

## Diagramming & Design Tools

### 1. Draw.io (diagrams.net)

Description: A free, web-based diagramming tool perfect for creating flowcharts, UML diagrams, system architecture diagrams, and network topology. It's a top choice for its simplicity and integration.

### 2. Lucidchart

Description: A powerful, web-based visual workspace for creating professional diagrams, including ERDs, sequence diagrams, and cloud architecture. Offers strong collaboration features.

### 3. Miro

Description: An online collaborative whiteboard platform ideal for architecture brainstorming, event storming, user story mapping, and creating low-fidelity diagrams with a team.

### 4. PlantUML

Description: A tool that allows you to create UML diagrams from a plain text language. It's great for version control and generating consistent diagrams programmatically.

## Modeling & Standard Notation

### 5. The C4 Model

Description: Not a tool, but a lean graphical notation technique for modeling the architecture of software systems. It uses Context, Containers, Components, and Code (C4) to describe software at different levels of detail.

### 6. ArchiMate

Description: A standardized modeling language from The Open Group for describing enterprise architectures. It's more formal and comprehensive than the C4 model.

## Cloud & Infrastructure as Code (IaC)

### 7. Terraform

Description: An industry-standard IaC tool that lets you define and provision cloud infrastructure (on AWS, Azure, GCP, etc.) using a declarative configuration language.

### 8. AWS CloudFormation

Description: Amazon's native IaC service for modeling and setting up AWS resources using JSON or YAML templates.

### 9. Docker

Description: A platform for developing, shipping, and running applications in containers. It's fundamental to modern microservices architecture.

#### **10. Kubernetes (K8s)**

Description: A container orchestration system for automating the deployment, scaling, and management of containerized applications.

#### **11. Kong / Apache APISIX**

Description: API Gateways that act as a single entry point for managing, securing, and routing API traffic in a microservices architecture.

### **API Design & Testing**

#### **12. Postman**

Description: A collaboration platform for API development. It allows you to design, test, document, and mock APIs effortlessly.

#### **13. Swagger / OpenAPI**

Description: A specification for machine-readable interface files for describing, producing, consuming, and visualizing RESTful web services.

### **Monitoring & Observability**

#### **14. Prometheus**

Description: An open-source systems monitoring and alerting toolkit, especially well-suited for dynamic cloud environments. It collects and stores metrics as time series data.

#### **15. Grafana**

Description: An open-source platform for monitoring and observability. It allows you to query, visualize, and alert on your metrics from data sources like Prometheus.

#### **16. ELK Stack (Elasticsearch, Logstash, Kibana)**

Description: A collection of three open-source products for searching, analyzing, and visualizing log data in real-time.

### **Code Quality & Analysis**

#### **17. SonarQube**

Description: An open-source platform for continuous inspection of code quality. It performs static analysis to detect bugs, code smells, and security vulnerabilities.

#### **18. Git**

Description: The fundamental version control system for tracking changes in source code during software development. Essential for any architect to understand workflows.

## **Messaging & Event-Driven Architecture**

### **19. Apache Kafka**

Description: A distributed event streaming platform for building real-time data pipelines and streaming applications. A cornerstone of event-driven architecture.

#### **Documentation**

### **20. Markdown**

Description: A lightweight markup language with plain-text formatting syntax. It's the de-facto standard for writing documentation on platforms like GitHub.

### **21. AsciiDoc**

Description: A more powerful and semantic documentation format compared to Markdown, excellent for technical books and large-scale documentation. Used by tools like Antora.