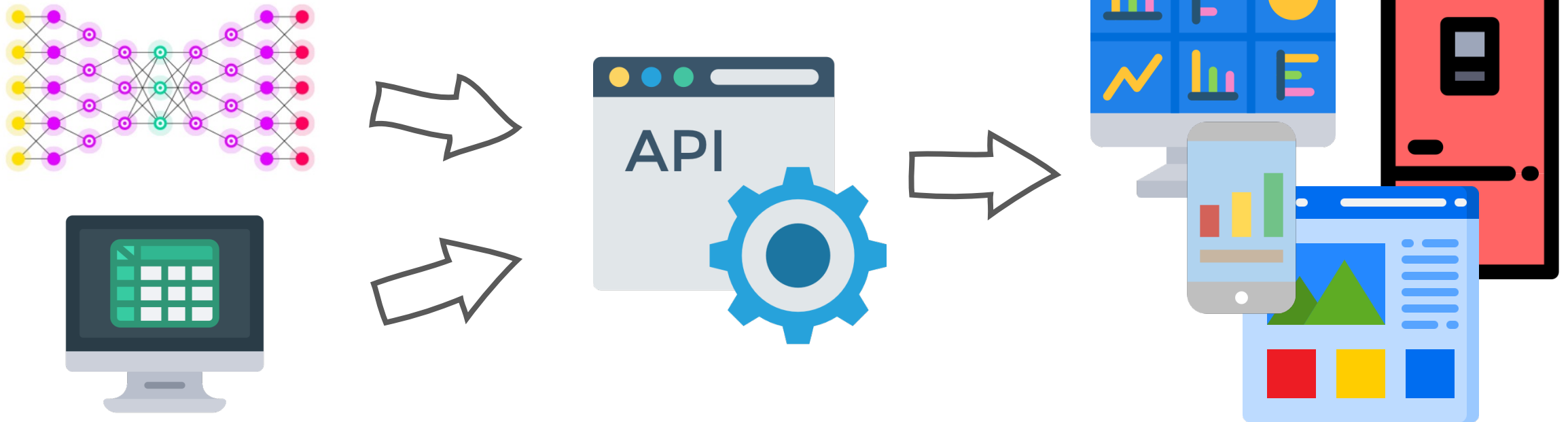


# **FastAPI for Data Scientist**

# What are APIs?

- One stop shop for all applications
- Freedom for programmers to add and alter endpoints
- No need to expose DB or Model directly to the Internet
- Inference API



# Why API? Why REST?

- **R**epresentational **S**tate **T**ransfer- Client-server architecture
- Statelessness
- Caching
- Layered system
- Uniform interface

# HTTP Basics - Status Codes

- 200 – 299 Everything is good
  - 200: Here is the response 👍
  - 201: Created 🚀
- 300– 399 Redirects (weird magic)
- 400 – 499 User/Input errors
  - 400: Bad Request 🤖
  - 403: You don't have permission 🚫
  - 404: Resource Missing 🤔
- 500 – 599 Server Errors
  - 500: Server is having troubles 🤯

Additional Source: <https://developer.mozilla.org/en-US/docs/Web/HTTP/Status>

# HTTP Basics - Methods

- Most often - think CRUD
- **C**reate - POST
- **R**ead - GET
- **U**ppdate - PUT
- **D**eleete - DELETE

 These cover most use cases for Databases!

# HTTP Basics - URLs

`https://www.example.com/pasta/dry?type=farfalle`

- `https://` : Protocol
- `www.example` : Host
- `.com` : TLD - Top Level Domain
- `/dry` : Path Parameter
- `?type=farfalle`: Query Parameter

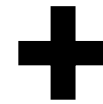
# FastAPI

Starlette



Pydantic

Bringing schema and sanity to your data



# Let's Code!





# Deployment

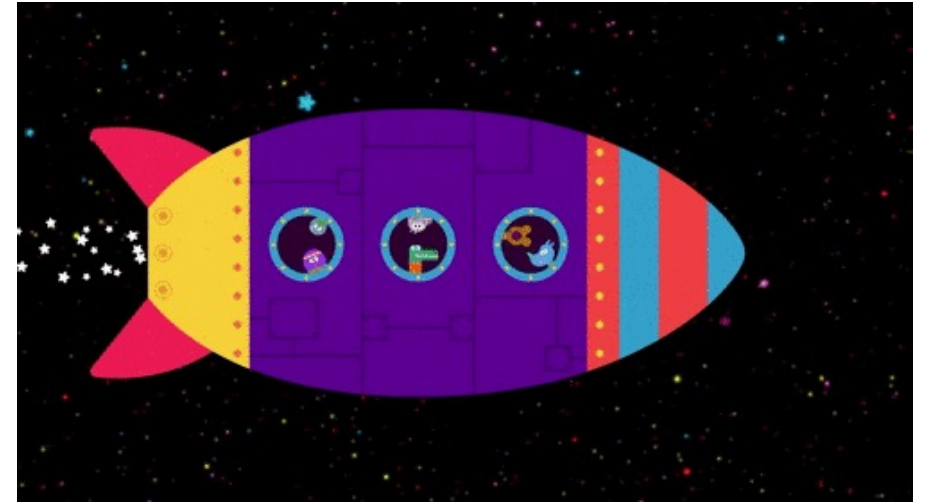
- Serverless
- Docker
- “Just” Python

# Security

- Add a proxy (Nginx, Caddy) to the system to enable TLS offloading
- Create specific users and use complex passwords
- Try to use existing libraries that have been tested in the wild
- Get familiar with OWASP (especially if you are adding a client)
  - OWASP Top Ten: <https://owasp.org/Top10/>
  - OWASP Web Security Testing Guide: <https://owasp.org/www-project-web-security-testing-guide/>

# What's next?

- Walk through the learning section in the FastAPI docs
- Add a database with SQLite/PostgreSQL/MariaDB & SQLAlchemy
- Add authentication & authorization with FastAPI Users
- Deploy the API
- Create a client (Website, Web Application, R library) using the API



# Resources

## Main Resources

- FastAPI Docs: <https://fastapi.tiangolo.com/>
- Pydantic Docs: <https://docs.pydantic.dev/latest/>
  - Pydantic Settings and Validation

## Additional Resources:

- Poetry Docs: <https://python-poetry.org/>
- Starlette Docs: <https://www.starlette.io/>
- FastAPI Users Docs: <https://github.com/fastapi-users/fastapi-users>
- SQLAlchemy Docs: <https://www.sqlalchemy.org/>

# Thank you!

'Icons: flaticon.com'. These slides were created using resources from Flaticon.  
'GIFs: giphy.com'. These slides were created using resources from Giphy.