



Containerization

Docker & Kubernetes

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Agenda

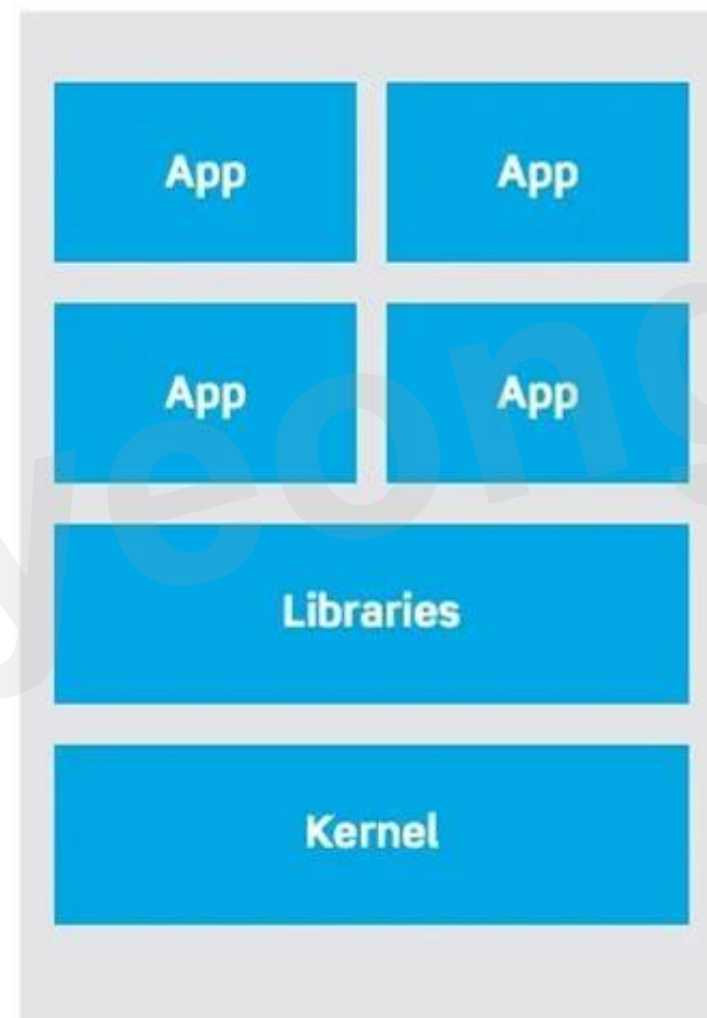
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What is Containerization?

Containerization is a method of packaging applications so they run consistently across different machines without the need for configuration.

