



The bridge to possible

GenAI Impact on DevOps & Application Development

A Technical Perspective

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CENDEV-1007

CISCO *Live!*

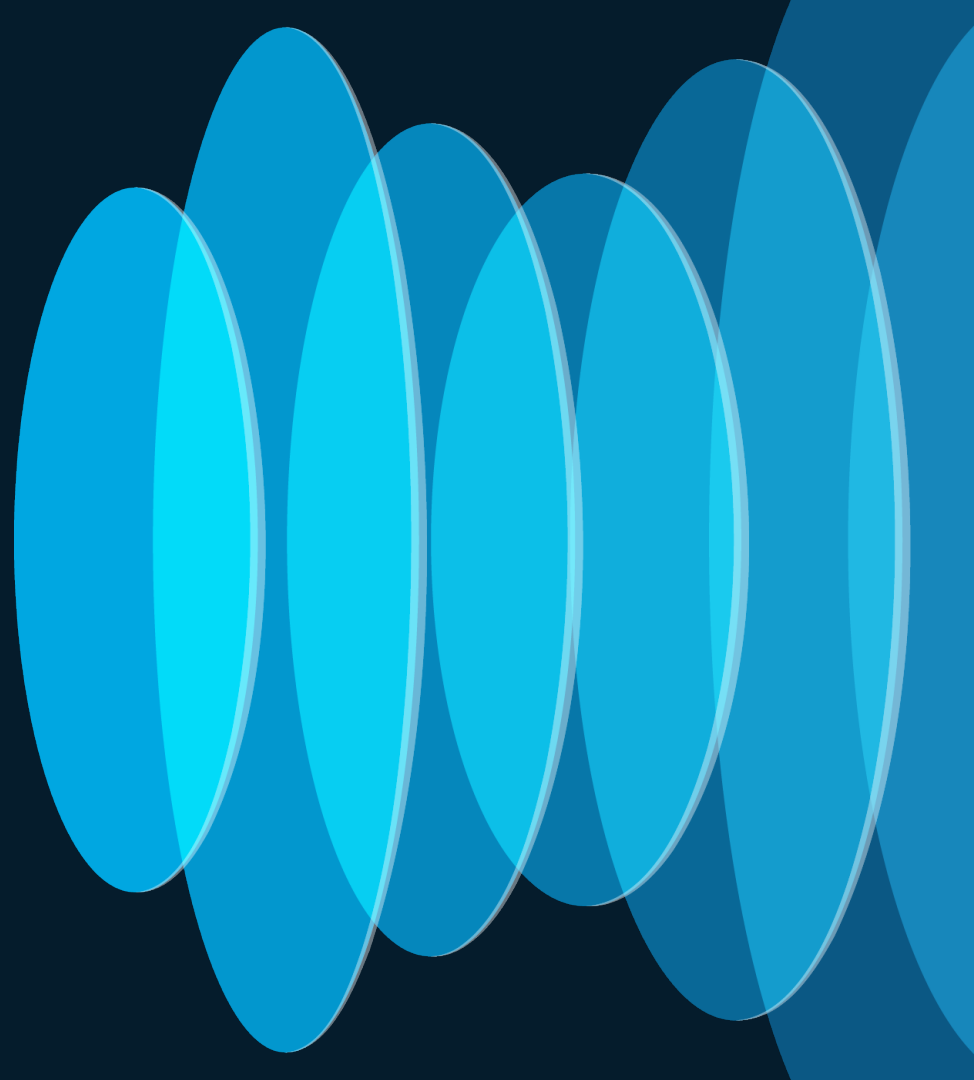
#CiscoLive



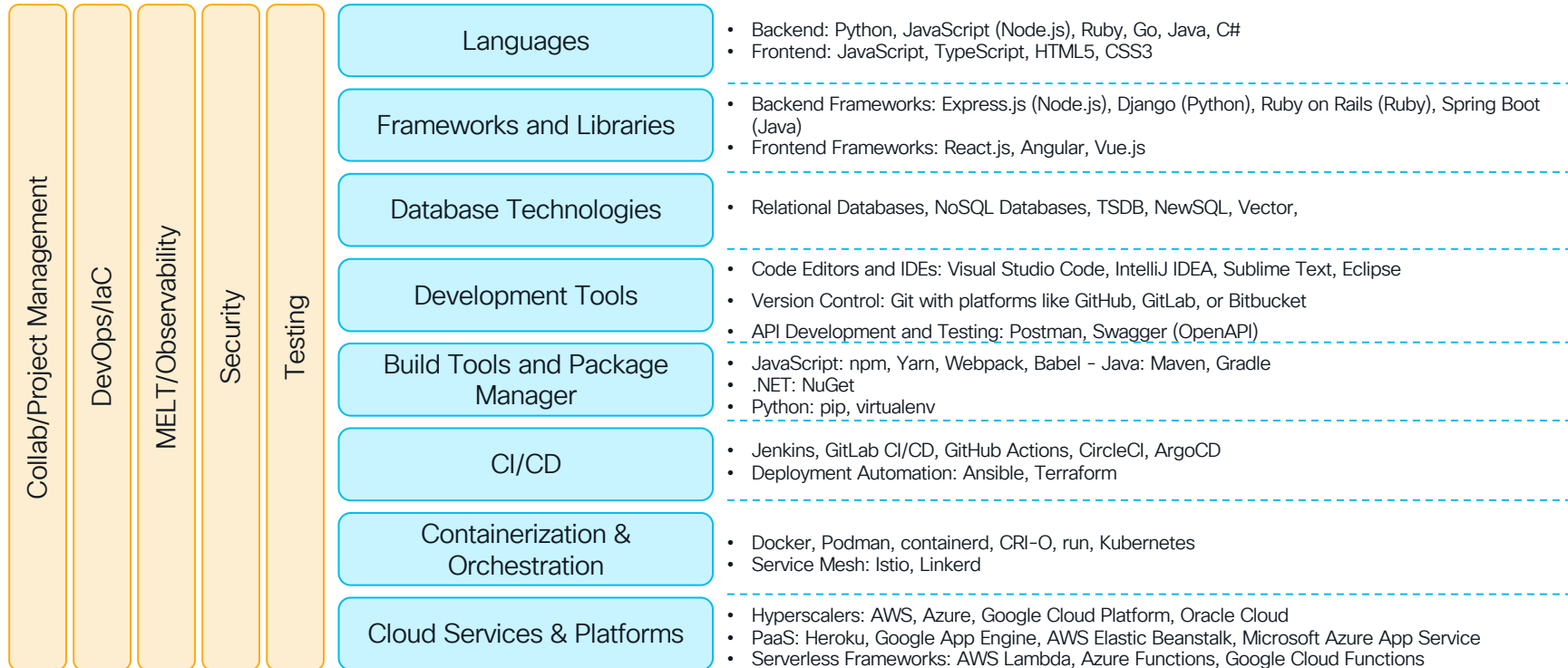
Agenda

- State of the Developer
- State of GenAI
- Joining Forces: Developers & Gen AI
- Conclusion

State of the Developer



Modern Developer Stack – Tool/Service View



The Modern Developer

Understand Requirements

- Ever-increasing complexity
- Ever-increasing pace

Design

- Tool & Tech Sprawl

Diverse Collaboration

- Tool Sprawl
- Forced Interaction



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Write / Debug / Test Code

- Languages
- Frameworks
- Tools

Support

- SRE
- Service Sprawl

Documentation

- APIs
- IaC
- Code

“Hey Developer, here’s more to do”

- Shift-Left:
 - Code quality
 - Security
 - Observability
 - Automation
 - More is coming...

