Intelligence Everywhere:

12 Months That Redefined AI and Internet Design

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Red Hat

Tony Kay

- AI Lead, Red Hat Portfolio Technology
- RITE 2024 Speaker
  - Thanks for having me back!
- Passionate about
  - Spec Coding
  - AI Engineering
  - Agentic AI
  - Inference and LLMs

Large Language Models (LLMs)

- Bigger models, but also, smaller models
  - High Quality Training
  - Better Quantization
- Better Reasoning
- Better Tool Calling
- More and better Open Source Models
- More Speciality Models including:
  - Anomaly Detection, Predictive Maintenance
  - Churn Prediction, Network Optimization
  - Capacity Planning

China Rising

deepseek

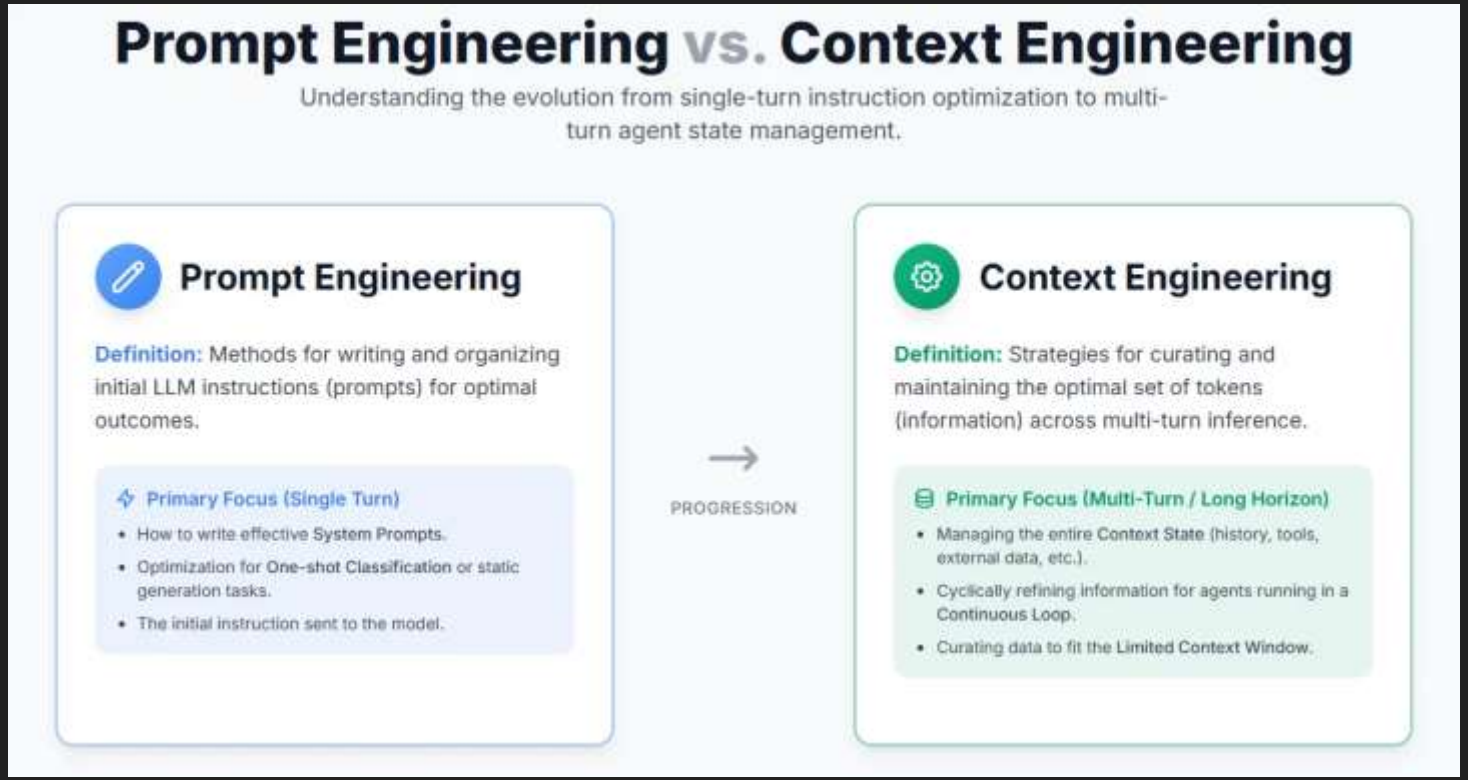
Qwen3

KIMI

ERNIE

- DeepSeek-R1 and V3 Series:
  - V3 and V3.1 hybrid “Thinking/Non-Thinking”
  - Caused the “Deep Seek Moment”
- Alibaba Qwen3 family (Apache 2 License):
  - Up to 235B and 480B Qwen3-Coder
- Moonshot Kimi-K2, Baidu ERNIE, and more
- Many Open Source contributions
- Huawei and ZTE
  - Telecom Foundation Model (2024)
  - Various AI Carrier products shipping

