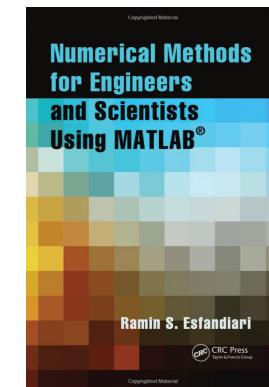
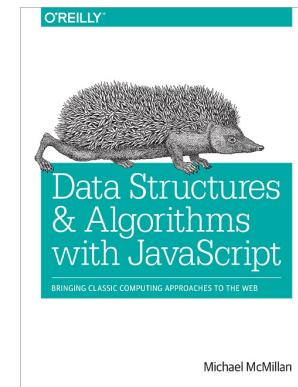
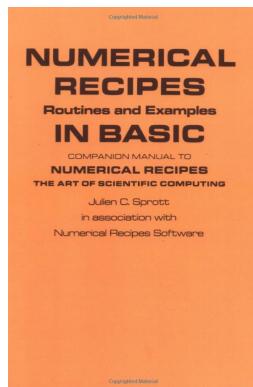
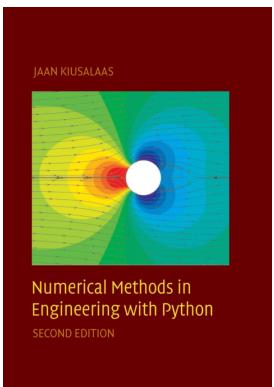
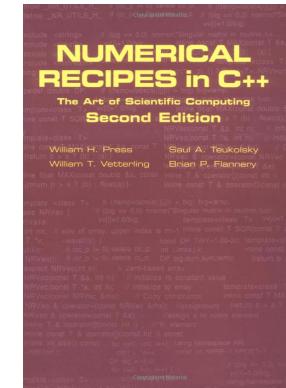
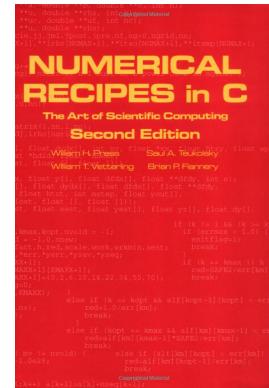
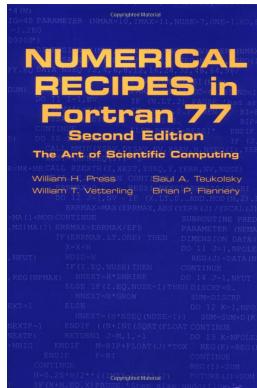
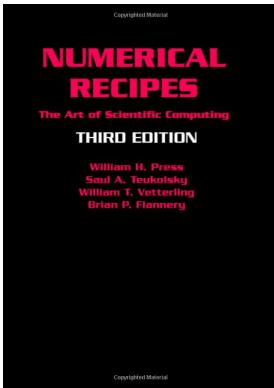


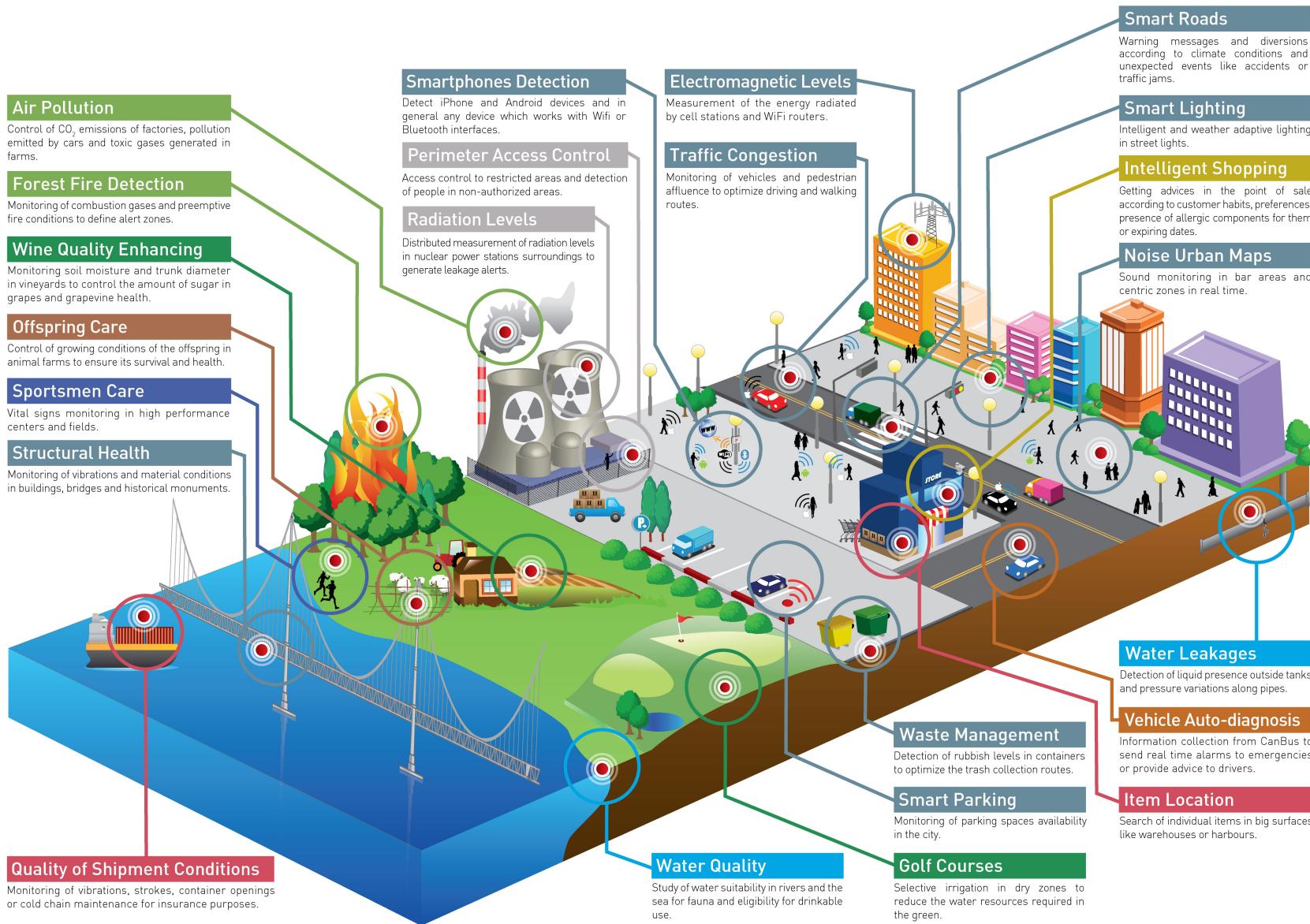
A white Westfalia van is shown from a rear three-quarter perspective, driving away from the viewer across a dry, brown, open plain. The van's license plate is partially visible. In the background, there are several layers of mountains under a sky transitioning from deep orange to pale yellow and white. The overall atmosphere is one of exploration and adventure.