Documentation

Support

Code

Infrastructure

Security

Observability

Collaboration

Design

Requirements

”Oh wait, here’s one more! Can you keep up with AI?”

- Shift-Left:
 - Code quality
 - Security
 - Observability
 - Automation
 - **More is coming ...**

GenAI

Documentation

Support

Code

Infrastructure

Security

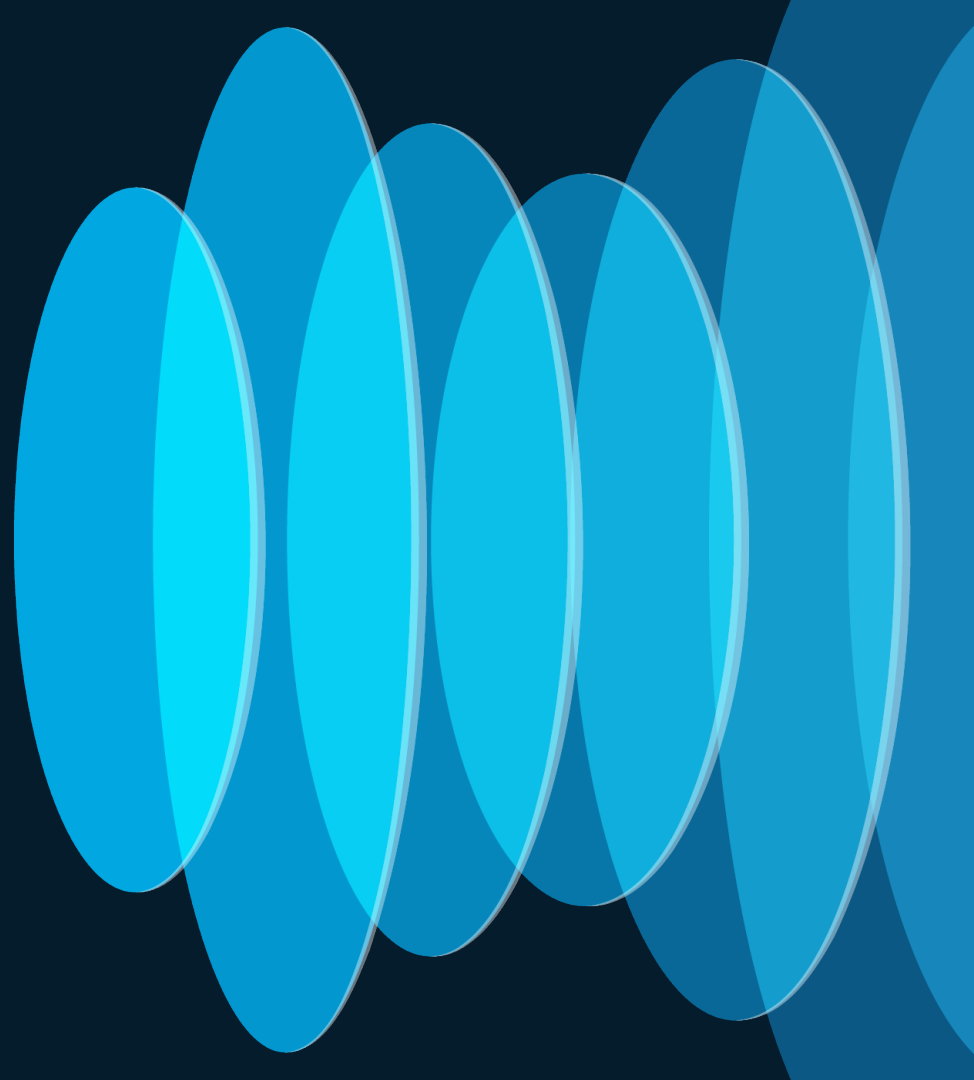
Observability

Collaboration

Design

Requirements

State of the GenAI



Artificial Intelligence Isn't New

Infrastructure Use Cases

- Network Traffic
- Resource Allocation in Storage & Compute
- Application Performance Prediction
- Load Balancing
- Data Breach

Business Use Cases

- Sales Forecasting
- Manufacturing Maintenance
- Fraud Detection
- Customer Behavior
- Healthcare

Generative AI – The New(er) Kid on the Block

Infrastructure Use Cases

- Network Optimization
- Resource Allocation
- Security Threat Detection
- Disaster Recovery Planning

Business Use Cases

- Content Creation
- Data Augmentation
- Automated Programming
- Personalized Marketing

