Introduction to core ML Techonologies

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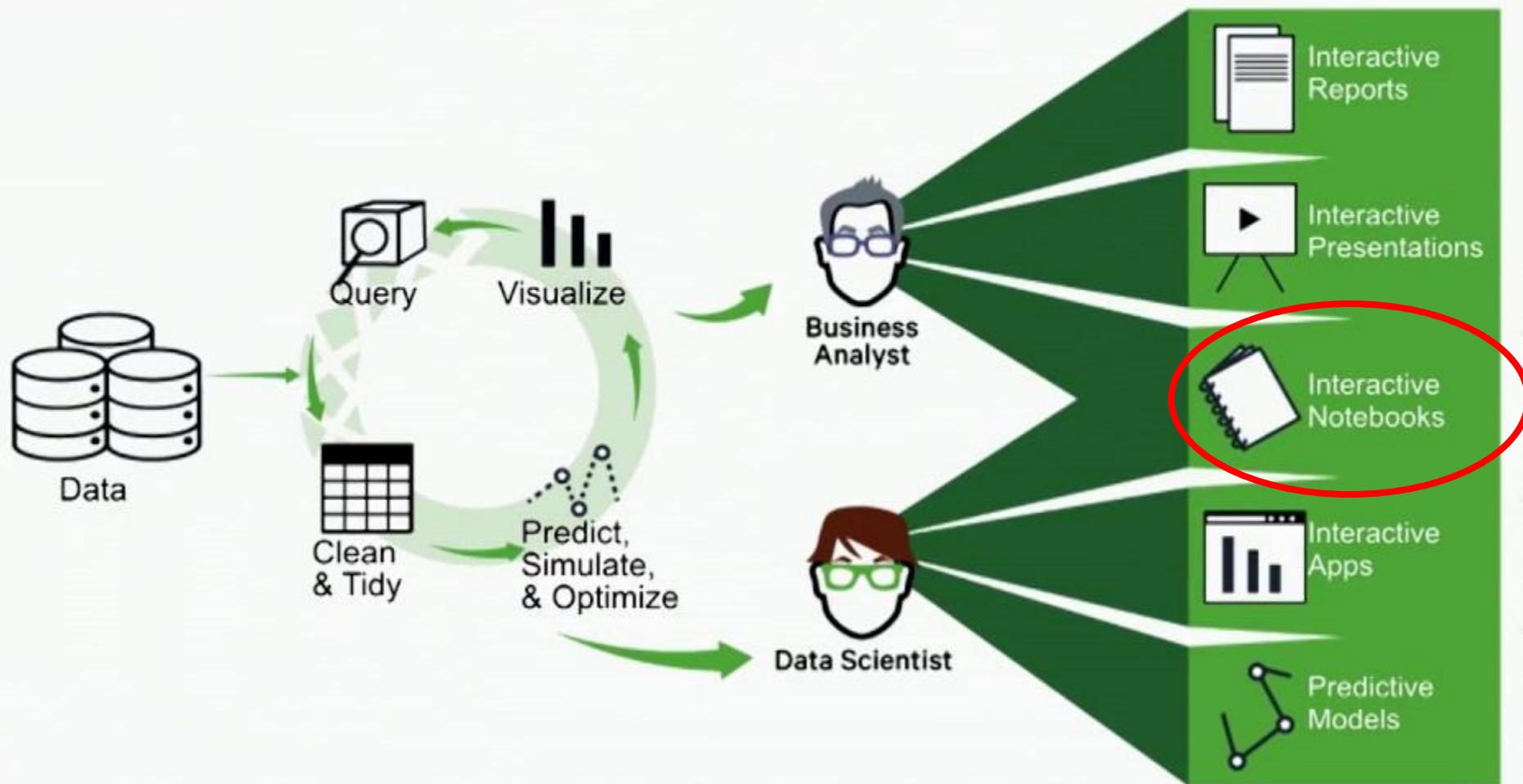
Web Mining and Information Retrieval
a.a. 2022 - 2023
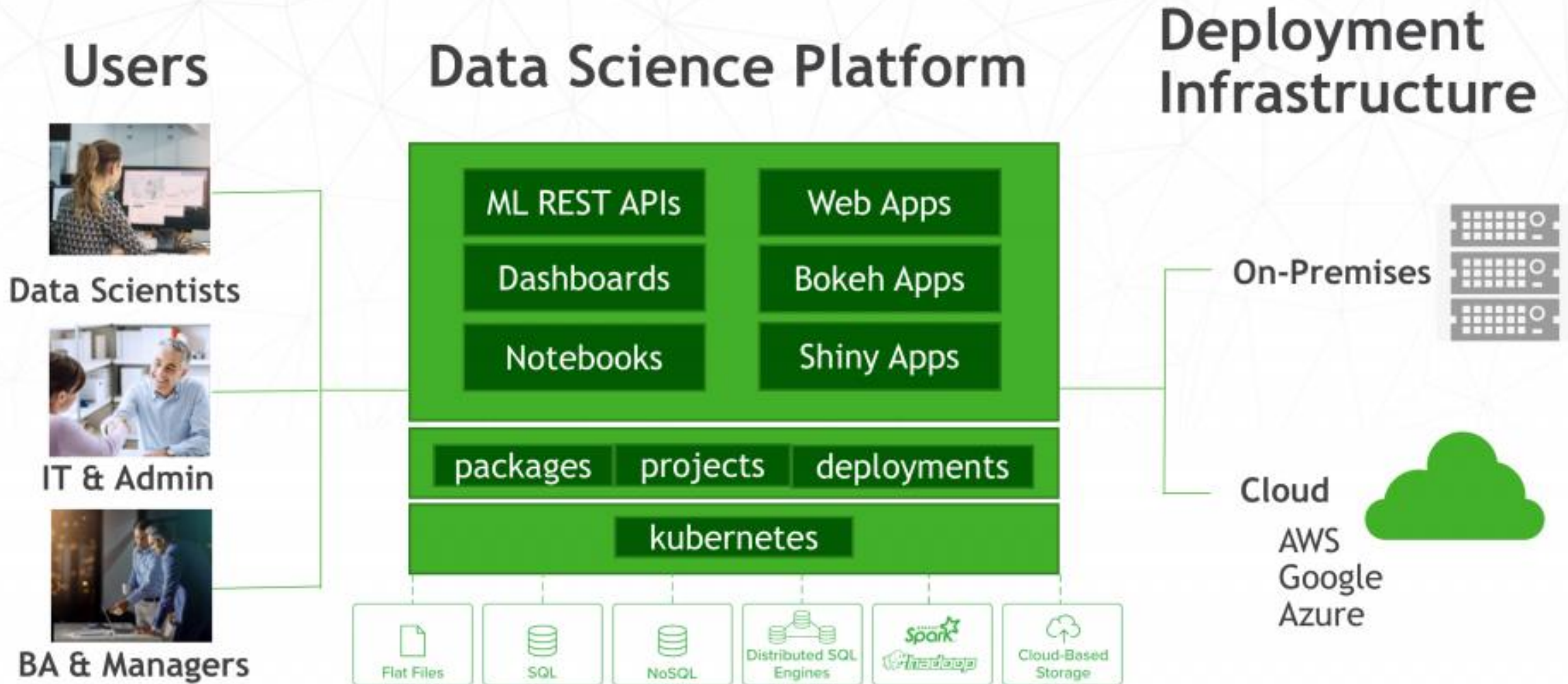
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Overview

