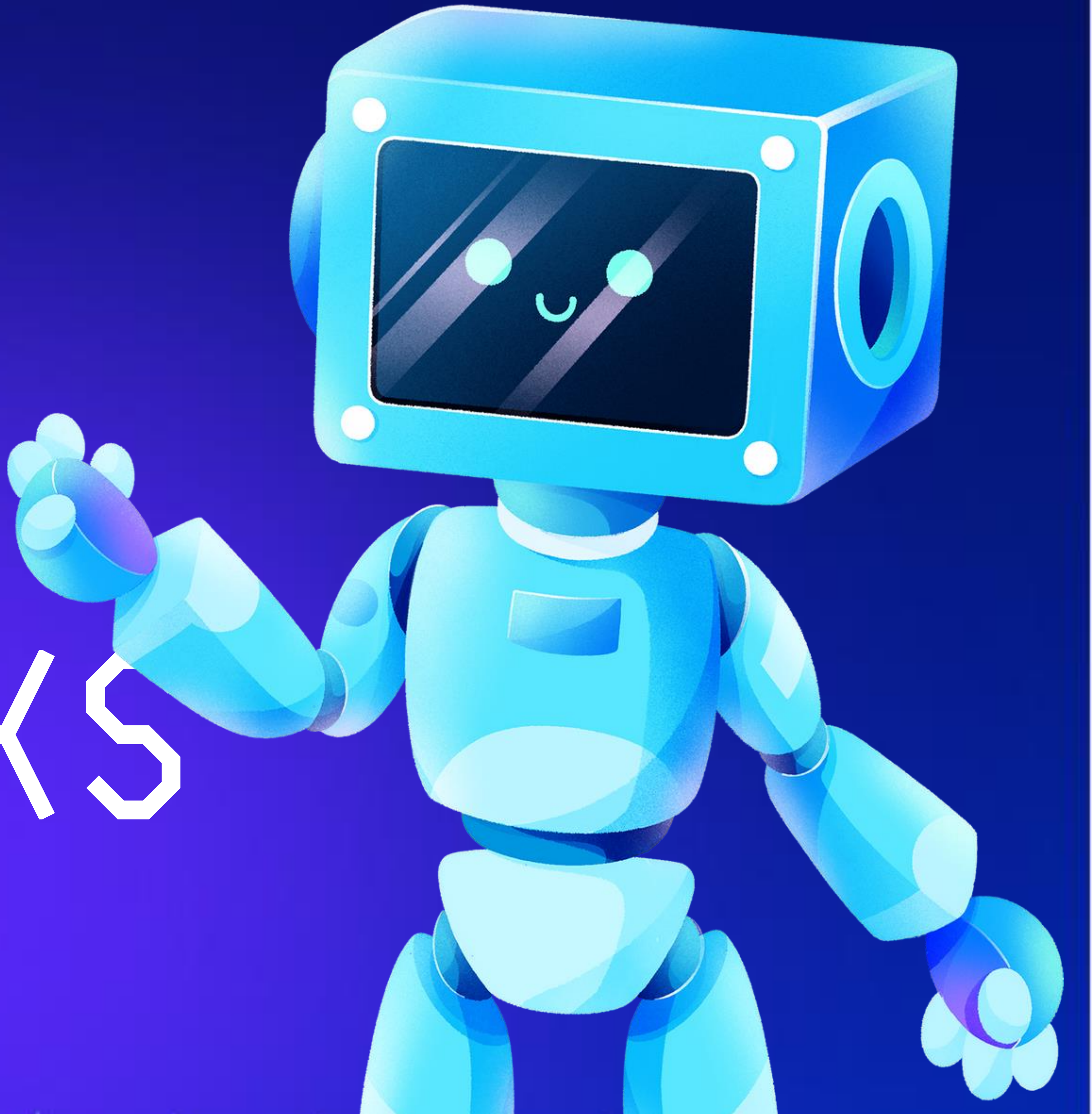
WEB FRAMEWORKS



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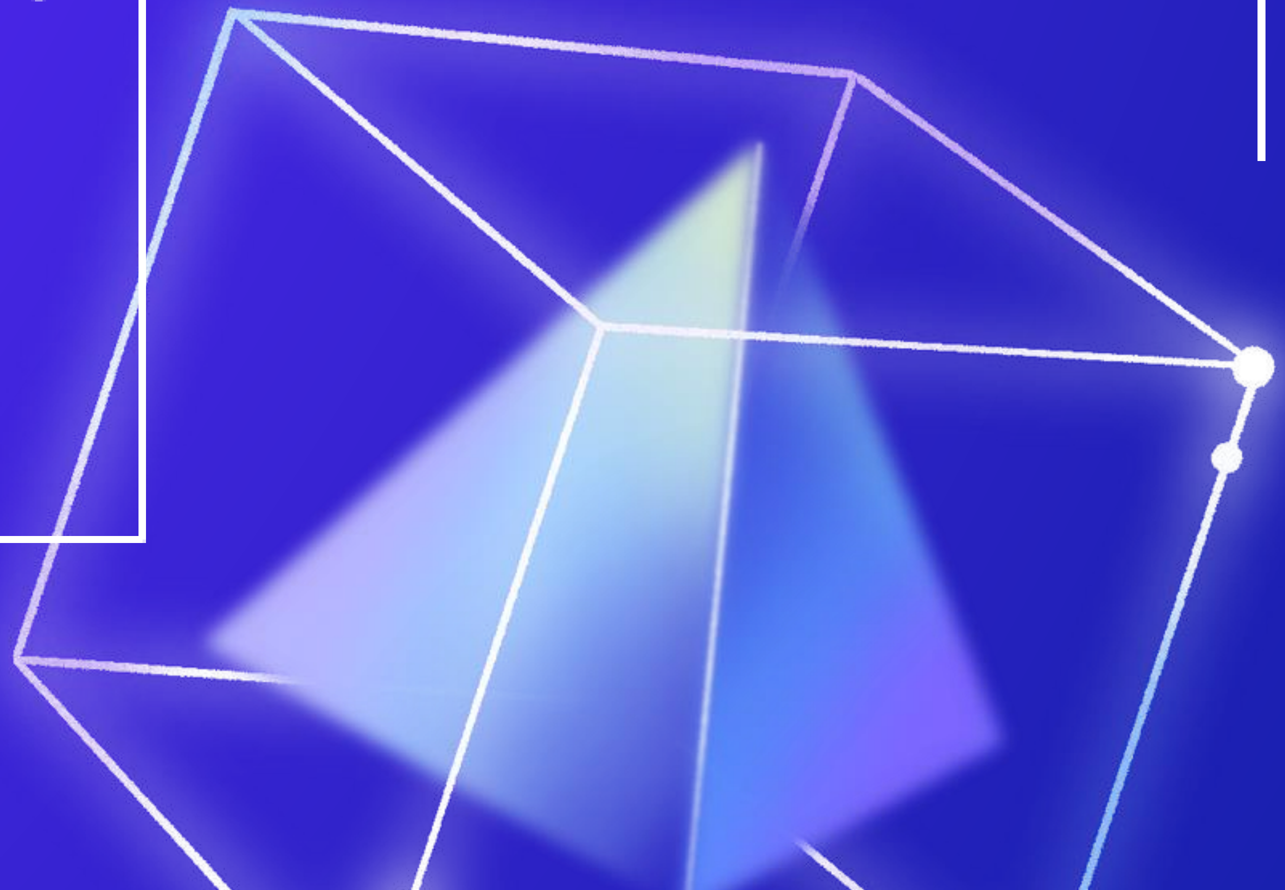


INTRODUCTION

DEFINITION OF WEB FRAMEWORKS:

- SOFTWARE LIBRARIES THAT SUPPORT WEB APPLICATION DEVELOPMENT.
- PROVIDE A STRUCTURED FOUNDATION TO SIMPLIFY COMPLEX AND REPETITIVE TASKS.
- ENABLE DEVELOPERS TO FOCUS ON UNIQUE APPLICATION FEATURES BY REUSING PRE-BUILT COMPONENTS.