Use Cases Inside of Use Cases

A View from our Customers



- Speech, Text, Language
- Speech-to-Text
- Text-to-Speech
- Translation

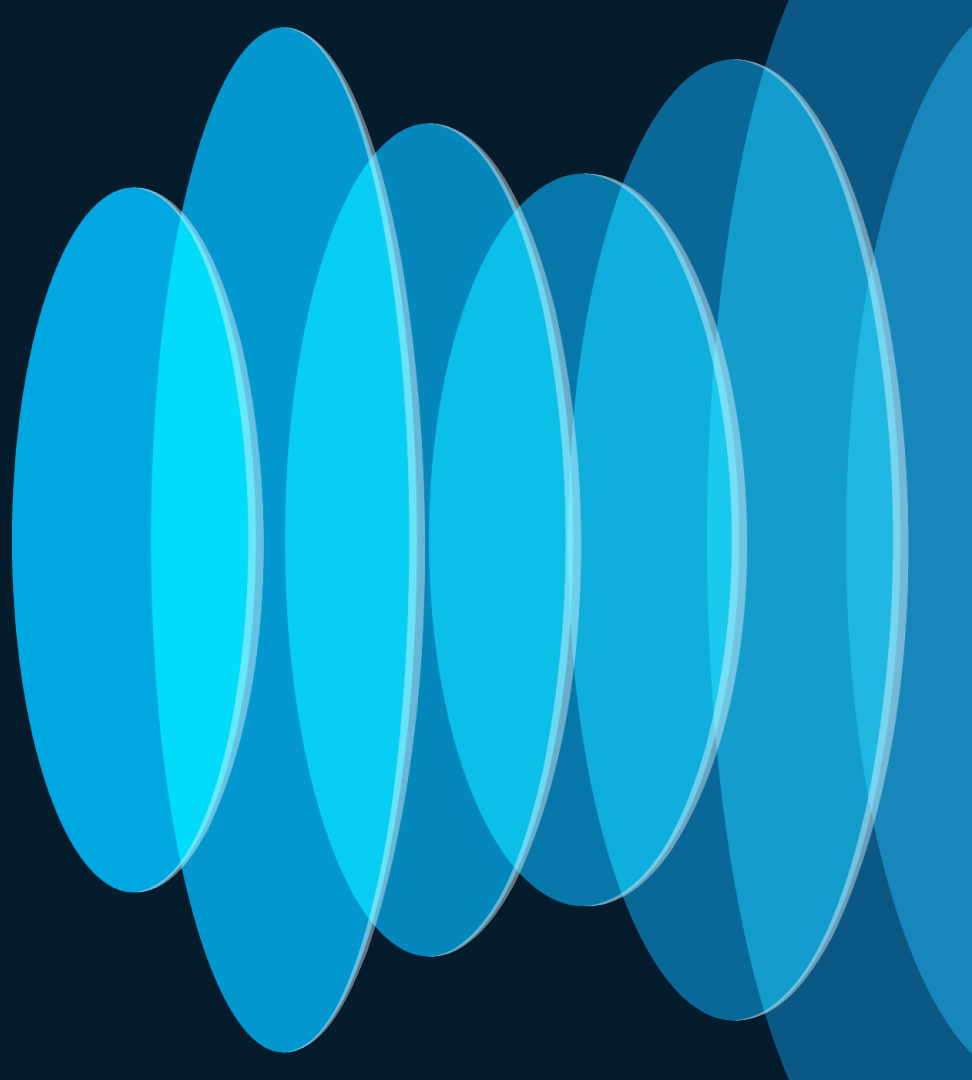


- Image & Video
- Text-to-Image
- Video Intelligence

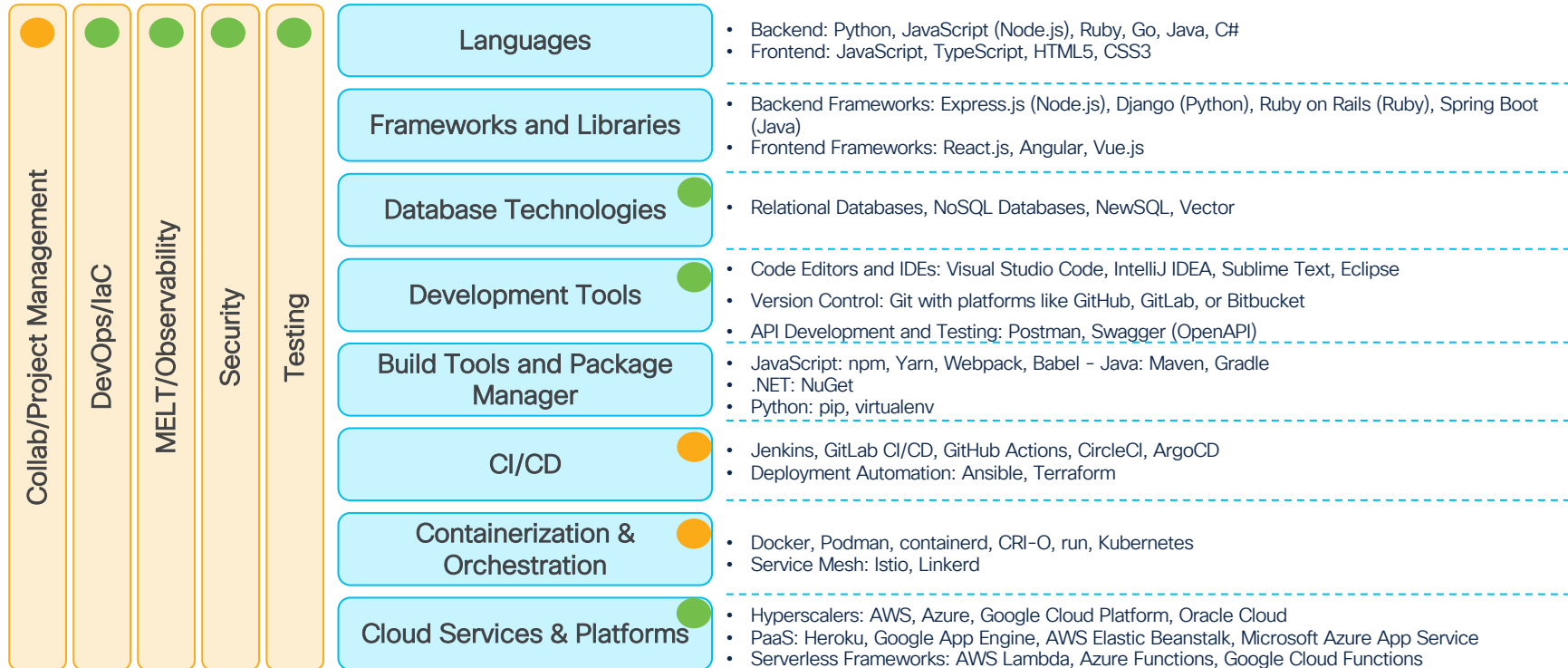


- Document & Data
- Optical Character Recognition (OCR)