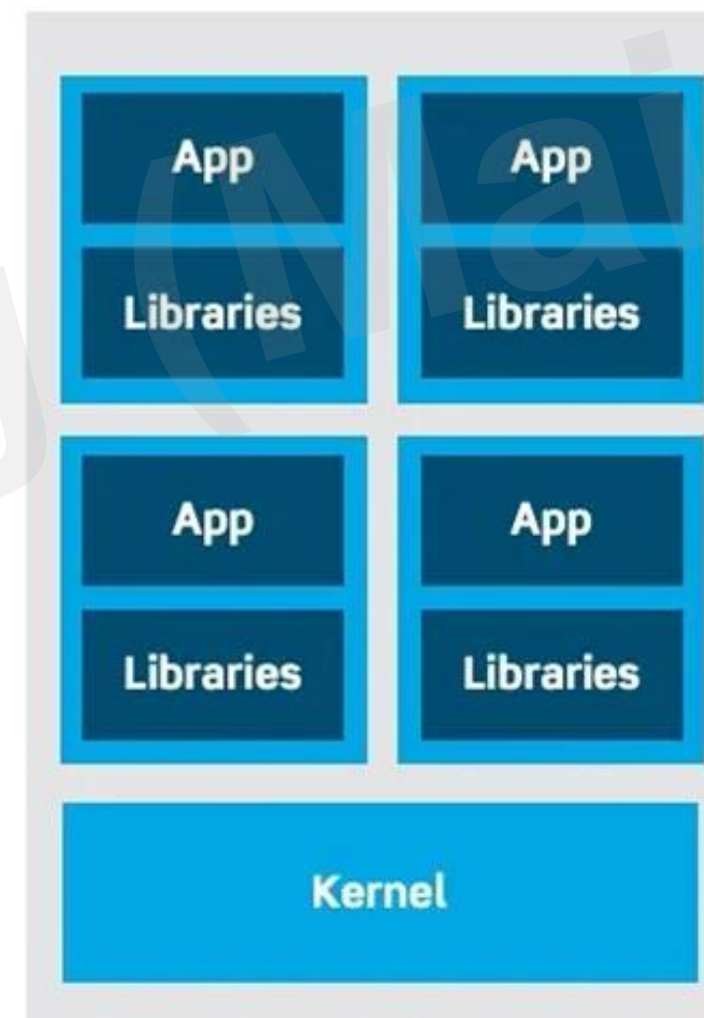
The old way: Applications on host

- Heavyweight, non-portable
- Relies on OS package manager

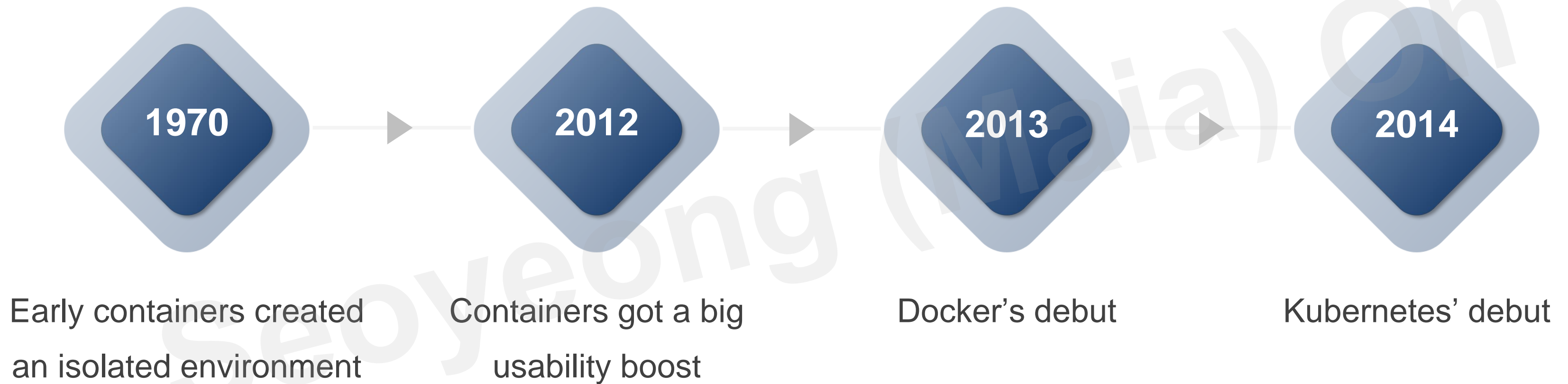


The new way: Deploy containers

- Small and fast, portable
- Uses OS-level virtualization



Brief History Of Containerization

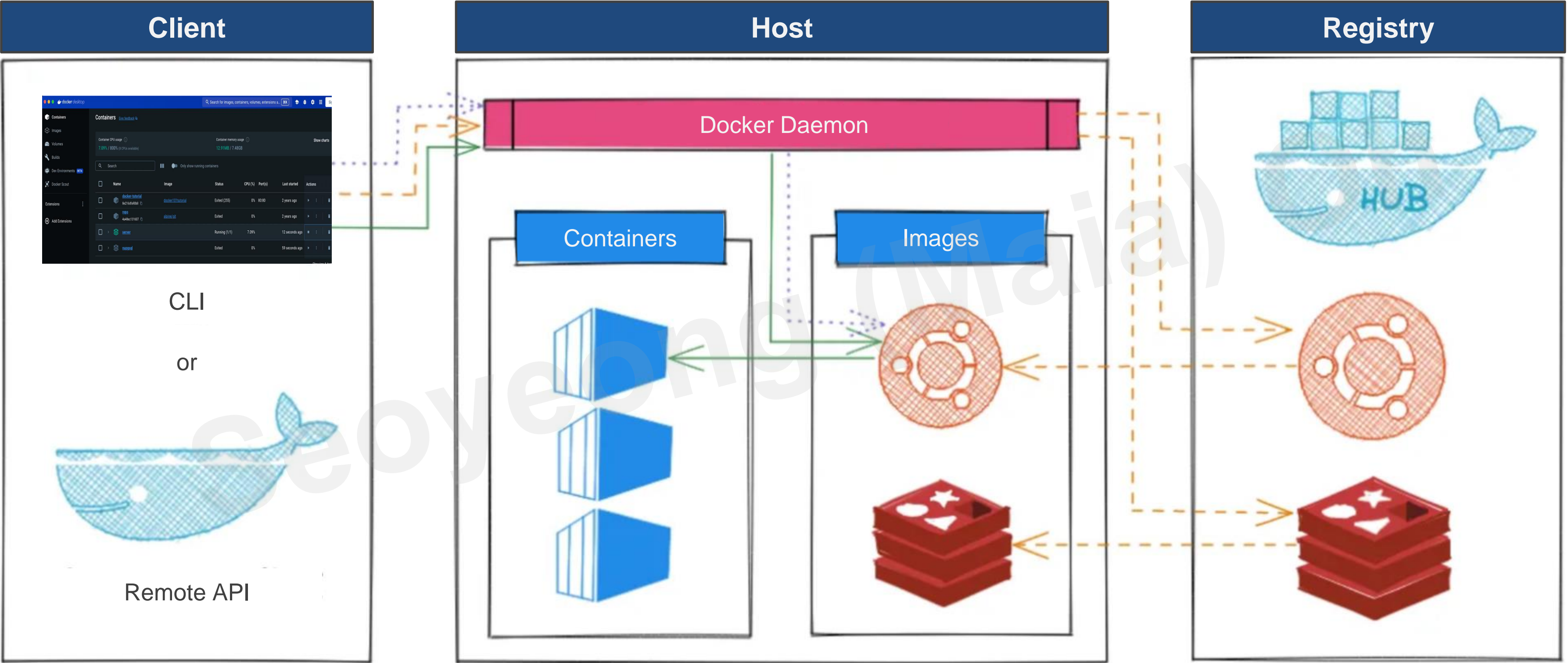


What Is Docker?

- | Docker is a way to package software into containers so it can run on any hardware.



How Docker Works



How Docker Works

Containers

Images

Volumes

Builds

Dev Environments BETA

Docker Scout

Extensions

Add Extensions

Search for images, containers, volumes, extensions a... K

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Containers [Give feedback](#)

Container CPU usage ⓘ
7.09% / 800% (8 CPUs available)

Container memory usage ⓘ
12.91MB / 7.48GB

Show charts

Search

