accelerant



# Generative AI as accelerant



More customers, but lower demand for expert work

7.7%

January 2023

% new customers that self-serve

# More customers, but lower demand for expert work

7.7% → 94.6%

January 2023

January 2024

% new customers that self-serve

A similar and massive change is  
happening in software engineering,  
but we can't measure it yet



Claude Code v2.0.27

Sonnet 4.5 · Claude Max

/Users/marcua/adamdata/programs/ayb/c1

> How do the query daemons per database work

● I'll explore the codebase to understand how the per-database query daemons work.

● Explore(Explore query daemon implementation)

└ Read(README.md)

  Read 100 lines

  +20 more tool uses

∴ Thought for 2s (ctrl+o to show thinking)

\* Crunching... (esc to interrupt)

- Two modes: direct execution or nsjail isolation (Linux only)
- When isolated, enforces limits:
  - 1 CPU core max
  - 64 MB memory
  - 10 max open files
  - 75 MB file size limit

#### Execution Flow

1. **API Request** arrives at `/v1/{entity}/{database}/query`
2. **Registry Lookup**: Check if daemon exists for database path
3. **Spawn Daemon** (if needed): Create subprocess with stdin/stdout pipes
4. **Send Query**: Write JSON request to daemon's stdin
5. **Read Result**: Parse JSON response from daemon's stdout
6. **Return to Client**: Convert to HTTP response

#### Lifecycle Management

##### Server Startup (`src/server/server_runner.rs:126`):

```
let daemon_registry = DaemonRegistry::new();
```

##### Graceful Shutdown (`src/server/server_runner.rs:170-175`):

- On SIGINT, closes all daemon stdin connections
- Kills remaining processes
- Ensures clean server shutdown

##### Database Updates (`src/hosted_db/paths.rs`):

- When restoring snapshots, shuts down old daemon before deleting old database file
- New queries trigger creation of new daemon for new path

#### Benefits

- **Efficiency**: Process persists between queries (vs. spawning per-query)
- **Isolation**: Optional nsjail sandboxing prevents resource abuse
- **Safety**: SQLite defensive mode + ATTACH disabled prevents corruption
- **Scalability**: One daemon per database, not per connection

The implementation is in commit [77577fc](#) - a relatively recent addition that replaced the previous per-query execution model with this more efficient daemon-based approach.

> Make the isolation limits (e.g., number of cores, memory, open files, file size limit) be tunable on a per-database level

# What I'm seeing in software engineering

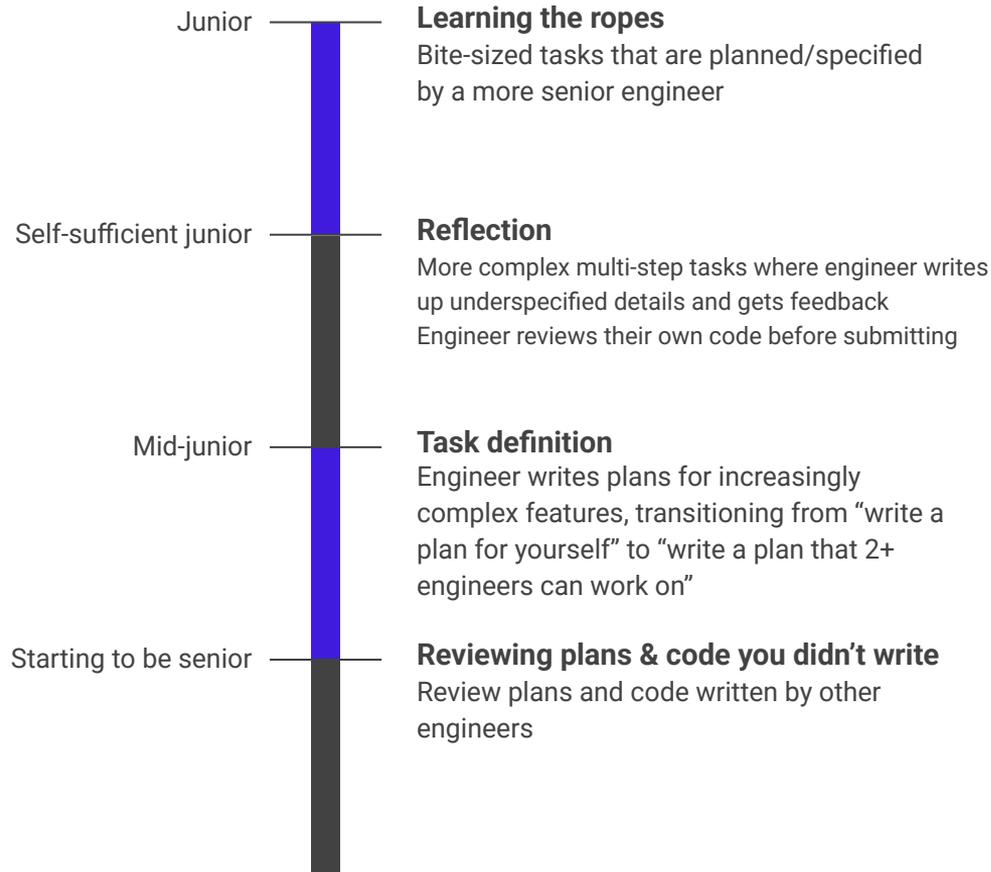
- To varying degrees, every engineer at B12 has self-selected some form of agentic coding assistant to supplement their workflow
- Every exploration, bug fix, or feature I've worked on in the past six months has been LLM-assisted or LLM-implemented
- Designers and product managers are building more interactive prototypes
- No reduction in our demand to hire engineers, but changes in our expectations of how engineers work