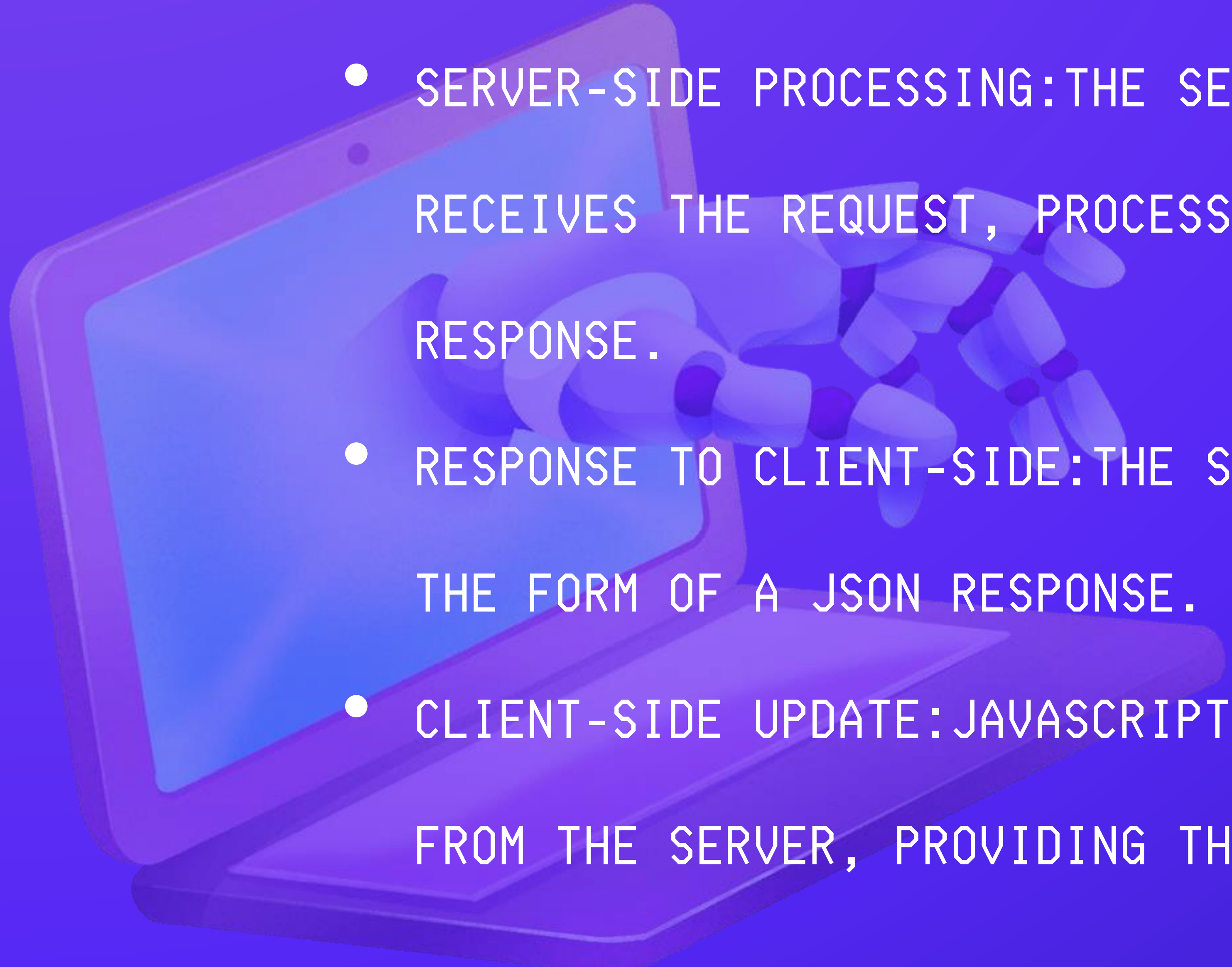
IMPORTANCE OF WEB FRAMEWORKS:

- EFFICIENCY AND SPEED
- CONSISTENCY AND MAINTAINABILITY
- SECURITY

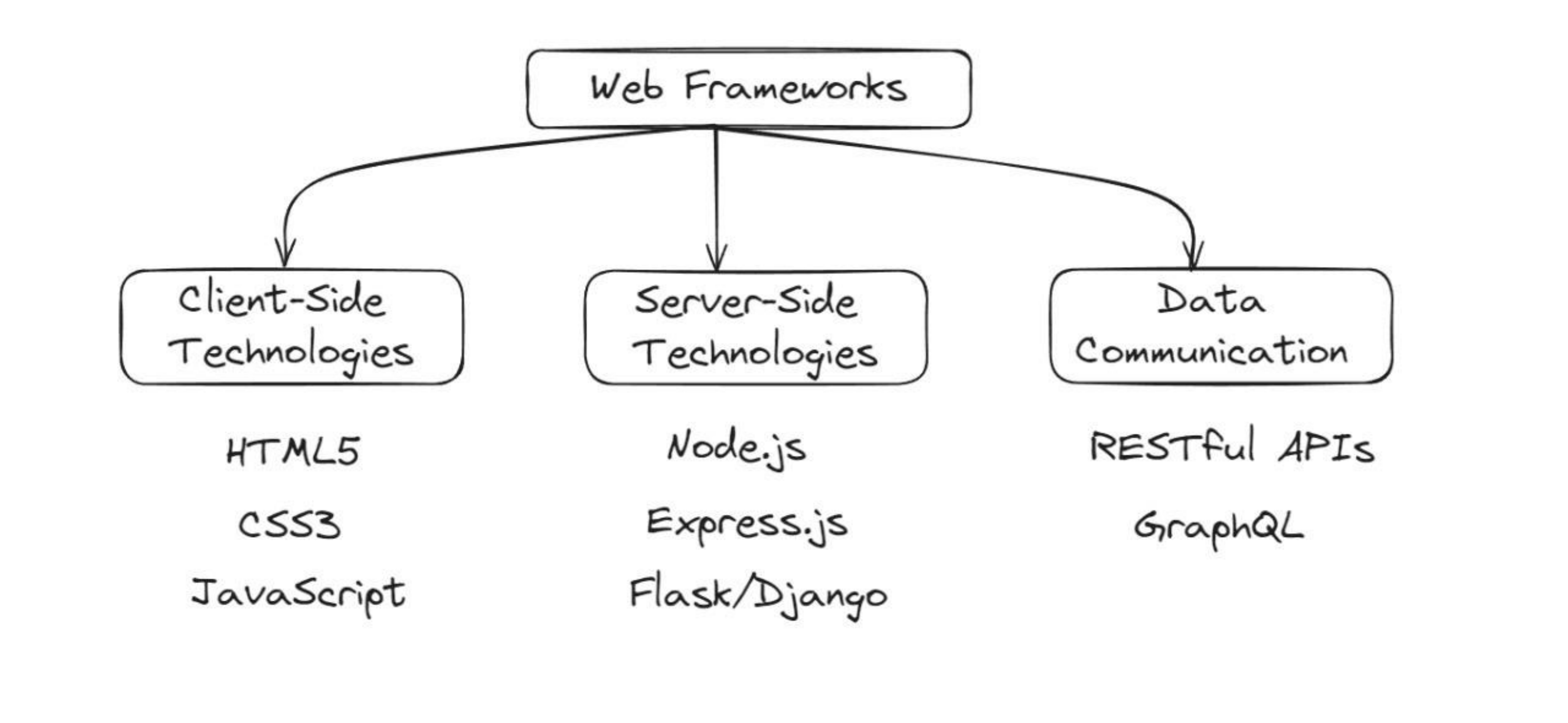
OVERVIEW OF WEB TECHNOLOGIES

FLOW OF INTERACTION:

- USER ACTION: A USER INTERACTS WITH THE CLIENT-SIDE INTERFACE (E.G., SUBMITS A FORM).
- CLIENT-SIDE REQUEST: JAVASCRIPT CAPTURES THE USER ACTION AND SENDS A REQUEST TO THE SERVER USING AN API (RESTFUL API OR GRAPHQL).
- SERVER-SIDE PROCESSING:THE SERVER-SIDE FRAMEWORK (NODE.JS/EXPRESS.JS, FLASK/DJANGO) RECEIVES THE REQUEST, PROCESSES IT (E.G., QUERYING THE DATABASE), AND PREPARES A RESPONSE.
- RESPONSE TO CLIENT-SIDE:THE SERVER SENDS THE PROCESSED DATA BACK TO THE CLIENT-SIDE IN THE FORM OF A JSON RESPONSE.
- CLIENT-SIDE UPDATE:JAVASCRIPT UPDATES THE USER INTERFACE BASED ON THE DATA RECEIVED FROM THE SERVER, PROVIDING THE USER WITH REAL-TIME FEEDBACK OR NEW CONTENT.