- Parsers
- Warehouse

Joining Forces Developers & GenAI

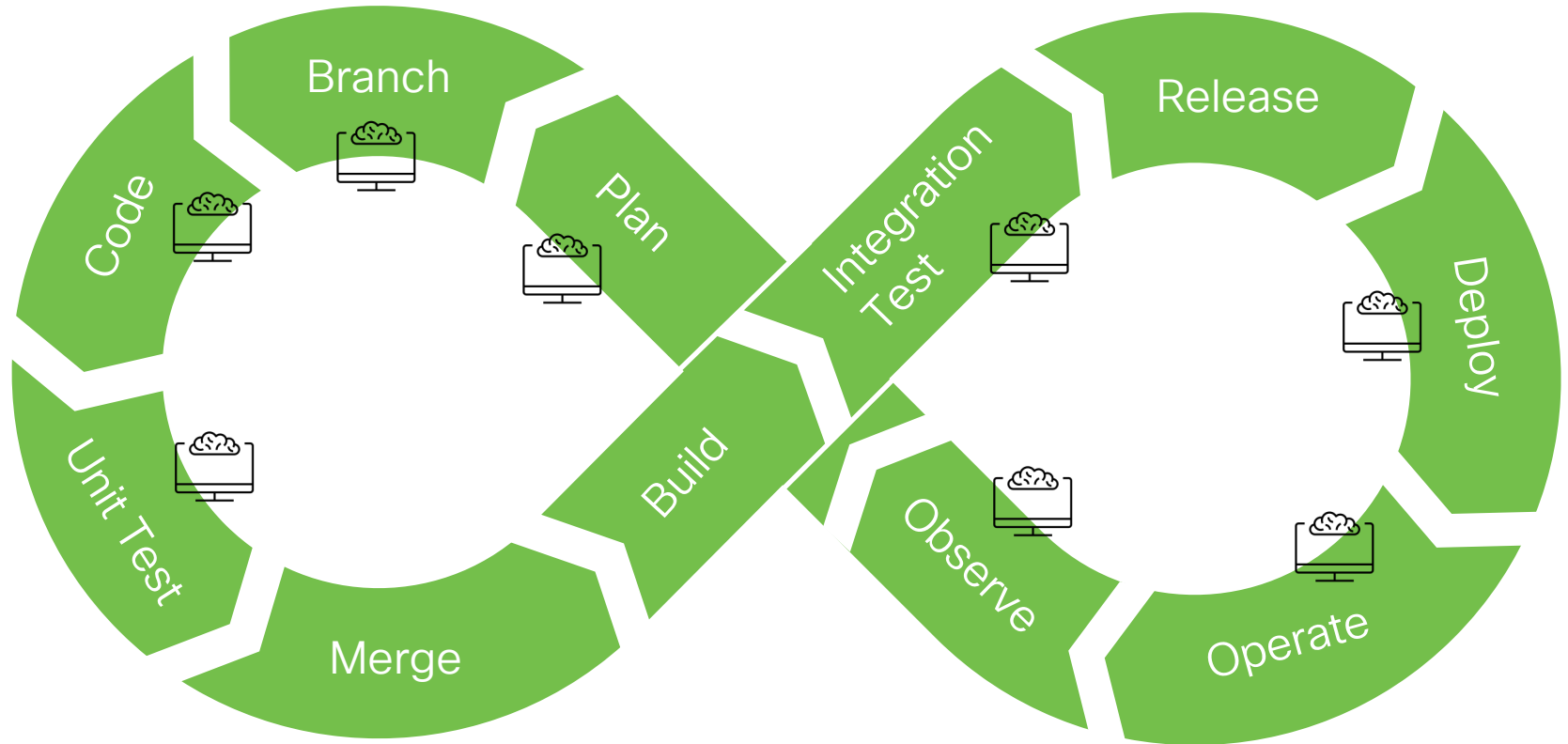


Modern Developer Stack – GenAI Intersection Points

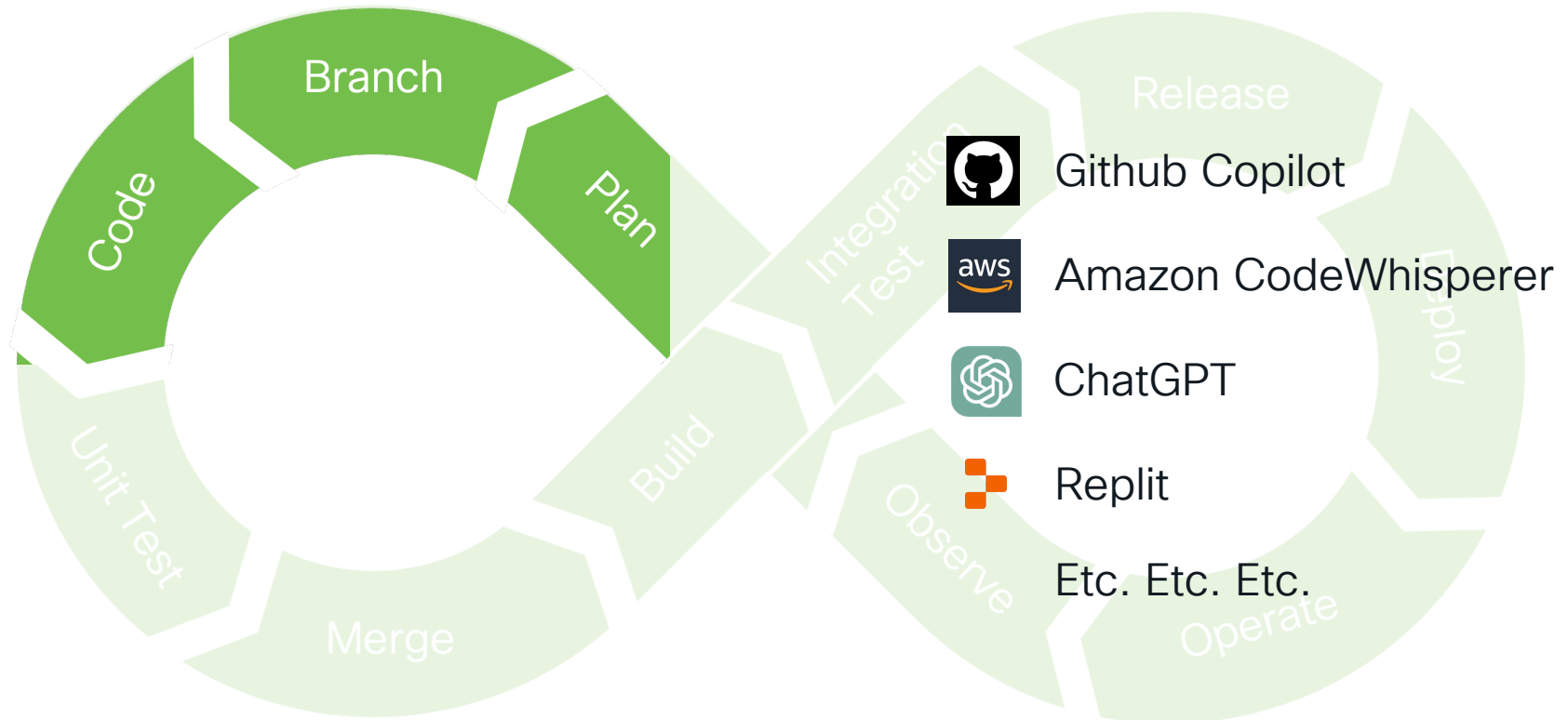


- GenAI-enabled
- GenAI-capable

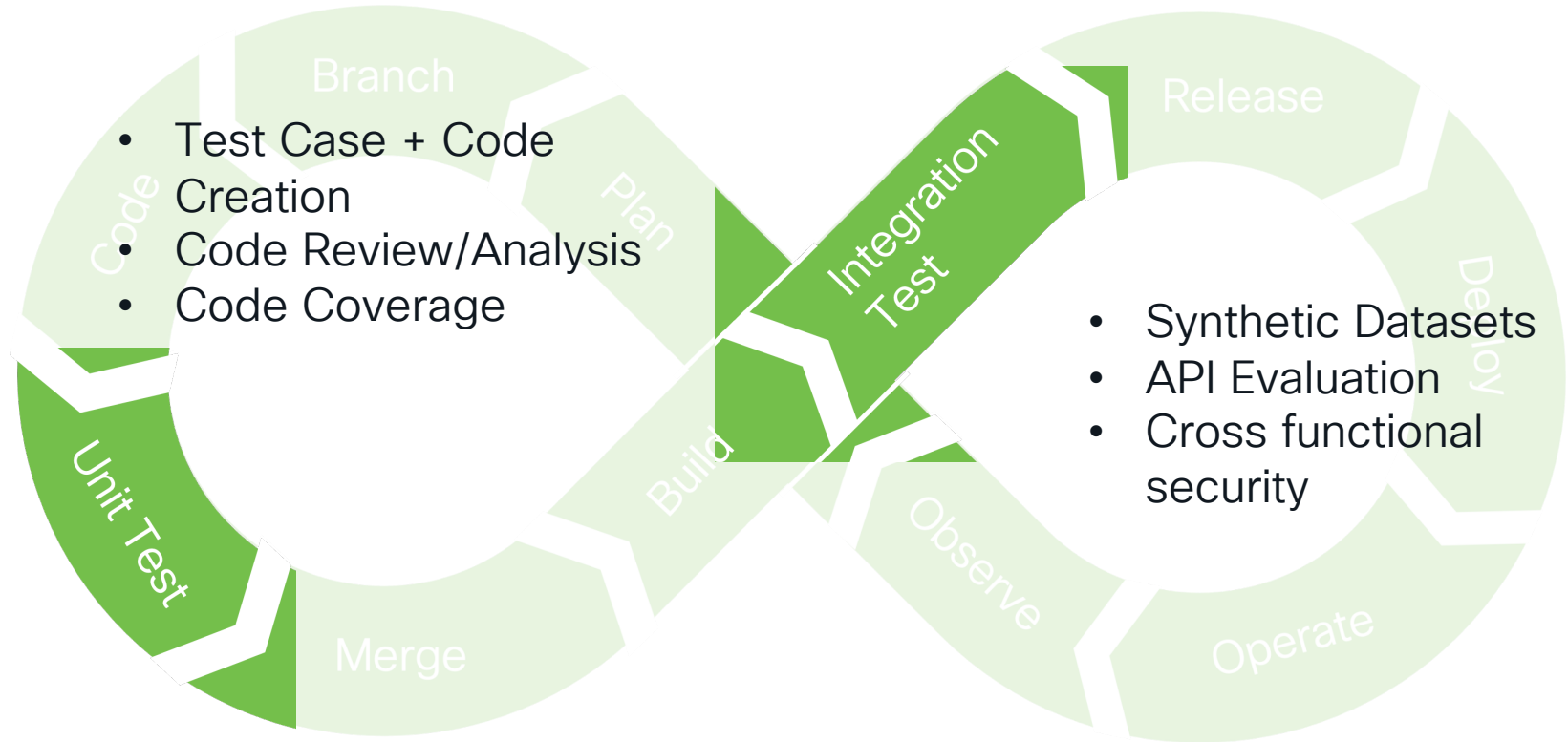
CI/CD – Functional View of AI Insertion