Architecting & Engineering Software Systems

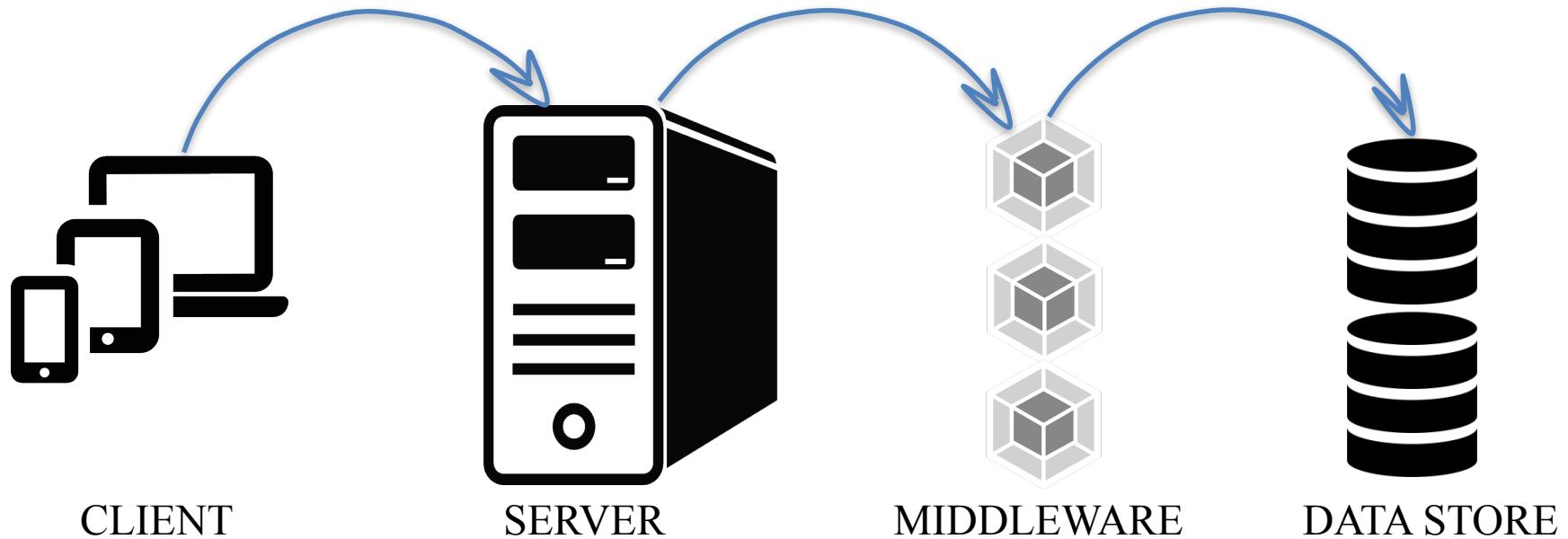
The Historical Approach



The Challenge: Complex Software Systems



N Tiers Systems



A white Westfalia van is shown from the rear, driving away from the viewer on a dirt road. It is kicking up a cloud of dust. The van is positioned on the left side of the frame. The background consists of rolling hills or mountains under a warm, golden sunset sky.