AI is changing knowledge work

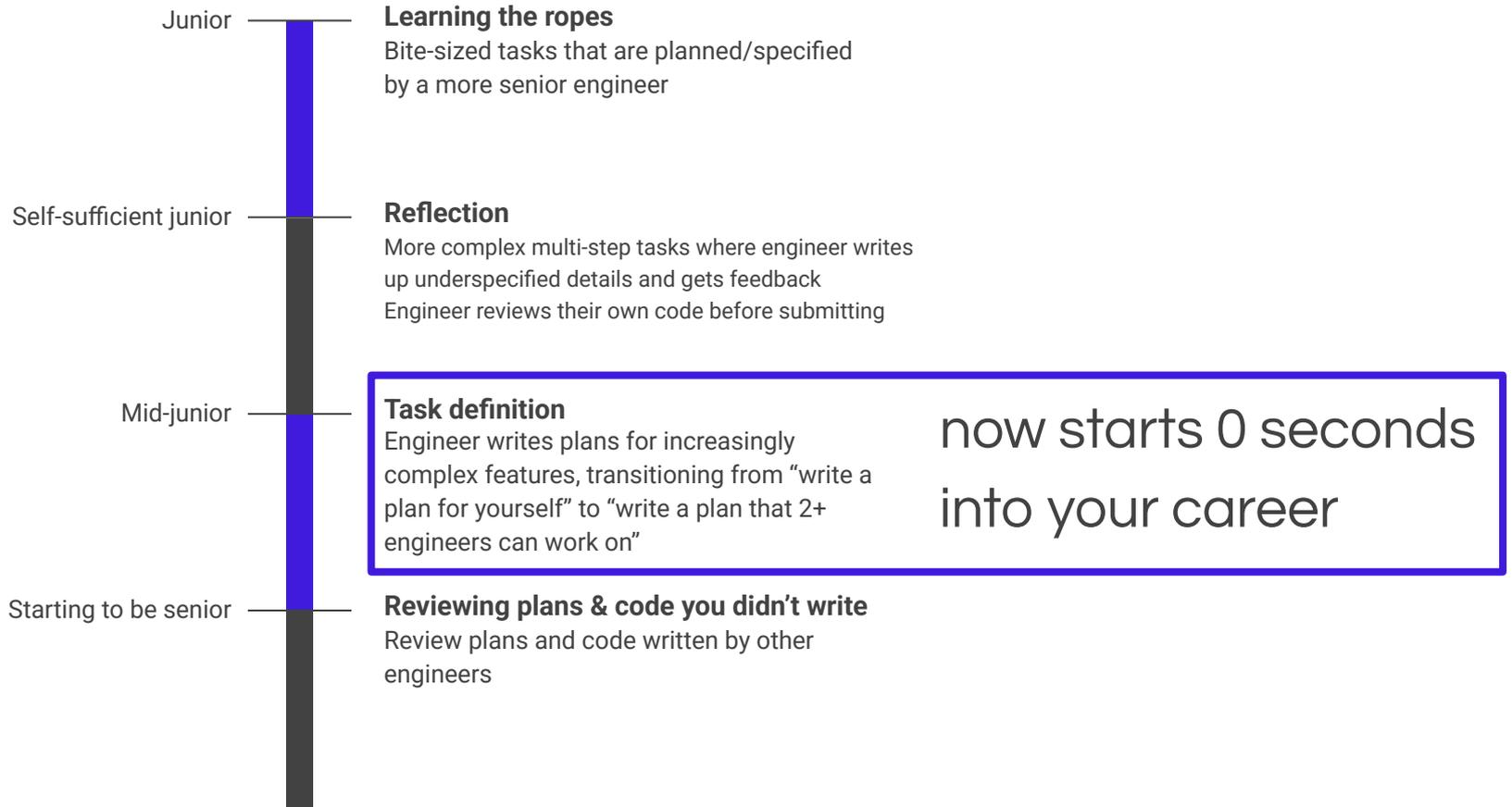
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What skills will remain valuable