OVERVIEW OF WEB TECHNOLOGIES



ADVANTAGES OF WEB FRAMEWORKS

- RAPID DEVELOPMENT: PRE-BUILT COMPONENTS REDUCE DEVELOPMENT TIME.
- CONSISTENCY: ENFORCES BEST PRACTICES FOR MAINTAINABLE CODE.
- SECURITY: BUILT-IN SECURITY FEATURES.
- COMMUNITY AND ECOSYSTEM: ACCESS TO EXTENSIVE LIBRARIES AND ACTIVE COMMUNITIES.
- SCALABILITY: SUPPORTS SCALABLE ARCHITECTURES.

DISADVANTAGES OF WEB FRAMEWORKS

- LEARNING CURVE: TIME NEEDED TO LEARN FRAMEWORK-SPECIFIC PRACTICES.
- Flexibility: Potential limitations on design choices.
- Performance Overhead: Abstraction layers may introduce performance issues.
- Compatibility and Updates: Challenges in keeping up with updates.
- Resource Consumption: May consume more resources than custom-coded solutions.

OBJECTIVES

SIMPLIFY & ACCELERATE DEVELOPMENT

ENSURE CONSISTENCY & MAINTAINABILITY

ENHANCE PERFORMANCE & SCALABILITY

IMPROVE SECURITY

FACILITATE TESTING AND DEBUGGING

EXAMPLES

DJANGO

FEATURES:

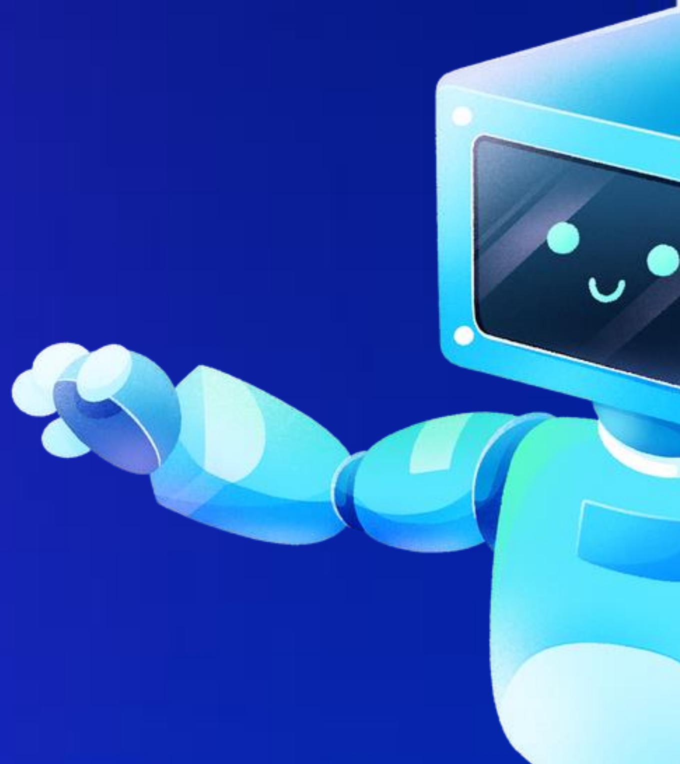
- Batteries Included: Built-in authentication, admin panel, ORM.
- MVC Architecture: Follows the Model-View-Controller pattern.
- Django REST Framework: Ideal for building RESTful APIs.
- Security: security best practices.

BENEFITS:

- Fast Development
- Robust Security
- Versatility
- Strong Documentation

DRAWBACKS:

- Monolithic structure
- Complexity for small projects



EXPRESS.JS

FEATURES:

- Minimalistic and flexible Node.js framework.
- Middleware support.
- Robust routing system.
- Scalable for real-time apps.

BENEFITS:

- High performance
- Lightweight, suitable for microservices
- Large and active community

DRAWBACKS:

- Minimalistic: Requires additional libraries for complex apps.
- Steep learning curve: Requires strong knowledge of Node.js and JavaScript.

THANK YOU!