System Building Blocks

Application Servers:

- Small
- Easy to use
- Low Cost
- Ubiquitous
- Loosely Joined



Application Server Skills

- Service Creation
- Service Consumption
- Service Integration
- Data Transformations
- Concurrency
- Coordination



Package Management

- Registry
- Creation
- Distribution
- Scalability

Parallel Happens – Async Programs

- Non-Blocking
- Event-loop
- Callbacks
- Promises



State Management

- Record and Replay
- Predictable Containers
- Logging
- Time Travel



Event Streams

- Event Management
- Event bubbling
- Event Driven Programming
- Reactive Patterns

Coordination

- Orchestration
- Integration
- Error Handling



REST

- Microservices
- Route Mgmt.
- Token Mgmt.
- API Design



Containers

- Container Mgmt.
- Docker
- Mesos
- Kubernetes

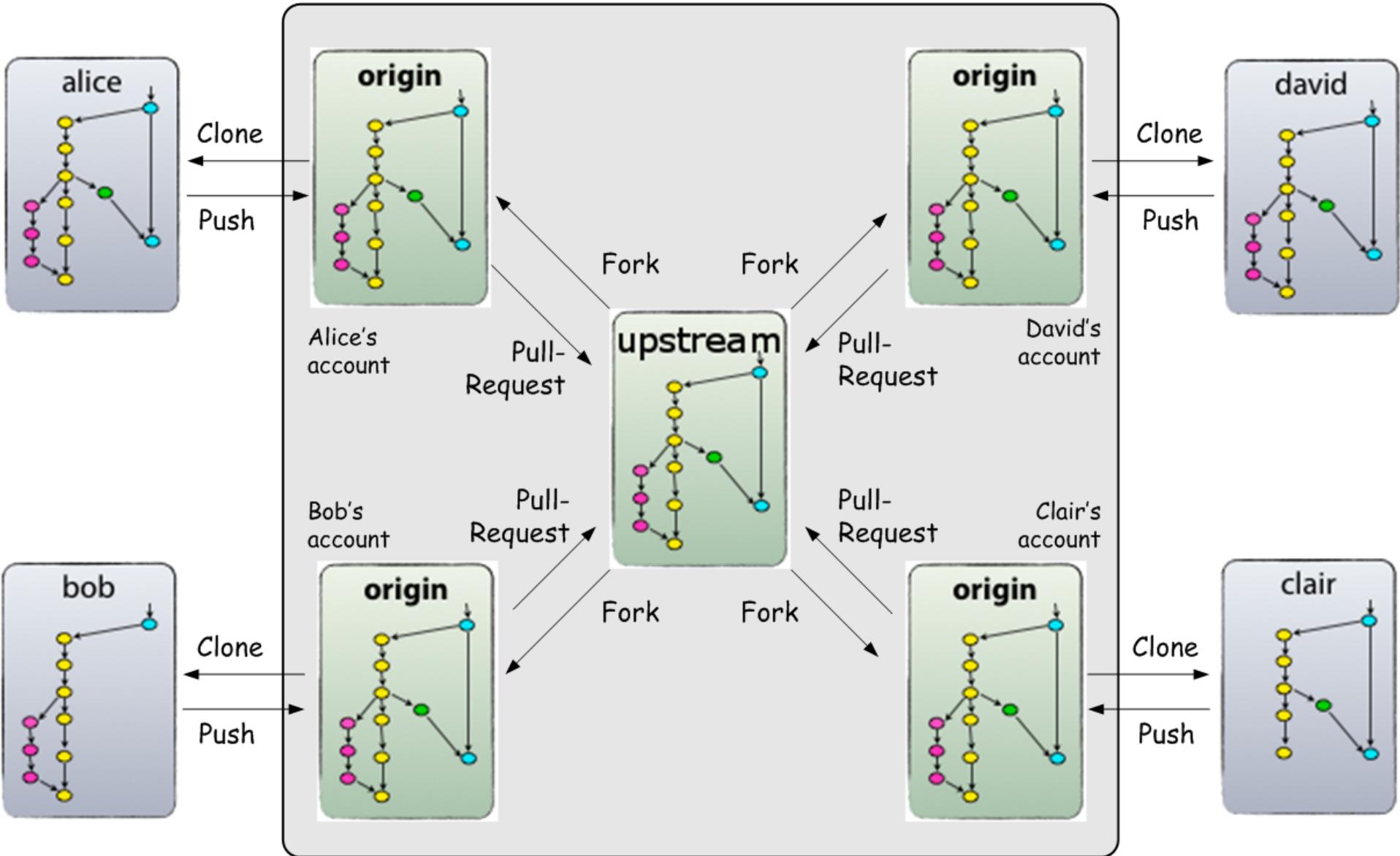


Collaboration

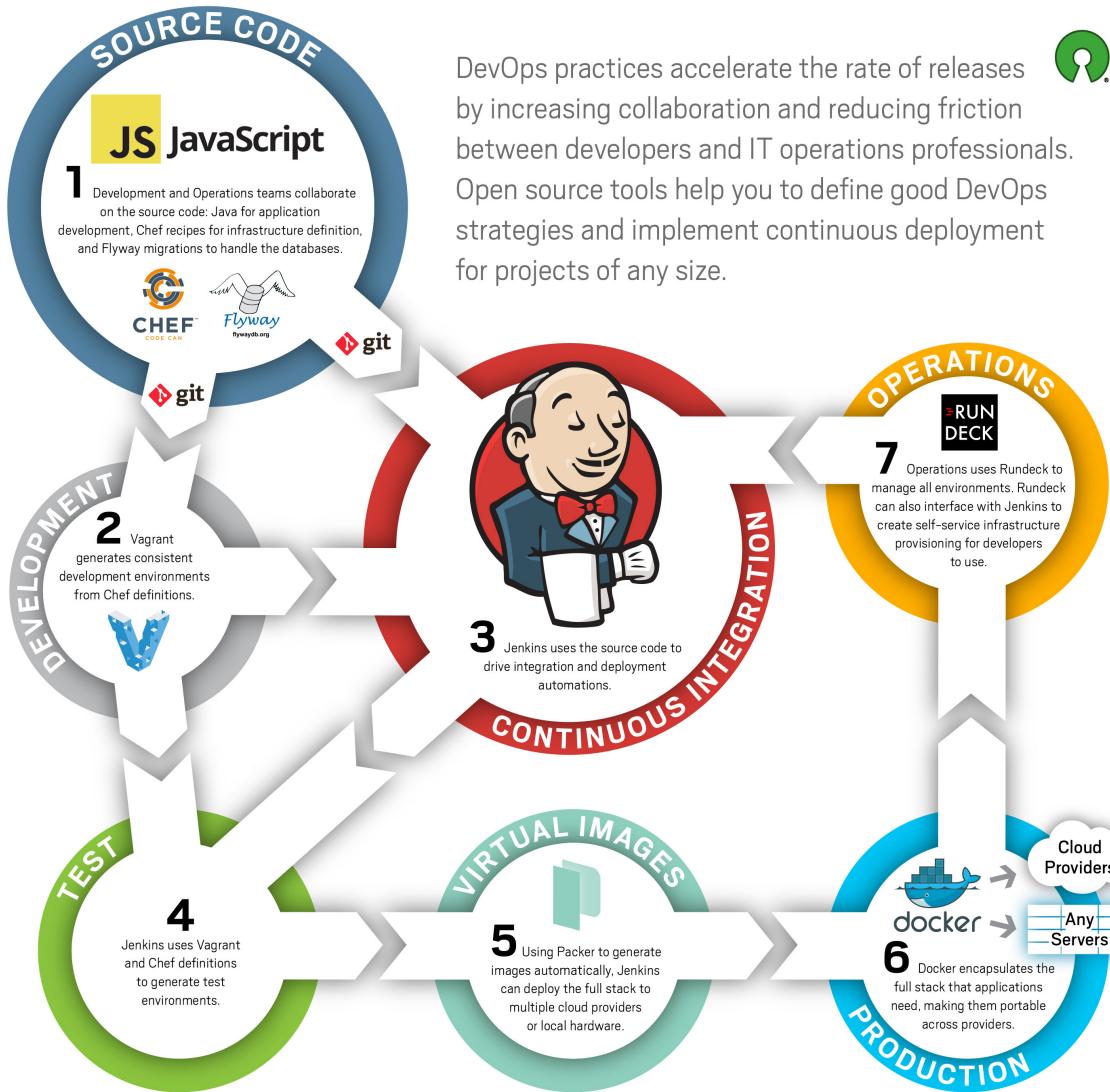
- Issues
- Tracking
- History
- Notifications
- Visualization
- Patterns



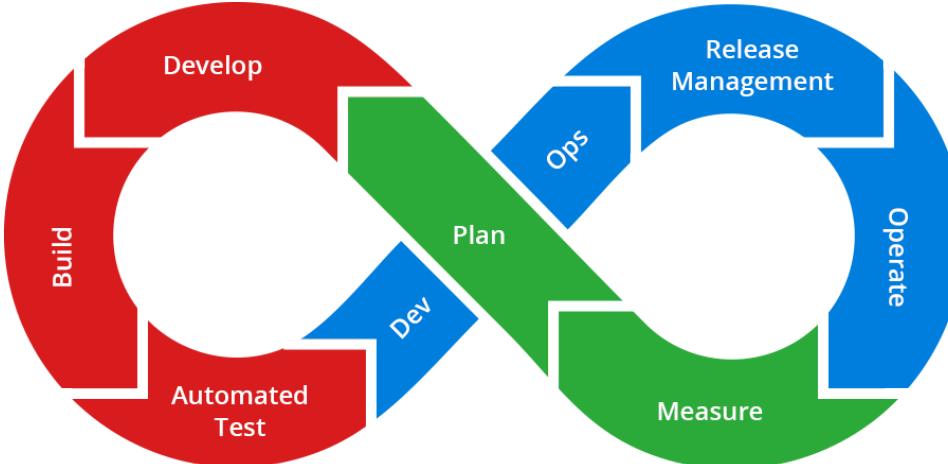
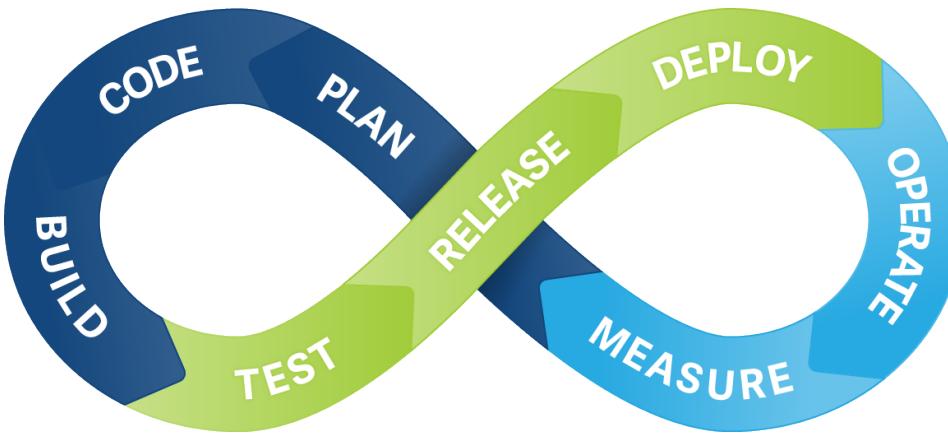
Collaboration



