RF-5 - Open Source Software Selection Report

CTRL ALT Elite

Kevin Ekart / Ethan Gray / Laken Hollen / Huynh Le

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FastAPI

1. Are the open source license terms compatible with my business requirements?

Yes, FastAPI is released under the MIT License, which is one of the most permissive open-source licenses. It allows free use, modification, distribution, and commercial use with minimal restrictions.

2. What is the strength of the community?

FastAPI has a strong and rapidly growing community. It is highly active on GitHub, Stack Overflow, and Discord, with strong involvement from the creator. The community contributes tutorials, extensions, and issue resolution. While smaller than Django or Flask communities, it is considered one of the most active for modern Python frameworks.

3. How well is the product adopted by users?

FastAPI has been widely adopted across both small and large organizations. Companies like Netflix, Microsoft, and Uber use FastAPI in production. It is one of the fastest-growing Python web frameworks, showing strong adoption in education, startups, and professional environments.

4. Can I get a warranty or commercial support if I need it?

Direct commercial support is limited because FastAPI itself is community-driven. However, support can be obtained through third-party consulting firms or platform services such as FastAPI Experts, AWS, or managed API hosting providers.

5. What quality assurance processes exist?

FastAPI has well-established quality assurance processes. It includes automated testing, strong type validation through Pydantic, and high test coverage across framework components.

6. How good is the documentation?

The documentation is excellent. It is easy to read, well-organized, and includes examples for beginners and advanced users. It provides tutorials, interactive examples, and covers REST, validation, WebSockets, and security.

7. How easily can the system be customized to my exact requirements?

FastAPI is highly customizable. It supports modular API design, custom middleware, dependency injection, and integration with databases, authentication tools, and real-time communication. It can easily adapt to small or large applications.

8. How is this project governed and how easily can I influence the roadmap?

The project is maintained primarily by its creator, Sebastián Ramírez, with contributions from the community. Governance is centralized, so influence on the roadmap is limited unless you become an active open-source contributor. However, feature requests and feedback are regularly reviewed on GitHub.

9. Will the product scale to my enterprise's requirements?

Yes, FastAPI is known for high performance and excellent scalability due to its asynchronous design. FastAPI can scale to enterprise levels if deployed behind load balancers with multiple workers.

10. Are there regular security patches?

Yes, FastAPI receives regular updates, including security enhancements. It benefits from the security maintenance of Starlette and Pydantic as well. The community submits fixes quickly when issues arise.

Next.js

1. Are the open source license terms compatible with my business requirements?

Yes, Next.js is released under the MIT License, which is a very permissive open-source license. It allows free use, modification, distribution, and commercial use.

2. What is the strength of the community?

Next.js has a very strong and active community. It is developed by Vercel and supported by thousands of contributors worldwide. There is abundant discussion and help available on GitHub, Stack Overflow, Discord, Reddit, and various developer communities. Because it is widely used in the industry, community support is reliable and consistent.

3. How well is the product adopted by users?

Next.js is one of the most popular web frameworks for building modern front-end applications. It is used by major companies such as TikTok, Netflix, Hulu, GitHub, and Nike. Its popularity has grown rapidly among both professionals and students due to its strong performance, built-in routing, and support for server-side rendering. Adoption levels are extremely high, giving it long-term stability.

4. Can I get a warranty or commercial support if I need it?

Yes, while the OSS version itself does not include a warranty, Vercel, the company behind Next.js, offers paid commercial support, enterprise-grade hosting, performance monitoring, and support options.

5. What quality assurance processes exist?

Next.js has strong quality assurance processes. It is maintained by Vercel with a professional engineering team that performs code reviews, automated testing, and version releases. The framework undergoes continuous improvement and regression testing. Because of its widespread use, issues are quickly identified and resolved by both the maintainers and community.

6. How good is the documentation?

The documentation for Next.js is excellent. It includes clear guides, sample projects, tutorials, interactive examples, API references, and best practices. It also provides learning paths for beginners. The documentation explains not only how to use features, but why certain approaches are recommended.

7. How easily can the system be customized to my exact requirements?

Next.js is very flexible and can be customized easily. It supports multiple rendering options (client-side, server-side, and static), custom configurations, middleware, API routes, and integration with various UI libraries and databases. It works with React components, so the UI can be built freely without major restrictions.

8. How is this project governed and how easily can I influence the roadmap?

Next.js is governed by Vercel, which controls the roadmap and long-term direction. While outside developers can submit pull requests and suggestions, major decisions are made by Vercel's core team. Community feedback is considered, but individual influence over the roadmap is limited. However, the roadmap is transparent and aligned with modern web development needs.