Shift: Prompt Engineering -> Context Engineering



https://www.marktechpost.com/2025/10/20/a-guide-for-effective-context-engineering-for-ai-agents/

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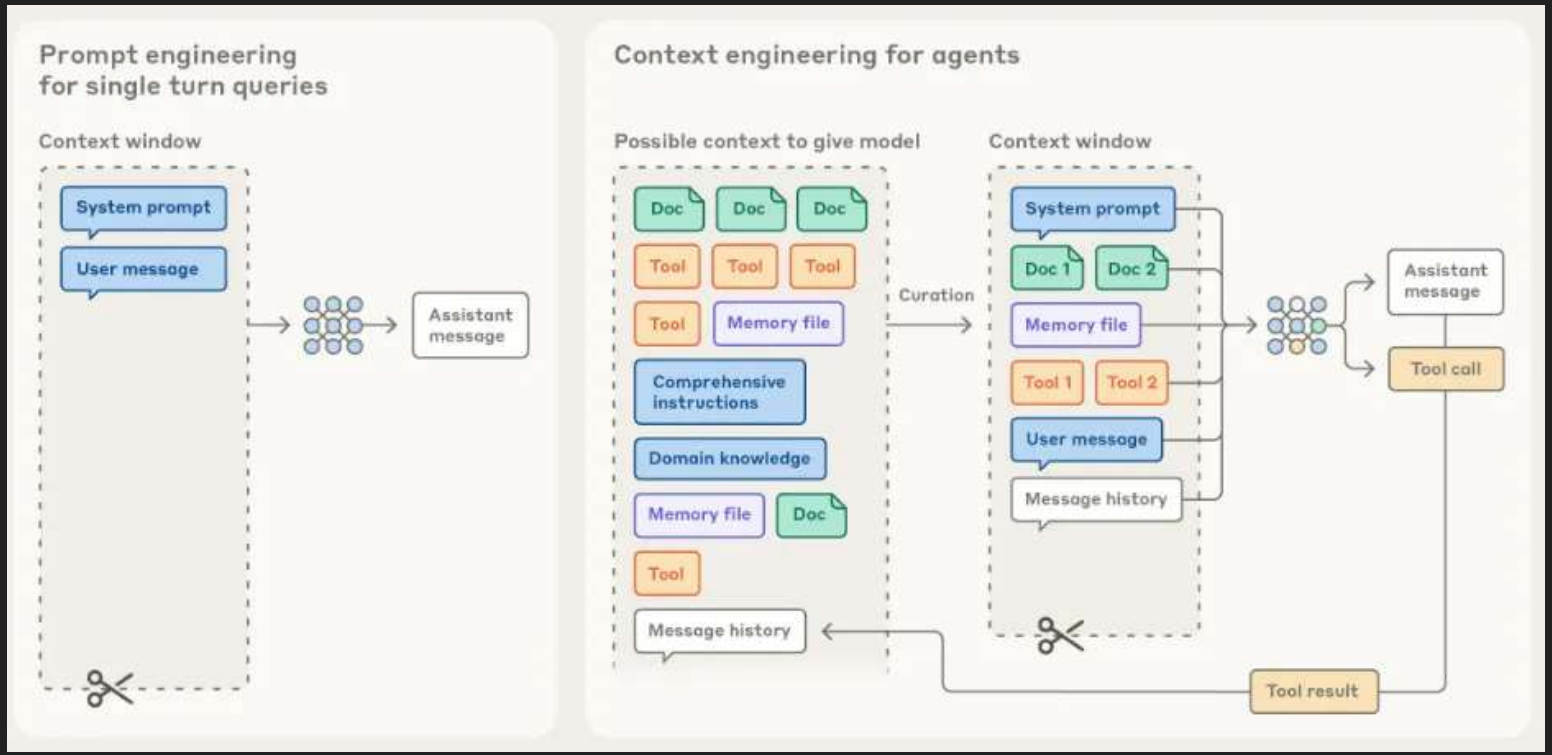