Coding Assistants - There's a bunch (with more to come)



Software Testing – It's not fun, but it's necessary



Coffee Break! Documentation – Not always talked about, ALWAYS NEEDED!



Espresso (75 mg):

Code Comments

Drip Coffee (165 mg):

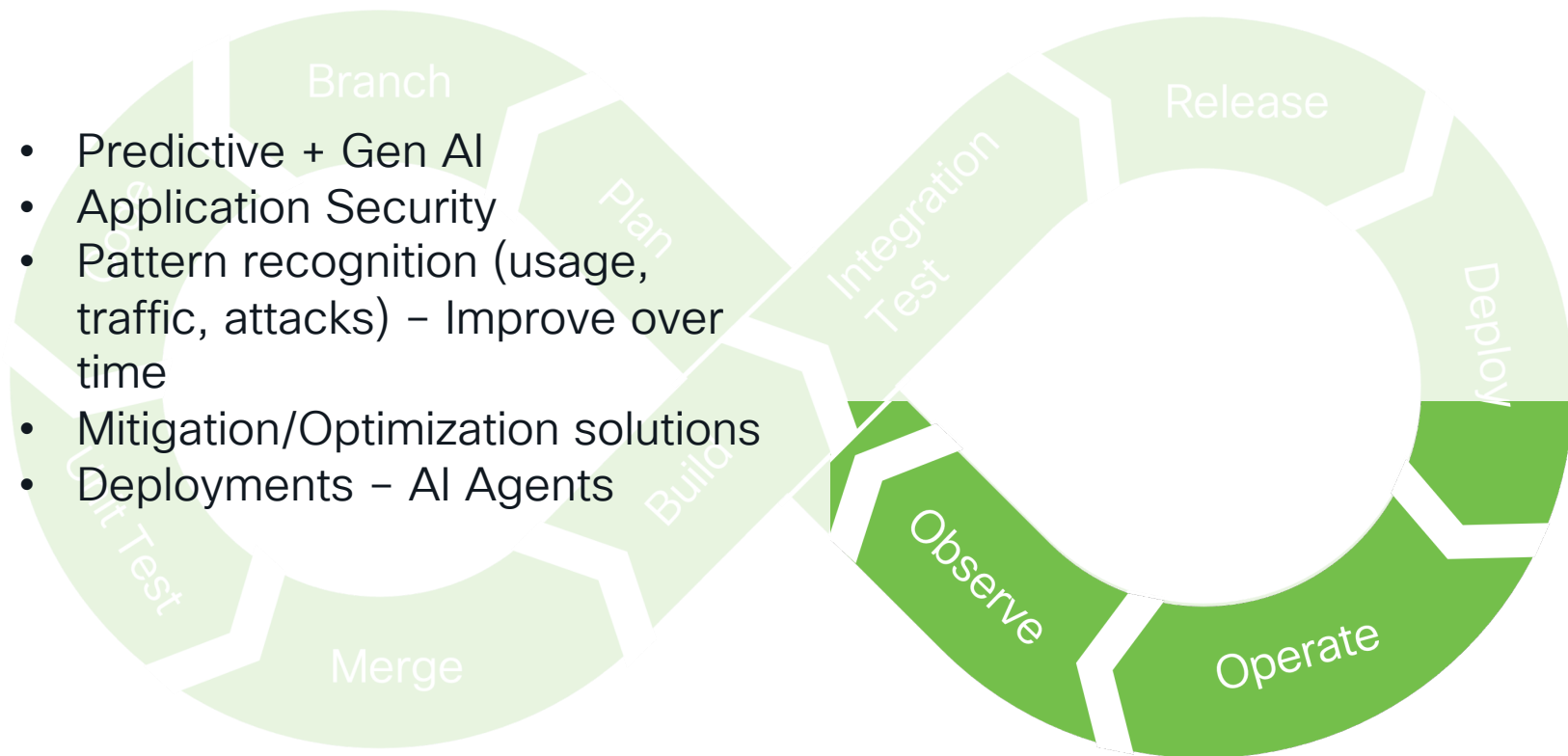
Functional Documentation

Nitro Cold Brew (215 mg):