9. Will the product scale to my enterprise's requirements?

Yes, Next.js is built for scalable, production-level applications. It can support enterprise-scale systems when paired with proper hosting infrastructure. It performs well under high traffic and integrates with CDNs for global scale.

10. Are there regular security patches?

Yes, Next.js receives frequent updates, including security fixes, performance improvements, and new features. Because Vercel actively maintains the project, security issues are quickly addressed. The community also contributes to reporting vulnerabilities.

PostgreSQL

1. Are the open source license terms compatible with my business requirements?

Yes, PostgreSQL is distributed under the PostgreSQL License, a very permissive open-source license similar to MIT. It allows full use, modification, and distribution of the software without restriction, making it fully compatible with academic, personal, and commercial uses.

2. What is the strength of the community?

PostgreSQL has a very large and long-standing community. It has been actively developed for over 25 years and is supported by thousands of contributors, companies, and database professionals. The community provides extensive documentation, forums, guides, and tools. It is considered one of the strongest and most mature open-source database communities in the world.

3. How well is the product adopted by users?

PostgreSQL is one of the most widely used relational databases globally. It is trusted by major organizations including Apple, Spotify, Reddit, NASA, Fujitsu, and government agencies. It is widely adopted in software engineering, data science, finance, and enterprise systems. Its popularity and reliability make it an excellent choice for both small and large projects.

4. Can I get a warranty or commercial support if I need it?

Yes, although PostgreSQL itself does not include a warranty, commercial support is available through companies such as EnterpriseDB, Percona, AWS, Azure, and other third-party vendors. Cloud platforms also offer managed PostgreSQL services.

5. What quality assurance processes exist?

PostgreSQL has very strict quality assurance and release processes. Every new version undergoes extensive testing, peer review, regression checks, and security validation. The project's long history and stability record show a strong commitment to reliability. Each version is supported for 5 years with minor updates and bug fixes.

6. How good is the documentation?

PostgreSQL's documentation is highly detailed, professional, and thorough. It includes extensive explanations, examples, diagrams, and references for all features. The documentation can be challenging for beginners because of its depth and technical wording, but it is extremely reliable.

7. How easily can the system be customized to my exact requirements?

PostgreSQL is very flexible and customizable. It supports extensions, custom data types, stored procedures, triggers, and indexing options. It also works well with many programming languages and frameworks.

8. How is this project governed and how easily can I influence the roadmap?

PostgreSQL is governed by a global community of developers and is not controlled by a single company. Decisions are made through community proposals and approval processes. Individual influence is possible through contribution, feedback, and participation, but meaningful influence requires active involvement in the community.

9. Will the product scale to my enterprise's requirements?

Yes, PostgreSQL is designed for high performance and scalability. It supports large databases, high user loads, replication, partitioning, and clustering. It is well suited for growth without needing to change database platforms.

10. Are there regular security patches?

Yes, PostgreSQL releases regular security updates and patches. Minor updates are released several times per year, and security vulnerabilities are addressed quickly. The development team is proactive about monitoring, testing, and releasing fixes. Its security track record is one of the strongest in the open-source database space.

Individual Contributions

Kevin Ekart

- RF-1 – Social Feasibility
- RF-2 – Specific Requirements
- RF-3 – Boundary Conditions
- RF-4 – Architecture Design
- RF-5
- Documentation assembly and formatting

Ethan Gray

- RF-1 – Economic Feasibility
- RF-1 – Market Research
- RF-2 – System Attributes and Other Requirements
- RF-3 – Overview
- RF-3 – Subsystem Decomposition
- RF-3 – Hardware/Software Mapping
- RF-4 – Interface Design

Laken Hollen

- RF-1 – Alternative Solutions
- RF-1 – Project Risks
- RF-2 – Specific Requirements
- RF-3 – Global Software Control
- RF-4 – Procedural Design

Huynh Le

- RF-1 – Product Feasibility
- RF-1 – Technical Feasibility
- RF-2 – Introduction
- RF-3 – Persistent Data Management
- RF-3 – Access Control and Security
- RF-4 – Data Design

Key Personnel Information

KEVIN EKART

SENIOR REACT DEVELOPER 2026 CARDINAL LANE, JEFFERSONVILLE, IN, 47130, UNITED STATES 812-697-0048

° Details °

2026 Cardinal Lane, Jeffersonville, IN, 47130, United States
812-697-0048
kevin.ekart@gmail.com

° Skills °

PHP (10+ years)