Continuous Integration



Continuous Integration



Continuous Integration

- Pull Requests
- Branch Select
- Notification
- Testing
- Containers
- Deployment

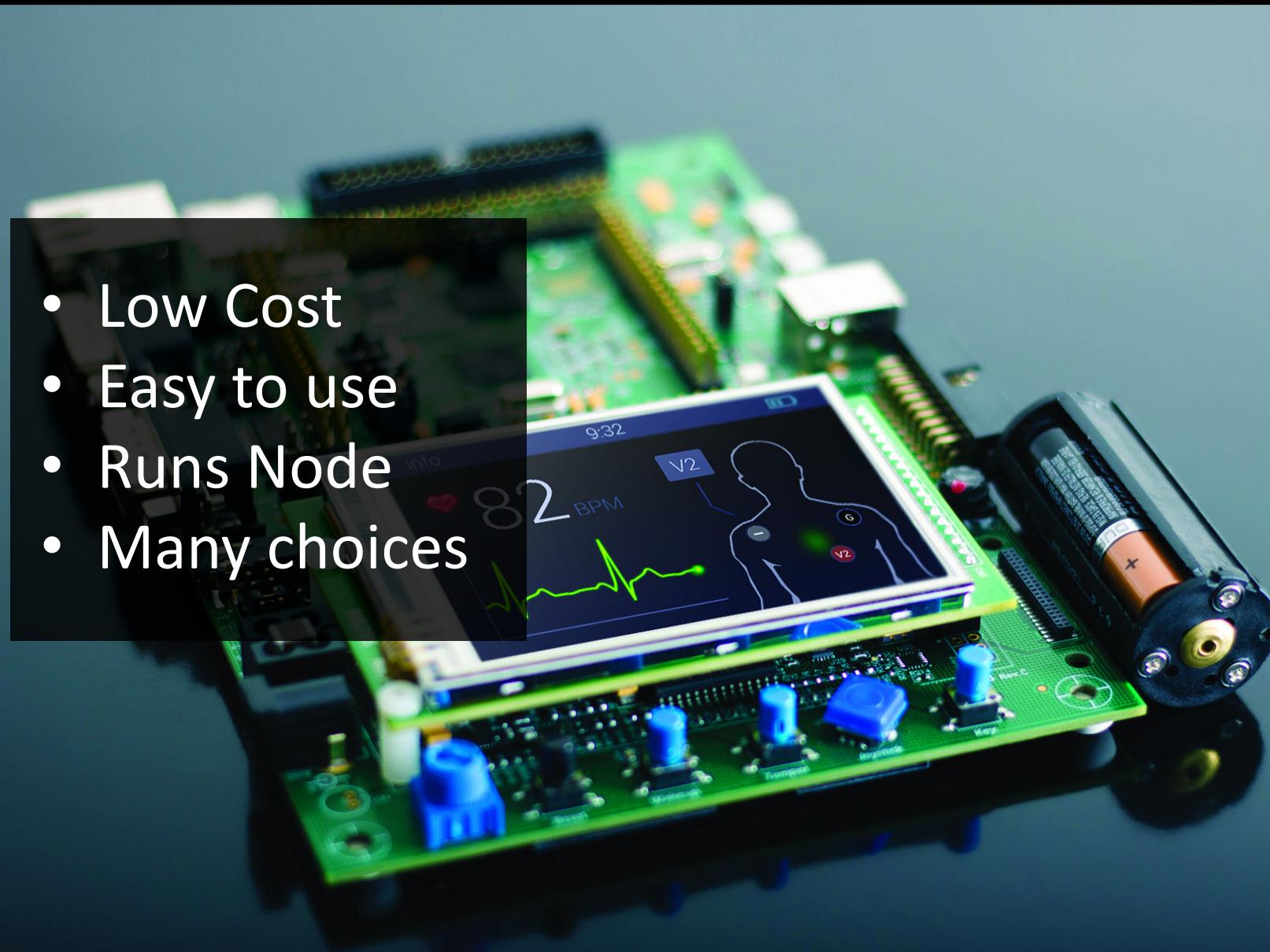


Big Data

- Volume
- Variety
- Velocity
- Transformations

Commodity Hardware

- Low Cost
- Easy to use
- Runs Node.js
- Many choices



Security

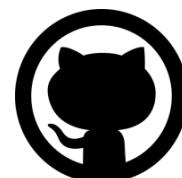
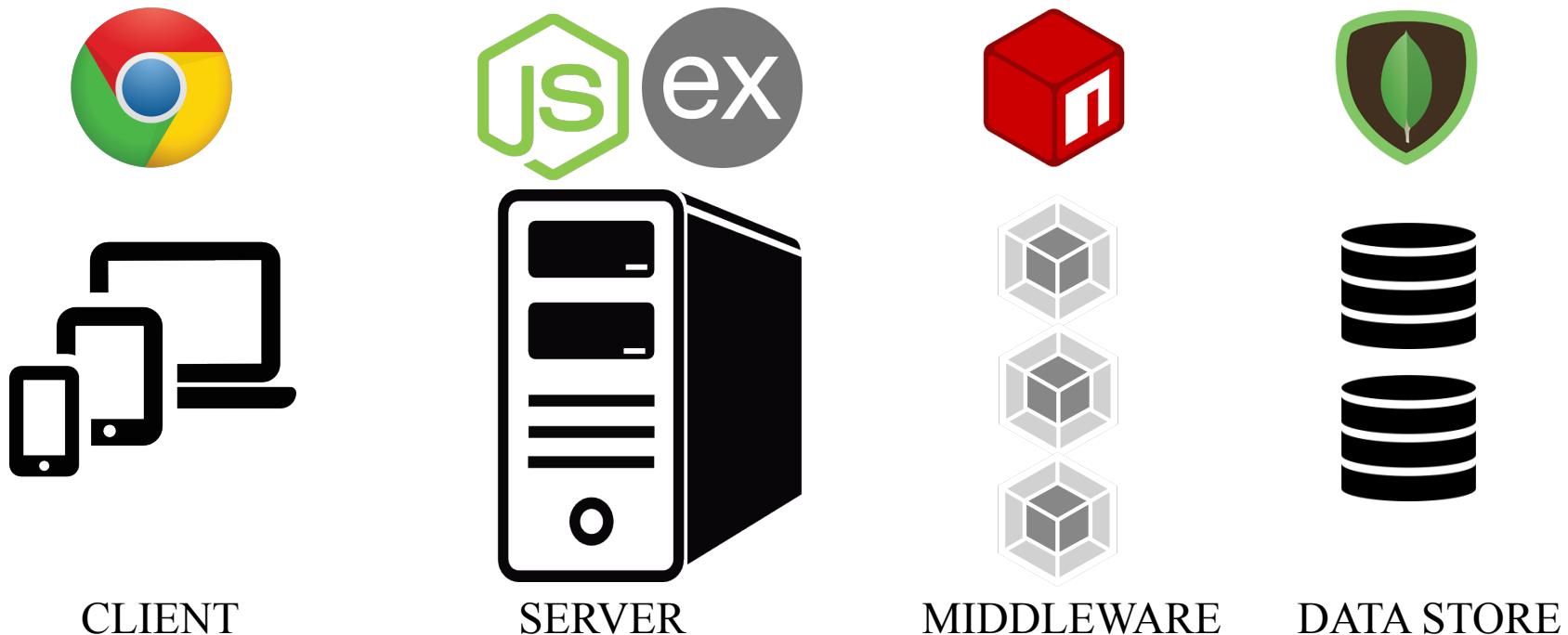
- Identify
- Protect
- Detect
- Respond
- Recover



A white Westfalia van is shown from a rear three-quarter perspective, driving away from the viewer across a vast, flat landscape. The van is kicking up a large cloud of dust behind it. The sky is a warm, golden-yellow color, suggesting either a sunrise or sunset. In the distance, there are low, rolling hills or mountains. The overall atmosphere is one of adventure and exploration.