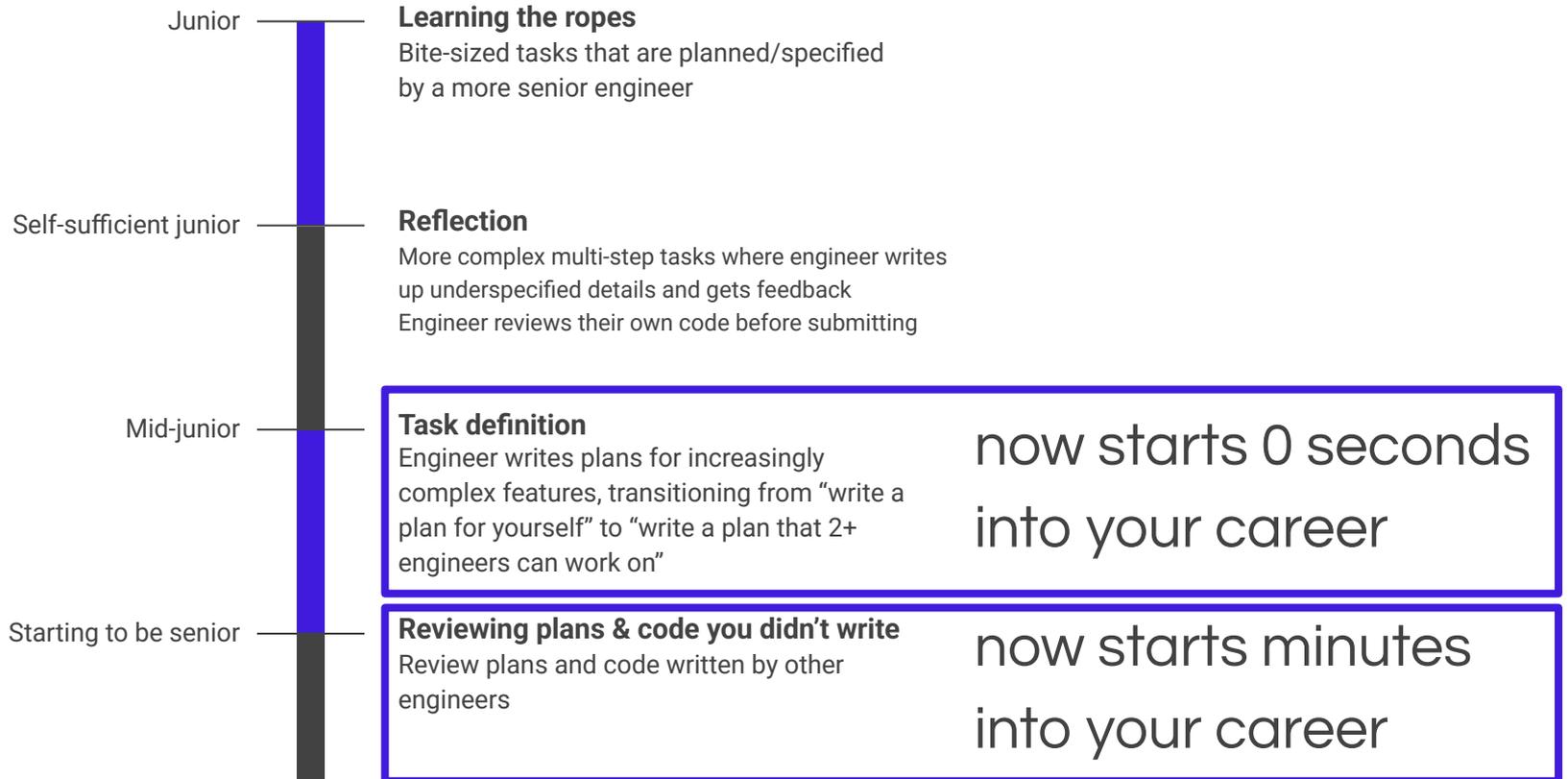
# How junior engineers used to grow



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Seek out projects & teams that  
use agentic coding tools

Start by improving and building internal tools

Read lots of plans and prompts

Pair with people that effectively use coding agents

Seek out code & plan reviews

Seek out shadow reviews of your reviews

AI is changing knowledge work

What will change for you

**What skills will remain valuable**

Understanding user needs

Understanding business needs

Forming consensus/agreement on what to work on

Defining scope  
Defining success  
Saying no

Making architectural decisions (and mistakes)  
Ensuring quality

Identifying blockers, unblocking others

# Thank you

- AI is changing knowledge work
- Quickly ramp up on task definition and review skills
- Continue to invest in valuable skills that complement agentic coding / LLMs

Feel free to ask about other stuff like open source at startups, doing academic-esque research at startups, etc.

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