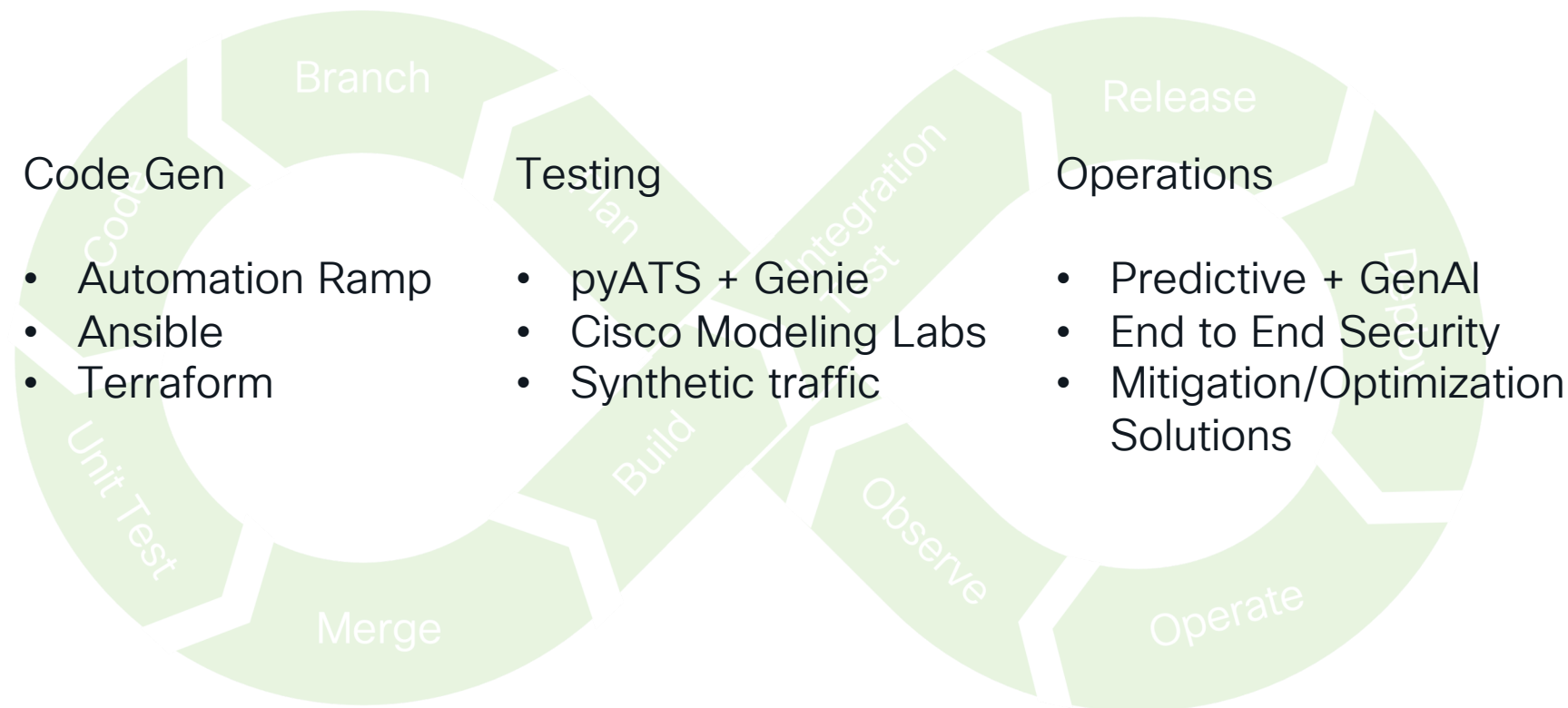
API Implementation/Usage

Operational Efficiency

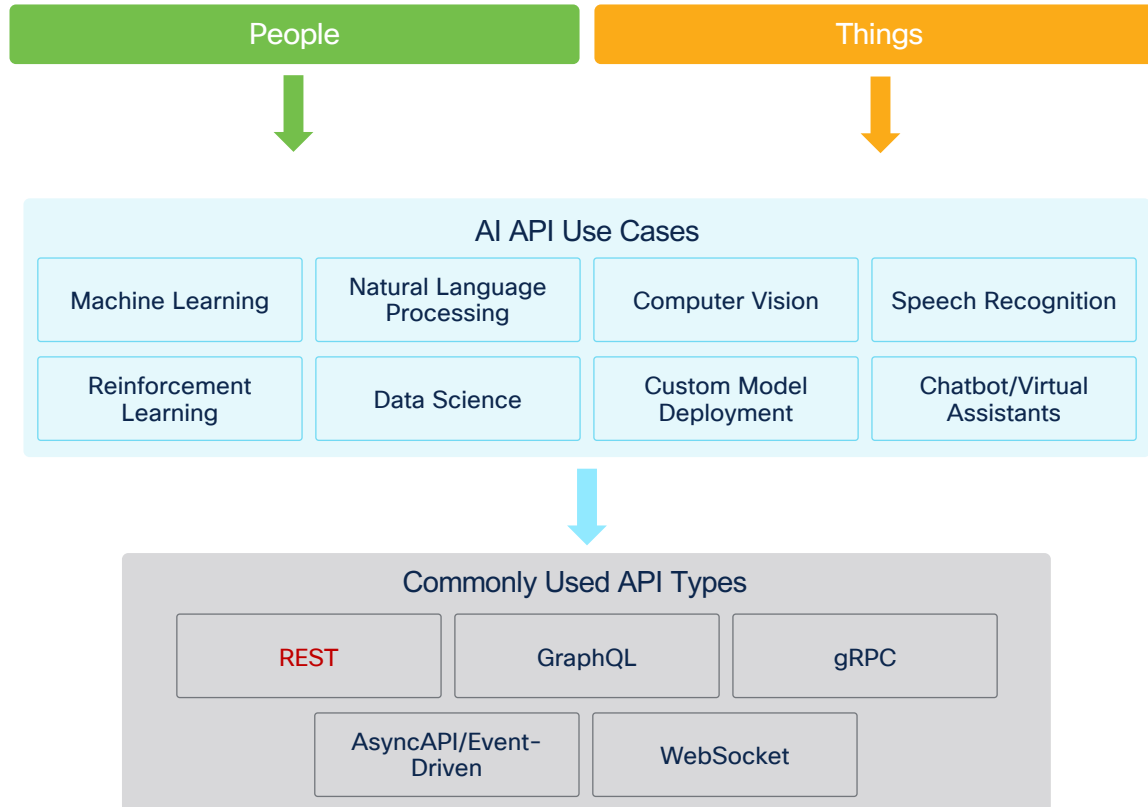
- Predictive + Gen AI
- Application Security
- Pattern recognition (usage, traffic, attacks) – Improve over time
- Mitigation/Optimization solutions
- Deployments – AI Agents



What about Infrastructure As Code?