Technology

Open Source, Scalable, Large Adoption



Some of the numbers



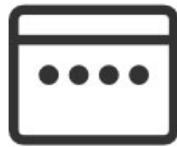
349,392

total packages



415,540,329

downloads in the last day



1,662,161,317

downloads in the last week



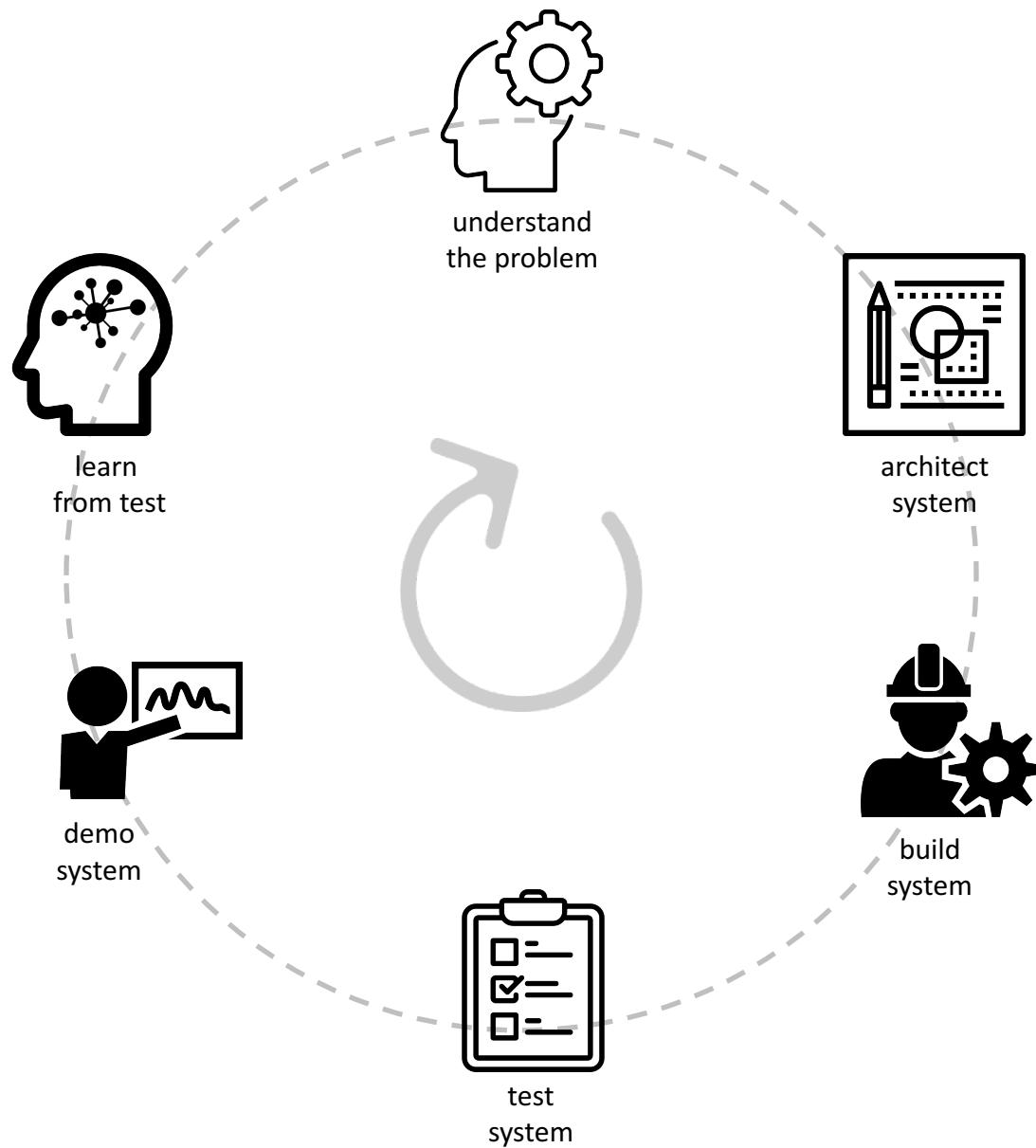
6,140,641,245

downloads in the last