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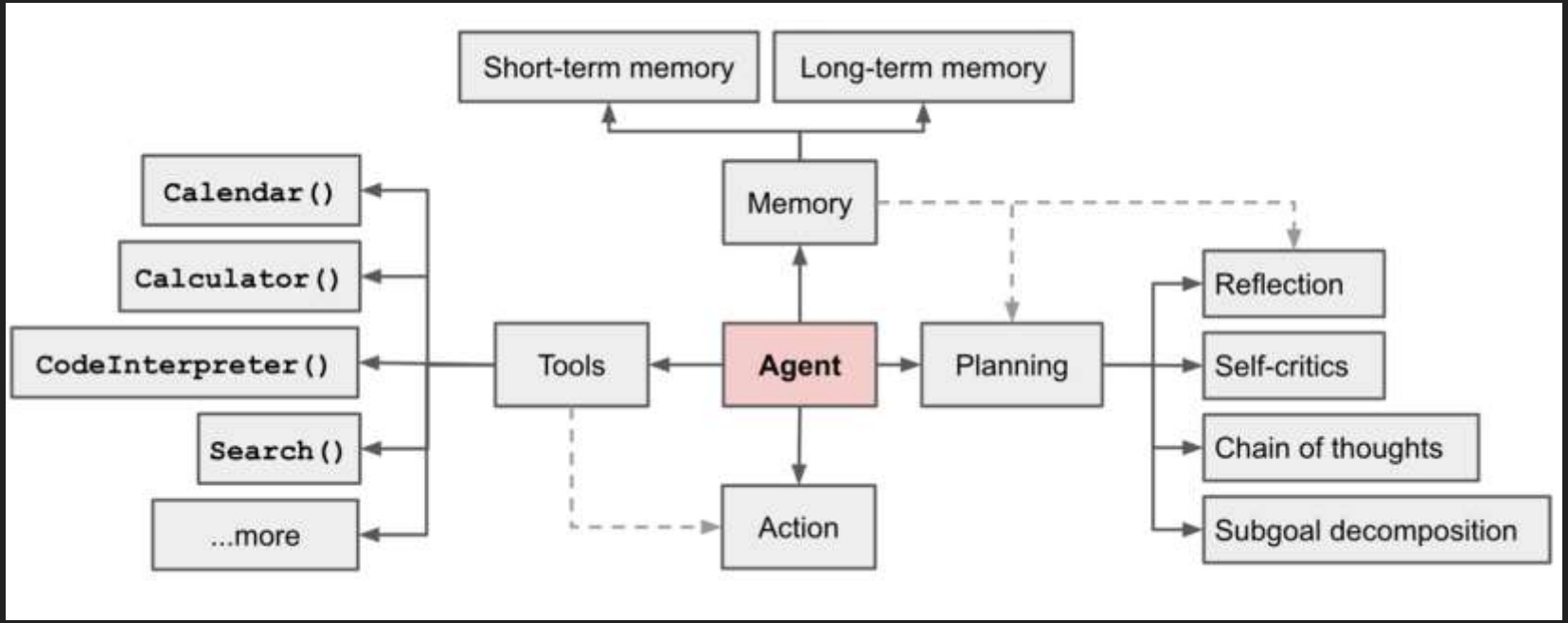
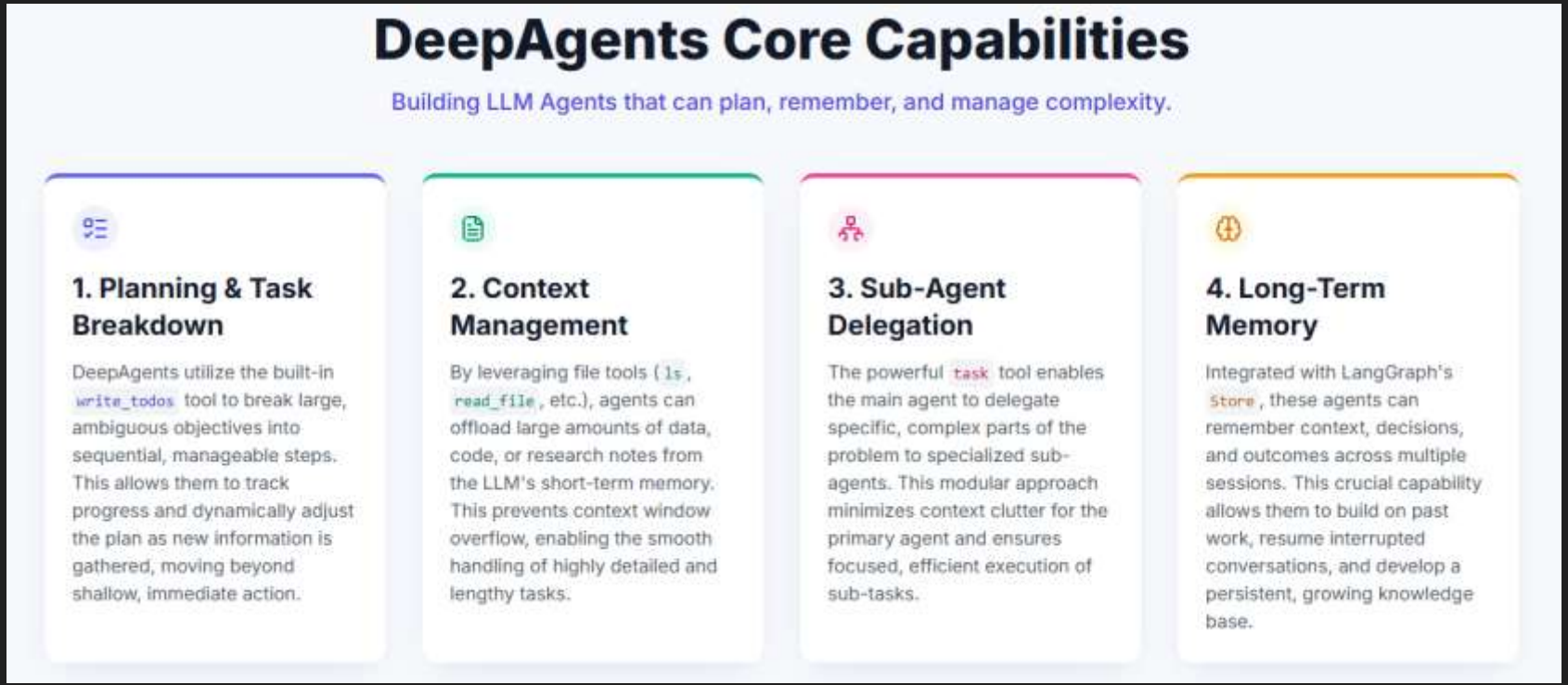
Agents - “2025 - the year of Agents”