Python (7 years)

MySQL (10+ years)

MongoDB (8 years)

JavaScript (10+ years)

TypeScript (5 years)

NodeJS (4 years)

React (7 years)

React Native (3 years)

AWS (9 years)

Serverless (7 years)

Postgres (5 years)

NextJS (3 years)

Employment History

Senior React Developer at Forecastr, Louisville, KY

May 2022 — Present

- Helped transition existing platform from React to NextJS.
- Helped improve speed of the application by 60%.
- Built integration pipeline using AWS Glue to pull and aggregate data from multiple sources including QuickBooks Online, Xero, and Hubspot.

Owner and Software Engineer at Echelon Kinetic Art & Multimedia, Jeffersonville, IN

May 2012 — Present

- **Adjunct World**
  - Took over existing code base for maintenance and enhancements using PHP, MySQL, HTML, jQuery, JavaScript, and CodeIgniter.
  - Built course sign up and checkout that integrates with Stripe to process payments and keep inventory of available seats.
- **Unnamed Press**
  - Built and designed online store and admin for store using PHP, MySQL, HTML, jQuery, JavaScript, and Laravel.
  - Built cart and checkout system that integrates with Stripe to process payments.
- **Rally78**

    - Built and designed API for mobile application using PHP, Python, NodeJS, MongoDB, and Lumen.
    - Built mobile application using React Native and TypeScript.
    - Built real-time chat interface in mobile app utilizing NodeJS and integration with Pusher.
    - Served as technical lead during conversations with the USTA about partnering.
- **Core Integrated Marketing**
    - Built integration between Evosus and Sharpspring using PHP and Laravel.
    - Built integration between Salesforce and Sharpspring using PHP and Laravel.
    - Built integration that scans SFTP server for new files, parses them, and loads them into Sharpspring using PHP and Laravel.

Lead Data Architect at Capture Higher Ed, Louisville, KY

October 2020 — May 2022

- Took over the data warehouse project started by an outgoing employee.
    - Optimized scripts that export data from the production database into the data warehouse using Python, MySQL, AWS S3, AWS Glue, and AWS Athena.
    - Reduced runtime of existing scripts from 23 hours to 8 hours.
- Designed and built business intelligence reports using Python, React, and AWS Athena.
- Planned next generation of data warehouse to reduce runtime and costs.
- Operated as technical advisor for product management group, data exchange group, and operations group.

Lead Software Architect at Capture Higher Ed, Louisville, KY

May 2017 — October 2020

- Designed architecture for fourth iteration of company platform (Engage 4) moving from a monolithic style architecture to a microservices design.
- Built initial prototype of Engage 4 using PHP, HTML, MySQL, and Laravel.
- Reimagined how the company sends bulk emails to improve and maintain sending reputation.
    - Developed plan for both IP warmup and domain warmup.
    - Developed plan for avoiding spam traps.
    - Improved open rates from 12% to 28%
    - Improved click through rates from 3% to 12%.
- Operated as technical advisor within the product management group.
- Operated as top tier support for development group to help troubleshoot and resolve issues with the platform.

Manager of Product Development at Capture Higher Ed, Louisville, KY

July 2015 — May 2017

- Oversaw and managed team of 5 developers.
- Operated as a working manager spending 60% of my time coding and 40% managing the team.
- Instituted 2-week sprints using Jira to track progress.
- Designed, built, and oversaw the implementation of the third iteration of the company's platform (Engage 3) using PHP, HTML, jQuery, JavaScript, MySQL, and Laravel.
    - Built email service capable of queueing and sending millions of emails daily via Mailgun.
    - Built tool that would create screenshots of emails to share with clients for approval using NodeJS.

- Moved platform from a single instance for all clients to an instance per client for scaling.

Software Engineer at Capture Higher Ed, Louisville, KY

April 2013 — July 2015

- Designed and built the second iteration of the company's platform (Engage 2) using PHP, HTML, jQuery, JavaScript, MySQL, and Laravel.
- Moved the platform out of single PHP file to an MVC framework using a monolithic design.
- Improved efficiency of file imports reducing import times by up to 400%.
- Built mobile version of Engage 2 using Apache Cordova.
- Built prototype of company's flagship product for tracking and identifying leads on clients' sites using JavaScript, PHP, and Slim.