month

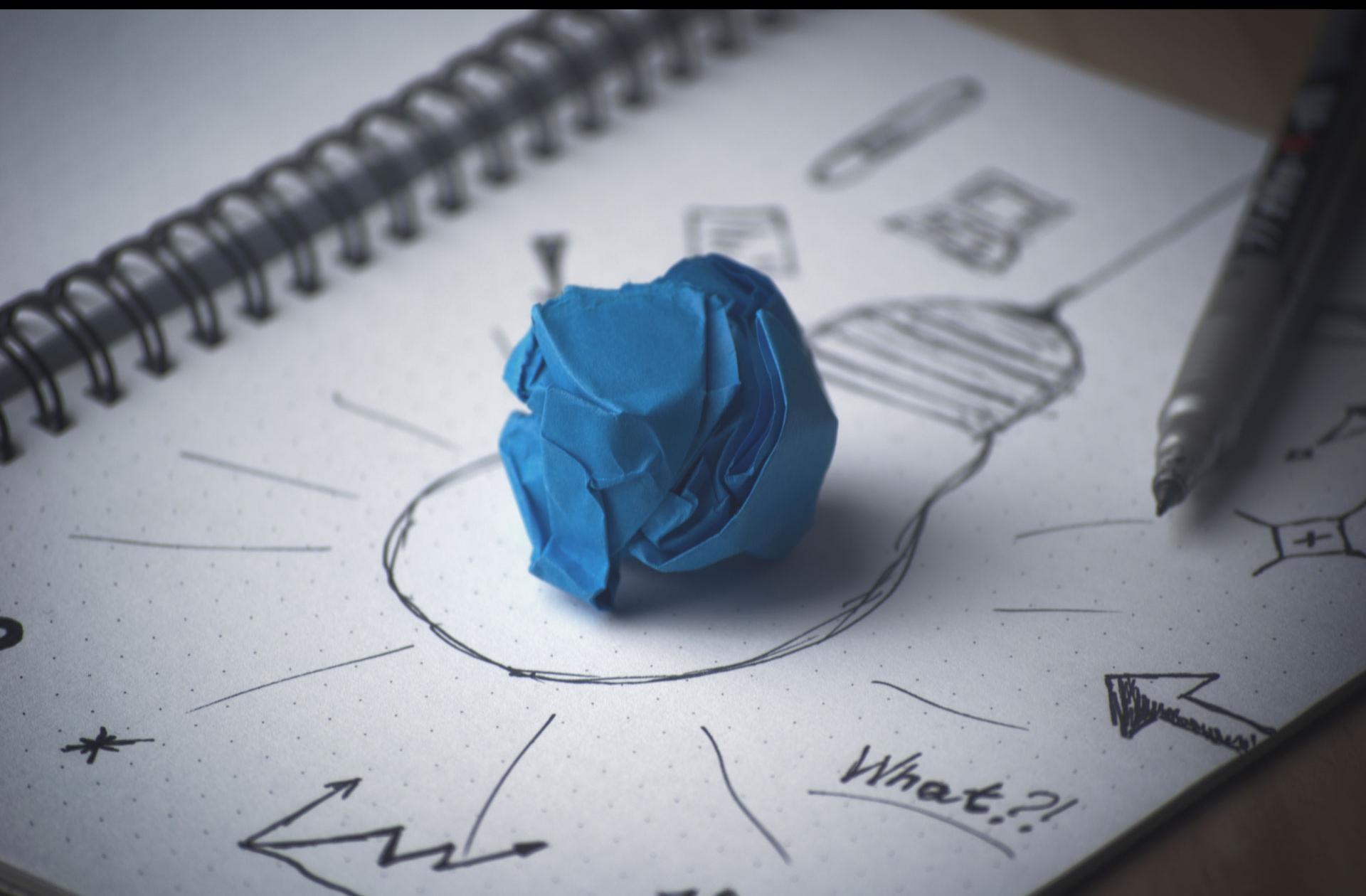


Construction Cycle

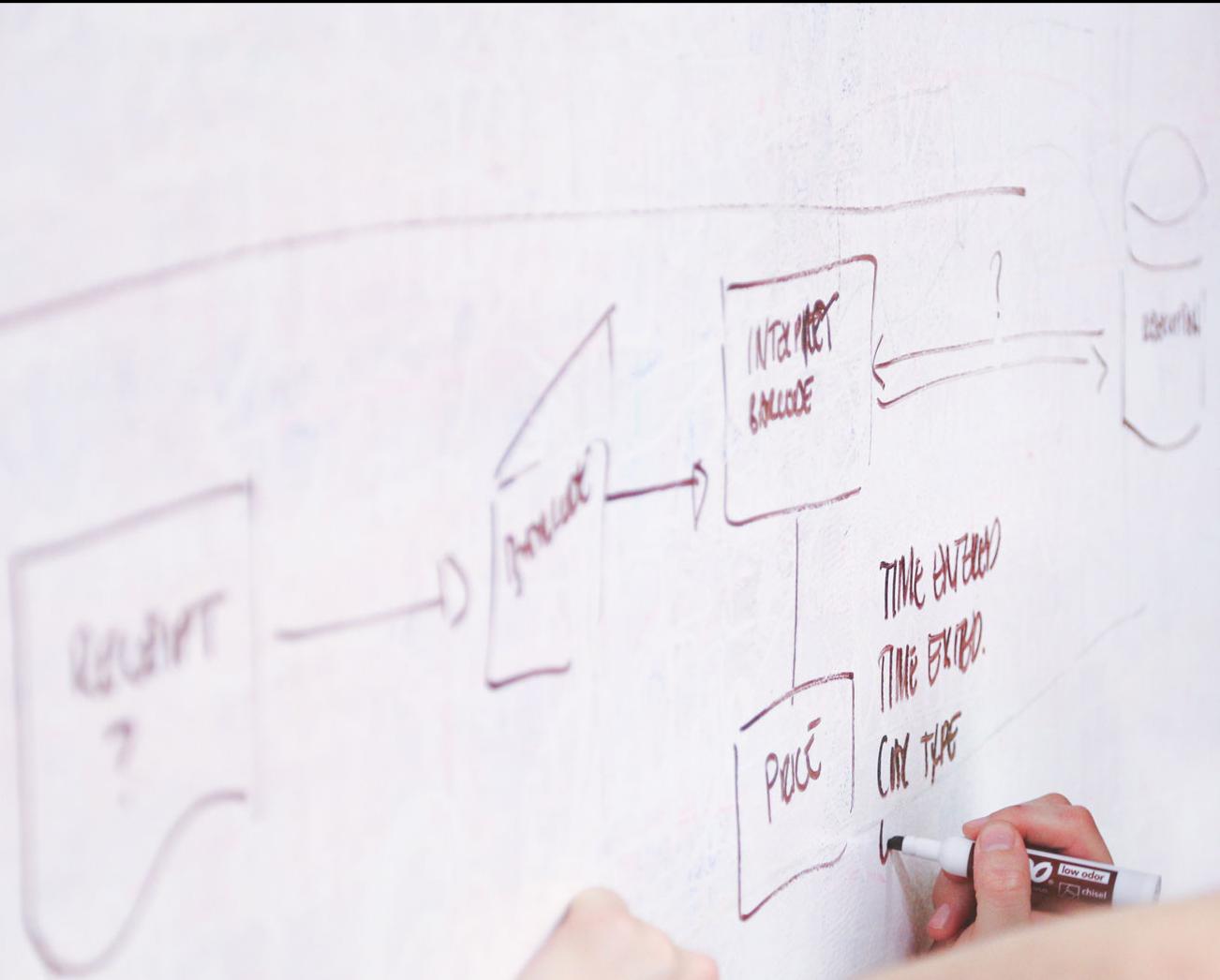
Complex Software System Cycle



Step 1: Understand the problem deeply

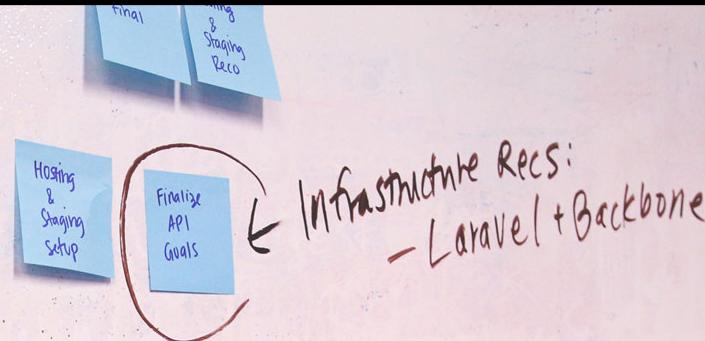


Step 2: Architect System

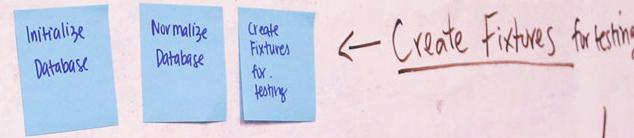


Step 3: Build System

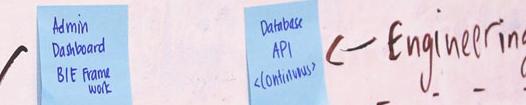
WEEK 3 : Design



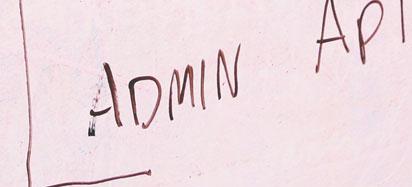
1) WEEK 4 : Design



16) WEEK 5 : Design



3) WEEK 6 : Dev



11) WEEK 7 : Dev



Step 4: Test the System



Step 5: Demo System



Step 6: Learn



Step 7: Iterate