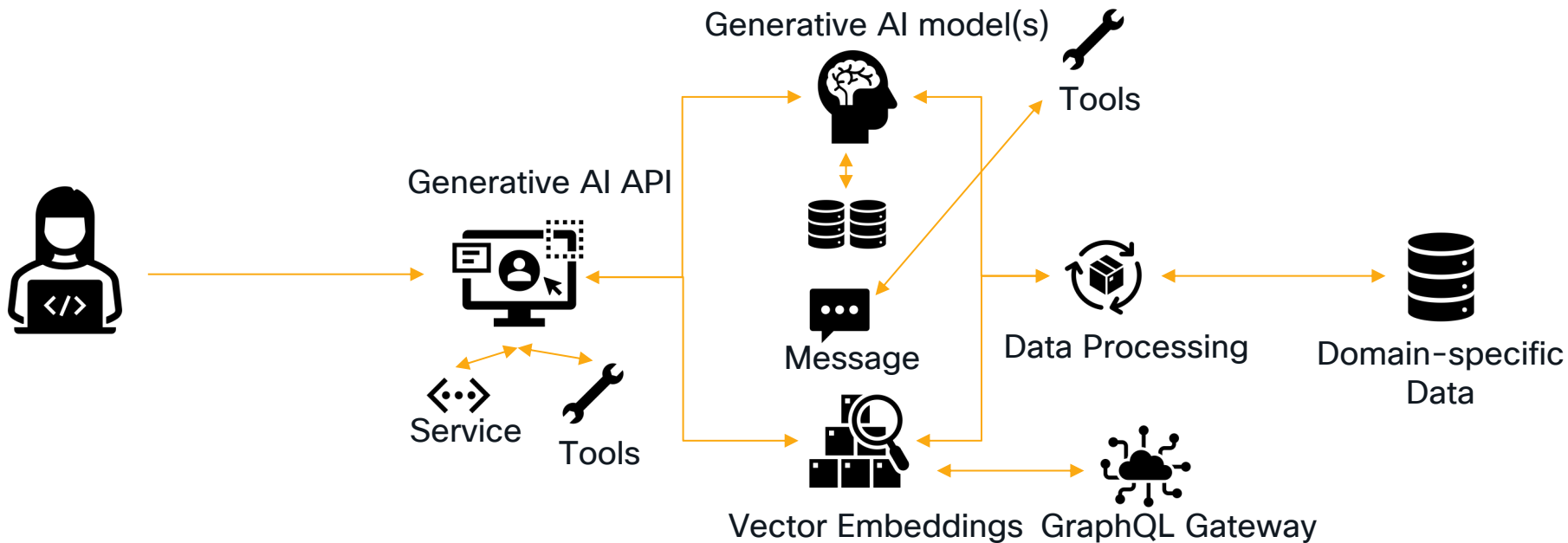


AI API Use Cases & Types



API Sprawl

APIs



AI Agents – Another tool in the toolbox

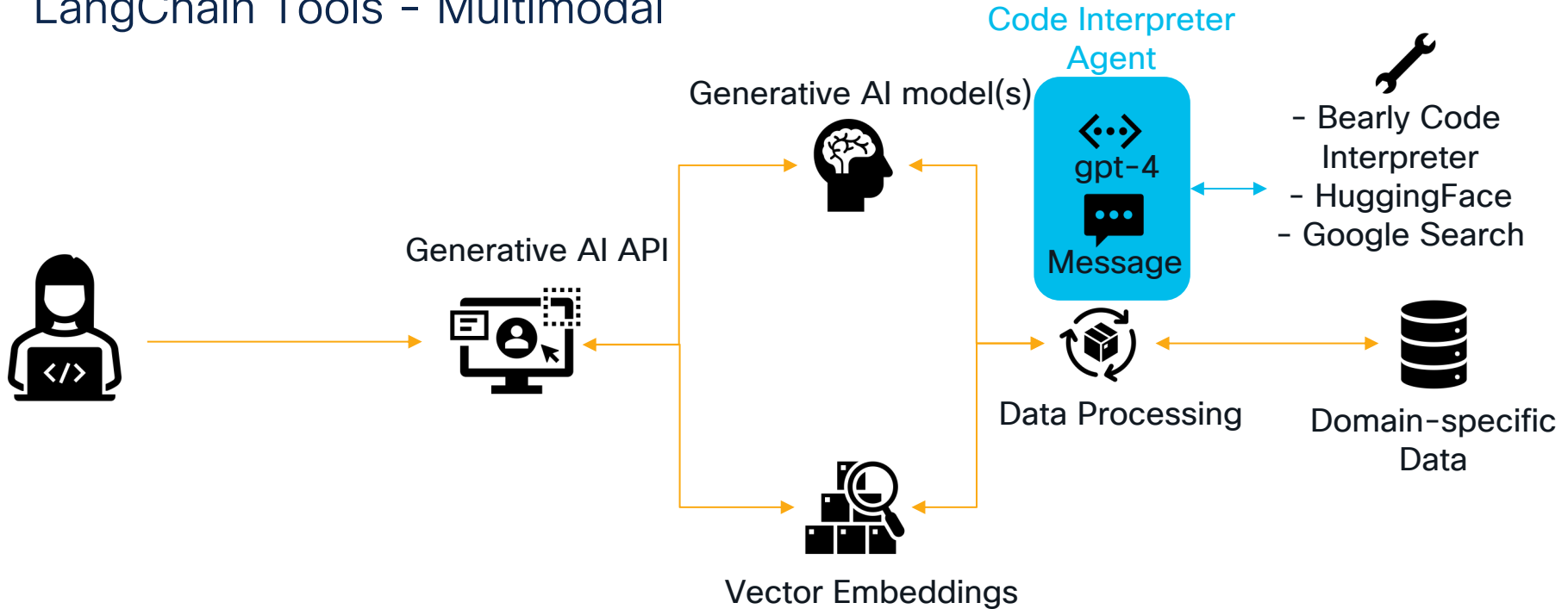
- An intelligent system that is designed for Natural Language Processing and to more efficiently interact with complex data
- Rule-based to complex ML algorithms
- Semi-to-Fully autonomous learning & decision making
- Conversational interactions
- Real-time data processing



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Selective Agent/Assistant Use

LangChain Tools - Multimodal

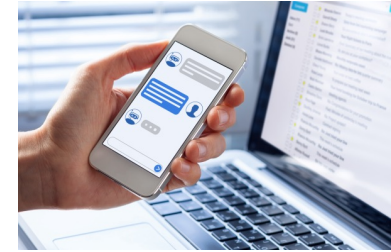


OpenAI Assistant API: <https://platform.openai.com/docs/assistants/how-it-works>

LangChain + OpenAI Assistant: https://python.langchain.com/docs/modules/agents/agent_types/openai_assistants

LangChain Integrations: <https://python.langchain.com/docs/integrations/tools>

APIs + Agents + Assistants



- For now, you will be doing a lot of API work
- REST, GraphQL, WebSockets, etc. will still be used
- API Gateways are your friend
- Additional API security is needed for AI use cases

- Agents will grow in popularity
- Agents will talk to Agents:
<https://microsoft.github.io/autogen/docs/getting-started>
- Agents will work with APIs and become more and more powerful

- Assistants will grow in capability, but will likely be relegated to more ‘simplistic’ functions
- They will work in combination with Agents and APIs as part of a full “stack”

CENTRAL IT & SECURITY TEAMS

(CITIZEN) DEV



motific.ai

BIZ USERS
ASSISTANT

EASY-START

- Sandboxes
- Starter assistants

ROI & INSIGHTS

- Cost, usage, feedback
- Effectiveness (prompt, models)
- Before & after analytics (time)

CUSTOMIZE

- Choose your model provider
- Bring your org data, access ctrl
- (Cisco connectors)

TRUST & SECURITY

- Toxicity, hallucination controls
- Data leak protection
- Gen AI adversarial protection



Introducing Cisco AI Assistant

First Context-Aware Cisco AI Assistant for Cloud App Security

Avoid Prompt Engineering fatigue

- Intelligent security companion that helps identify and resolve security issues
- **Multi-modal** user interface that ties existing Panoptica features into queries
- An interactive **lens-like** interface points to any place in the product, providing context and guidance

Introducing GenAI Protection

Mitigate Expanded Security Risks with GenAI

LLM Security and Protection Tool

- Detects malicious prompts made by users, blocks them, and reports them in Panoptica (as part of API security)
- **Protects against several key risks of OWASP Top 10 (Prompt Injection, Insecure Output Handling...)**
- Protects against LLM security vulnerabilities using app and API security techniques, as well as prompt injection detector