Agents

- Models globally became stronger at
  - Reasoning
  - Tool Calling
- Anthropic and OpenAI follow Perplexity's Agentic Lead
- Chinese Agentic Assistant Manus 1 and Manus 1.5 Released
- Frameworks and Frameworkless evolved
  - LangGraph and LangChain went 1.0
  - Pydantic AI, Smolagents, OpenAI Agent SDK released
- Agents became "deeper"
  - LangChain releases Deep Agents

Agents becoming deeper – Deep Agents



Model Context Protocol (MCP)

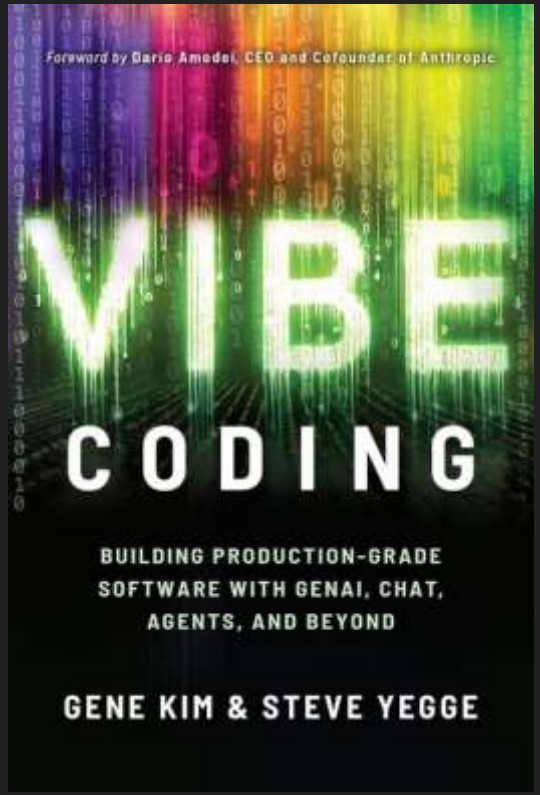
- Announced by Anthropic in November 2024, Open Standard
  - Achieved widespread adoption including by rivals
- Quickly over 1,000 MCP Servers by February 2025
- MCP Servers:
  - Tools - executable server-side functions
  - Resources are data objects or endpoints
    - Structured data, or SQL query etc
  - Prompts - reusable templated messages or instructions
- Security remains a **huge concern**

Vibe Coding, Spec Coding

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.

4:17 PM · Feb 2, 2025 · **5M** Views



Spec Coding - Spec Driven Development (SDD)
The Future of Software Development?

- Agentic Coding Tools driven by formal Specifications
- Frameworks and Methodologies evolving
  - `spec-kit` GitHub/Microsoft
    - Released early September, 79 releases, 41K stars
  - AWS Kiro - Codeserver based IDE, “Spec First”
  - Multiple new “Spec Frameworks”
  - Also many evolving Spec practices

So what's coming next for 2026?

- Autonomous AI and Agentic Systems
  - Agentic Networking and Network Engineers?
- Open Source Frontier Models
  - Even higher quality "Small" < 100B parameter models
- Wide scale Spec Coding?
  - What will this look like for Networking?
- Will we get serious about AI Security?

Invitation: I'll be outside the session. Come out and we can make some Agentic Networking and other Engineers together


Thank you!