- Introduction to core ML DevOps

- What is Jupyter

- Download and install required libraries

- Coding on Jupyter Notebook:
  - The IRIS dataset
  - Visualization of data
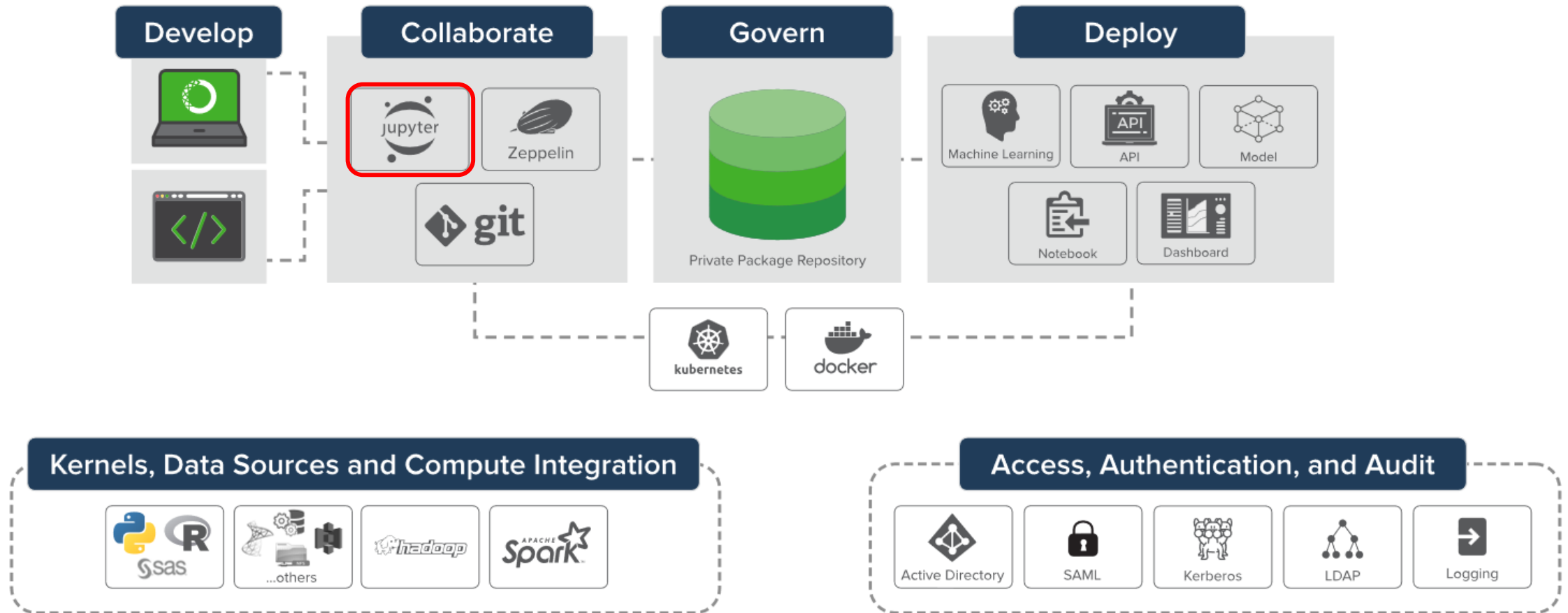 - Development of a kNN model to classify flowers

Architecture Diagram

Users

Data Scientists

IT & Admin

BA & Managers

Data Science Platform

ML REST APIs	Web Apps
Dashboards	Bokeh Apps
Notebooks	Shiny Apps

packages   projects   deployments

kubernetes

Flat Files   SQL   NoSQL   Distributed SQL Engines   Spark Hadoop   Cloud-Based Storage