Modern Developers are on an Exciting Journey

- Leverage the Power Platforms – Abstract Away Complexity while Ensuring Safe GenAI use
 - Motific (<https://motific.ai/>)
- Leverage in-IDE & in-CI/CD services to ease Shift-Left friction
 - Cisco AI Assistants
 - Panoptica (<https://www.panoptica.app/>)
- Streamline automation and API consumption strategy – API-first strategy
- Cisco API and IaC documentation, education and enablement through Cisco DevNet: <https://developer.cisco.com/>



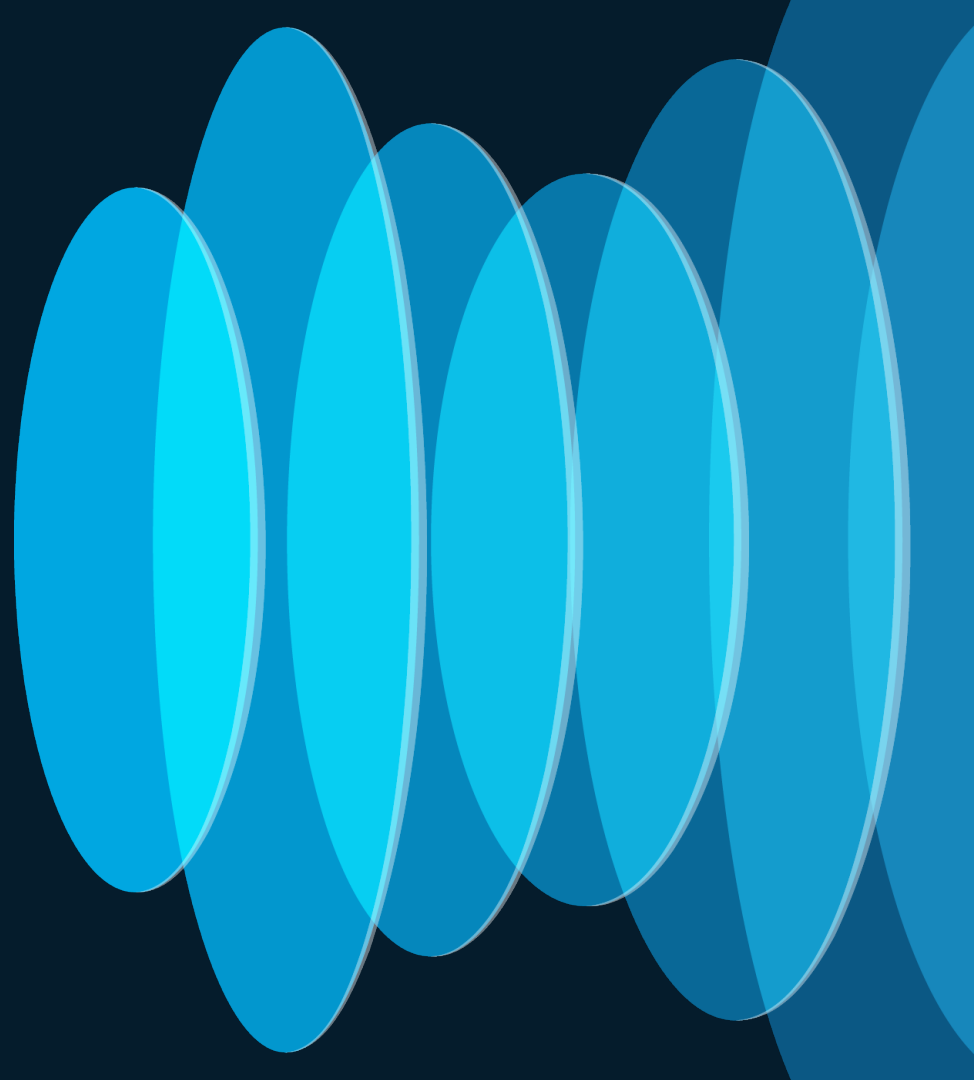
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What is a Developer Stack for AI?

- It is a combination of AI and Developer-centric tools:
 - IDE and CI/CD plugins
 - Test and reporting tools
 - Quality and security tools
 - Per-language modules
 - Per-product modules and SDKs
 - IaC automation library for AI Infrastructure
 - API standards, best practices and specifications
- Leverage AI-savvy tooling and modern development practices (e.g., API-first) to increase quality, velocity, and reduce toil



Summary



DevNet Zone AI Sessions

- **DevNet Zone Classrooms / Workshops (9)**
 - DEVNET-1084: Explore Generative AI Capabilities with Oleksii Borysenko
 - DEVNET-2127: Supercharge Your Webex Integrations with AI: APIs, Bots, and Embedded Apps Unleashed with Adam Weeks
 - DEVNET-2159: AI-Powered Scripting with GitHub Copilot with Erika Dietrick
 - DEVNET-2160: Natural Language Processing (NLP) using Python with Erika Dietrick
 - DEVNET-2161: Getting started with Large Language Models (LLMs) with Flo Pachinger
 - DEVNET-2708: Empowering Businesses with Secure, Private and Sovereign AI: A Guide to Deploying Large Language Models with Jock Reed
 - DEVNET-3000: ChatBot for Catalyst Center – on Open-Source AI based Bot with Gabi Zapodeanu
 - DEVWKS-2127: Create your first Machine Learning Model with Flo Pachinger
 - DEVWKS-3003: Motific: Accelerating Delivery of Trustworthy GenAI Capabilities Across Your Organization with Stefan Braicu



The bridge to possible

Thank you

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Cisco Webex App

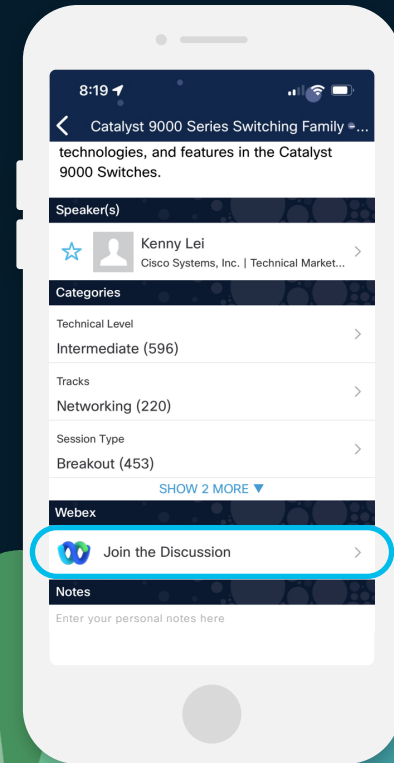
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 7, 2024.



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Contact me at: [@eyepv6](#)

OpenAPI + OpenAI = “Wait, what?!”

RESTful APIs – OpenAPI Specification (OAS)

OpenAPI

- <https://www.openapis.org/>
- Originally based on the Swagger Specification (Donated by SmartBear Software)
- OAS provides a standard, language-agnostic interface to RESTful APIs
- Design, build, document and consume RESTful APIs

OpenAI

- <https://openai.com/>
- Artificial General Intelligence
- ChatGPT hotness
- Uses OpenAPI:
 - <https://platform.openai.com/docs/api-reference/introduction>
 - <https://github.com/openai/openai-openapi/blob/master/openapi.yaml>

<https://developer.cisco.com/learning/tracks/Coding-APIs-v0/>