Software Engineer at The Learning House, Louisville, KY

April 2009 — April 2013

- Worked to design and build company's internal ERP system (Grail) to manage clients and workloads.
- Worked to design and build company's partner portal that allow clients to view and export reports.
- Built integrations from company's ERP and partner portal to clients' Moodle LMS platforms to gather course data and launch courses.
- Started building media library platform for managing images, videos, and other types of content for publication.
- Built real-time chat module with rooms for each course for Moodle to replace existing, buggy chat module using PHP, HTML, jQuery, and NodeJS.

Computer Hardware Specialist at Spalding University, Louisville, KY

March 2008 — April 2009

- Worked as primary contact for resolution to technical issues on campus.
- Responsible for installing, upgrading, and maintaining computer hardware and software for entire campus.
- Managed server network for campus library.
- Managed computer and software inventory.

Education

Bachelor of Science in Computer Science, Indiana University Southeast, New Albany, IN

January 2022 — Present

Undergraduate Certificate in Cybersecurity, Indiana University Southeast, New Albany, IN

January 2022 — May 2025

Associates in Multimedia, ITT Technical Institute, Louisville, KY

March 2006 — August 2008

Awards and Recognition

Forecastr – Speak the Truth Core Values Award

July 2023

Capture Higher Ed - MVP

August 2015

Business First - 20 People to Know - Technology & Innovation

November 2015

Capture Higher Ed - MVP

August 2013

Ethan Gray

1237 N Highway 31, Austin, Indiana (812) 216-0436 egray1333@gmail.com

EDUCATION

Austin High School Austin, Indiana

Core 40 and Academic Honors May 2022

GPA: 3.604

Ivy Tech Community College Sellersburg, Indiana

Associate of General Studies in General Studies May 2022

Indiana University Southeast New Albany, Indiana

Bachelor of Science in Computer Science Expected: May 2026

GPA: 3.329

EXPERIENCE

Math Tutor, Austin High School January – May 2020

- Greeted customers and treated them with kindness and respect, making them feel welcome in the area
- Worked with other math tutors to aid students in completing various math problems
- Maintained a clean learning environment

Dishwasher, Cracker Barrel August 2025 – Current

- Worked with other dishwashers to clean dishes and stock them in a timely manner
- Cleaned the dish room when dirty and at the end of the day
- Assisted in other areas as needed, such as taking the trash out

LAKEN HOLLEN

8487 S Riddle Rd | Leavenworth, IN 47137

812-968-5485 | Lakendawn0813@gmail.com

OBJECTIVE

Aspiring IT professional pursuing a B.S. in Computer Science with hands-on experience in tech support, digital tools, and community-focused projects.

EDUCATION

Indiana University Southeast, New Albany, IN

Bachelor of Science in Computer Science (Expected Graduation: May 2026)

- Minor: Science/Mathematics
- Dean's List: Every semester attended

Relevant Coursework:

- Programming Fundamentals
- Foundations of Digital Computing
- Introduction to Computer Software Systems
- Computer Programming II
- Intro to Operating Systems
- Computer Structures
- Computer Security
- Intro to Digital Forensics
- Data Structures

Crawford County High School, Marengo, IN

Academic Honors Diploma (May 2022)

- GPA: 3.8 (Unweighted), 4.0 (Weighted)
- National Honor Society (2020–2021)
- Honor Roll (Fall/Spring 2018–2020)
- Booster Club Member (2018–2021)

WORK HISTORY

Philanthropy/ IT Intern

Community Foundation of Crawford County | Marengo, IN | January 2025 – Present

- Provide IT support for meetings and events, including setup and troubleshooting of devices, Microsoft SharePoint, and Office 365 tools
- Developed the Crawford County Community Resource Guide, a directory of services for low-income residents seeking food, housing, healthcare, and other assistance
- Supporting outreach efforts through nonprofit site visits and survey development to better communicate the missions, needs, and impact of local organizations
- Contribute to daily operations and special projects across departments, demonstrating adaptability and a proactive mindset
- Selected as the facilitator for the Summer 2025 Code IT Academy, a tech training program hosted by CFCC in collaboration with Ivy Tech and The Mill, aimed at expanding digital skills in the community

Cook - Dietary Department

Todd Dickey Nursing and Rehabilitation – Leavenworth, IN | December 2021 – January 2025

- Prepared breakfast and lunch, often simultaneously, for up to 60 residents, ensuring meals met nutritional standards, dietary restrictions, and facility schedules.
- Efficiently organized and executed tray line service for both breakfast and lunch, helping to maintain a timely and accurate meal delivery system.
- Maintained strict sanitation standards and collaborated with kitchen and nursing staff
- Balanced workflow under tight deadlines to ensure timely service

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PROJECTS

- **Disk Analyzer Tool** – Built a Python script to analyze disk usage and generate reports

- Board Game Website – Designed a fantasy strategy board game site with HTML/CSS and JavaScript, including dynamic forms and gameplay summaries
- Community Resource Guide – Compiled and organized local nonprofit information into a printed guide distributed to residents seeking food, housing, and healthcare assistance.