Deployment Infrastructure

On-Premises

Cloud

AWS
Google
Azure

Taken from blog on thenewstack.io

ML Ops Process

Taken from blog on *anaconda.com*

Comunication in Jupyter

Jupyter Architecture

Taken from docs on jupyter.com
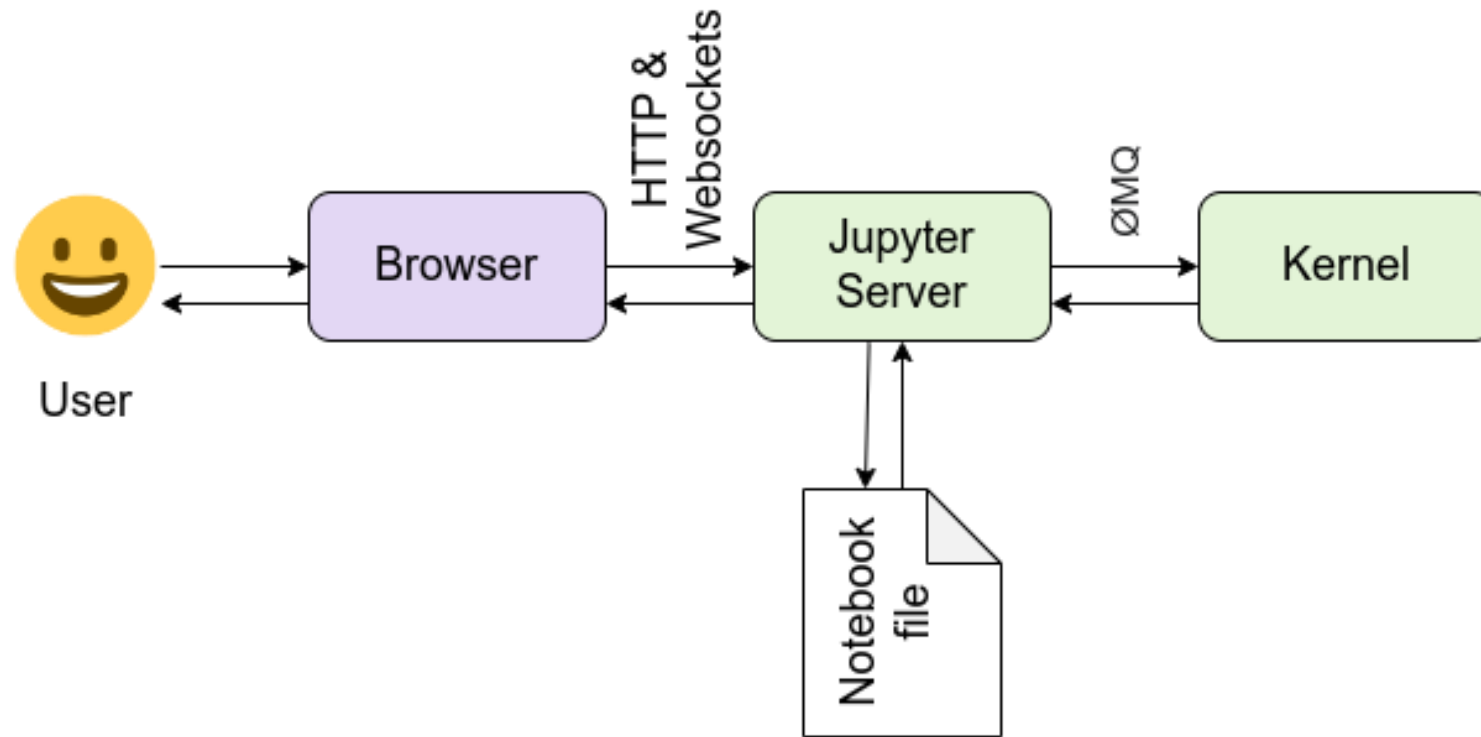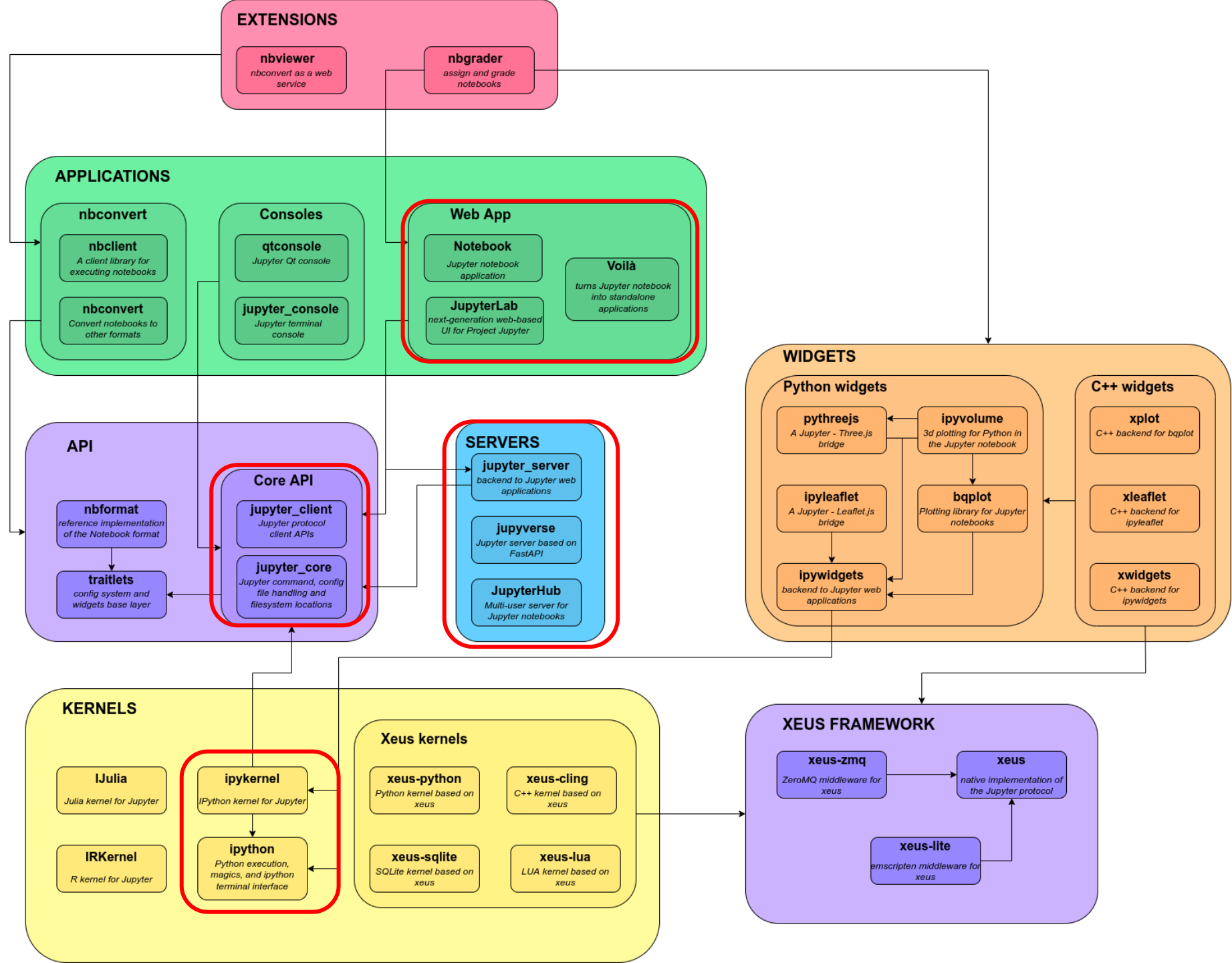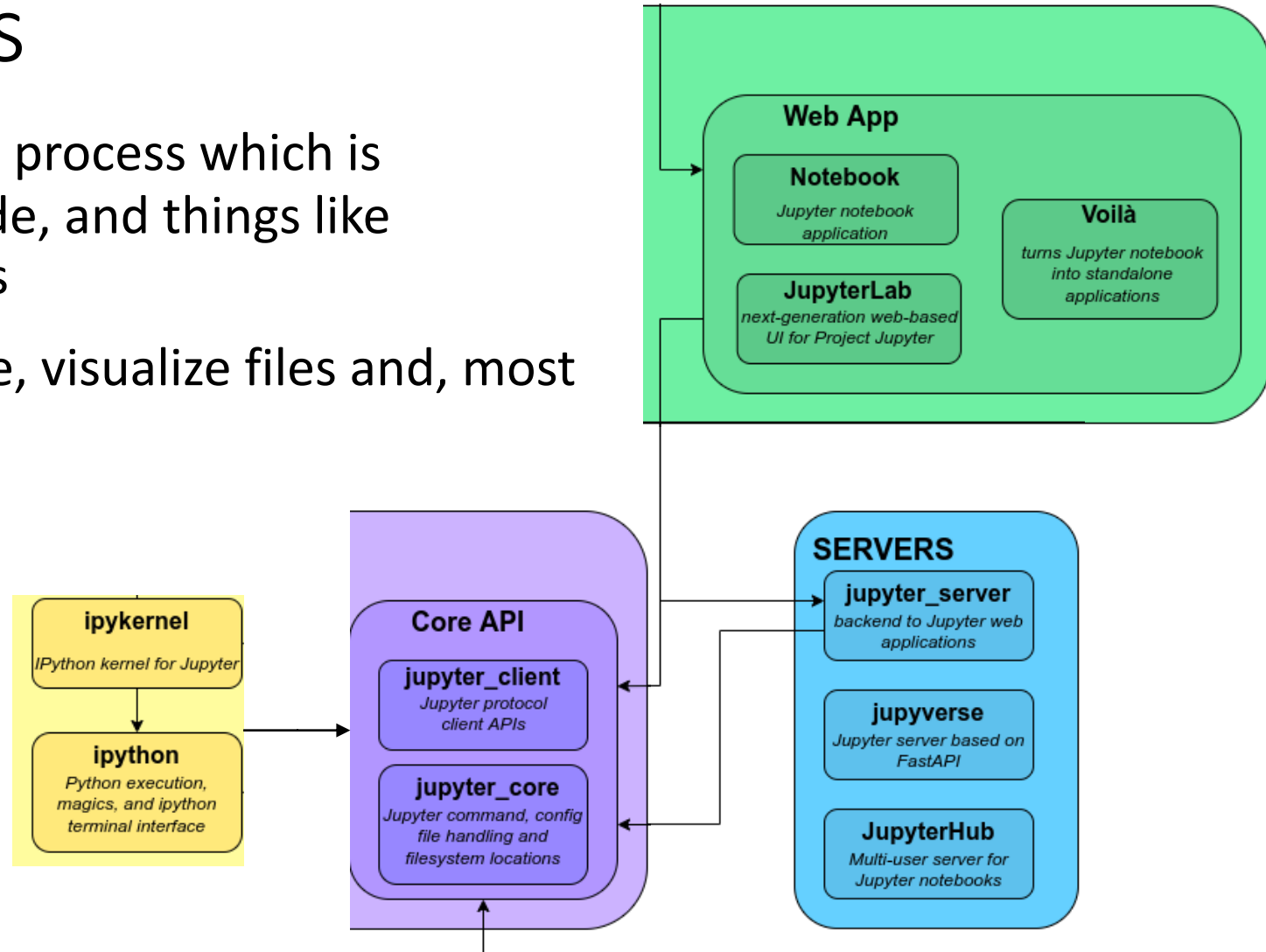
Important modules