TECHNICAL SKILLS

- Programming Languages: Python, Java, C, C++, Assembly, JavaScript
- Tools: Microsoft Office, SQL (basic), Git, IntelliJ, PyCharm, Node.js, Visual Studio Code, Virtual Box, ChatGPT, Excel (basic)
- Operating Systems: Windows, Linux
- Data Analysis & Troubleshooting

SOFT SKILLS

- Communication, Time Management, Problem-Solving, Adaptability, Teamwork

HUYNH LE

CONTACT

281 - 966 - 5277
lehuynh228@gmail.com
Louisville, KY 40228

TECHNICAL SKILLS

Networking: TCP/IP, LAN/WAN, Wi-Fi basics, troubleshooting principles

Cybersecurity: Security fundamentals, firewalls, VPNs, cryptography basics

Programming & Scripting: Java, Python (basics), Bash (exposure)

Operating Systems: Windows, Linux (familiarity)

Tools & Platforms: Wireshark, VirtualBox, VMware, Packet Tracer

Analytical & Soft Skills:

- Problem-Solving & Logical Reasoning
- Data Analysis (Packet/Log review - conceptual)
- Attention to Detail
- Communication (Written & Verbal)
- Teamwork & Collaboration
- Adaptability & Eagerness to Learn

EDUCATION

Indiana University - Southeast

Expected Graduation - May 2026
B.S. Computer Science – Cyber Security

Houston Community College

2017 – 2019
A.S. Computer Science

Industrial University Of Ho Chi Minh City

2009-2013
B.A . Business Administration

Certification In Process

CompTIA Security+
(Expected Completion: December 2025)

CAREER OBJECTIVE

Motivated Computer Science student with a strong foundation in networking, cybersecurity, and technical support. Seeking an Entry-Level Computer Support Assistant position at the Help Desk to leverage my troubleshooting skills, customer service experience, and passion for technology to resolve user issues efficiently and contribute to a collaborative IT team.

PROJECTS

Virtualized Network Setup with Wireshark Traffic Analysis

Description: Configured a virtualized network using VMware/VirtualBox with multiple subnets and analyzed traffic using Wireshark to identify protocol (HTTP, DNS) and troubleshoot connectivity issues.

Skills : Virtualization, subnetting, Wireshark, packet analysis, troubleshooting.

Simulated Network Attack Detection Using Wireshark

Description: Simulated a basic ARP spoofing attack in a virtual environment and used Wireshark to detect malicious traffic, documenting findings and mitigation steps.

Skills: Wireshark, cybersecurity, virtualization, network monitoring.

File Recovery and Analysis

Description: Used tools like Autopsy to recover deleted files from a disk image and analyzed file details (metadata) to track user activity.

Skills Demonstrated: File recovery, metadata analysis, digital forensics.

Hidden Data Detection

Description: Used tools like Steghide to find and extract hidden data in image files. Documented the steps and results.

Skills: Steganography, data concealment detection, digital forensics.

Honeypot with Fake Billing Page

Description: Developed a honeypot system with a fake billing page using Python, HTML, and CSS to collect attacker credentials (ID, username, password) and log malicious activity.

Skills: Python programming, web development (HTML/CSS), cybersecurity, ethical hacking, and threat detection.

Password Strength Checker

Description: Developed a Python program to evaluate the strength of passwords based on criteria like length, use of uppercase/lowercase letters, numbers, special characters, and resistance to common patterns.

Skills: Python programming, cybersecurity, password security, algorithm design.

WORK EXPERIENCE

ASSISTANT MANAGER *Anthony Vince Nail Spa* *2020 - Present*

- Led and trained a team of 13+ employees, fostering teamwork and ensuring excellent customer service.
- Resolved client concerns to improve satisfaction and reduce complaints by 20%.
- Organized employee schedules, optimizing for peak times and seasonal demand.
- Maintained staff records (salaries, PTO, schedules) using Microsoft Office Suite.
- Managed inventory supplies using Excel to track stock levels.
- Provided day-to-day customer support and bilingual translation services (English/Vietnamese)