- *Kernels*: *IPykernel* is a separate process which is responsible for running user code, and things like computing possible completions

- *Web App:* Interface to navigate, visualize files and, most importantly, to code!

- *Servers*: Local (or online) server to store files and variables (memory)

- *Core API*: File system, APIs and Protocols Manager

Web App

Notebook
Jupyter notebook application

Voilà
turns Jupyter notebook into standalone applications

JupyterLab
next-generation web-based UI for Project Jupyter

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ipykernel
IPython kernel for Jupyter

ipython
Python execution, magics, and ipython terminal interface

Core API

jupyter_client
Jupyter protocol client APIs

jupyter_core
Jupyter command, config file handling and filesystem locations

SERVERS

jupyter_server
backend to Jupyter web applications

jupyverse
Jupyter server based on FastAPI

JupyterHub
Multi-user server for Jupyter notebooks

It's time to code!

1. Download and install Anaconda from
    https://www.anaconda.com/products/distribution
    accordingly to your System (MacOS, Windows, etc)

2. Go to https://tinyurl.com/4nscupde and download the Python
    Notebook

    1. Click on '*File*'

    2. Click on '*Download*'

    3. Download as '.ipynb'

3. Open Jupyter, navigate and locate the files on your machine

4. Open the Notebook you downloaded