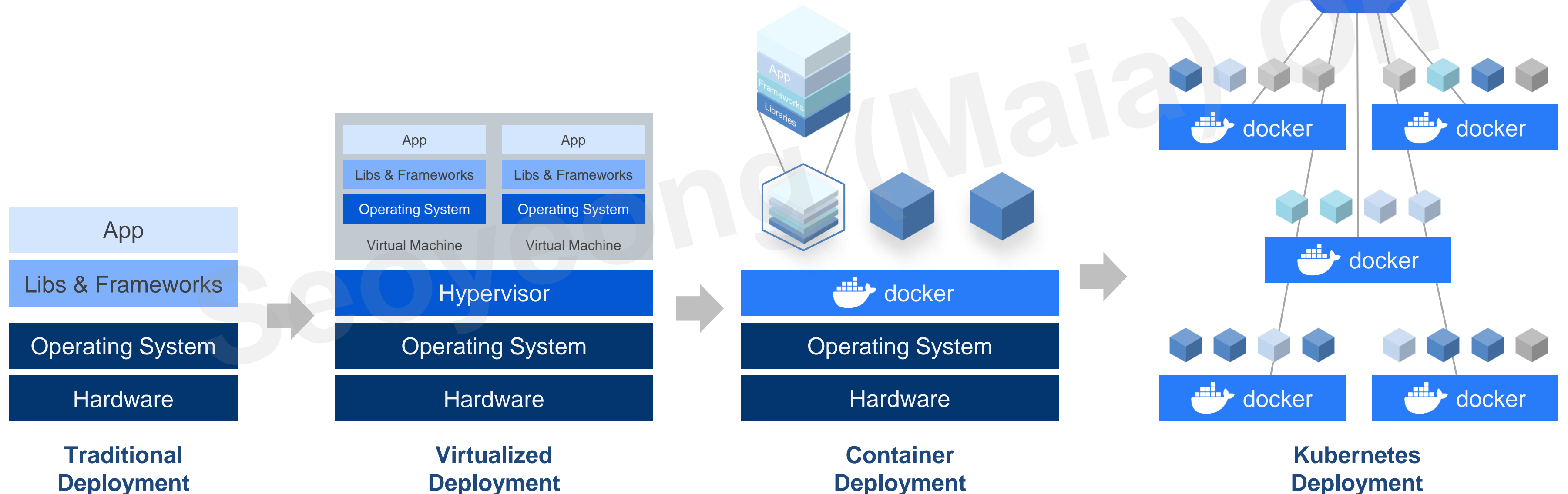
Only show running containers

<input type="checkbox"/>	Name	Image	Status	CPU (%)	Port(s)	Last started	Actions
<input type="checkbox"/>	<div><div></div><div>docker-tutorial 8e216dfa90b8 </div></div>	docker101tutorial	Exited (255)	0%	80:80	2 years ago	<div><div></div><div></div><div></div></div>
<input type="checkbox"/>	<div><div></div><div>repo 4a48ec131607 </div></div>	alpine/git	Exited	0%		2 years ago	<div><div></div><div></div><div></div></div>
<input type="checkbox"/>	<div><div></div><div><div>></div><div><div></div><div>server</div></div></div></div>		Running (1/1)	7.09%		12 seconds ago	<div><div></div><div></div><div></div></div>
<input type="checkbox"/>	<div><div></div><div><div>></div><div><div></div><div>nupgsql</div></div></div></div>		Exited	0%		59 seconds ago	<div><div></div><div></div><div></div></div>

Showing 4 items

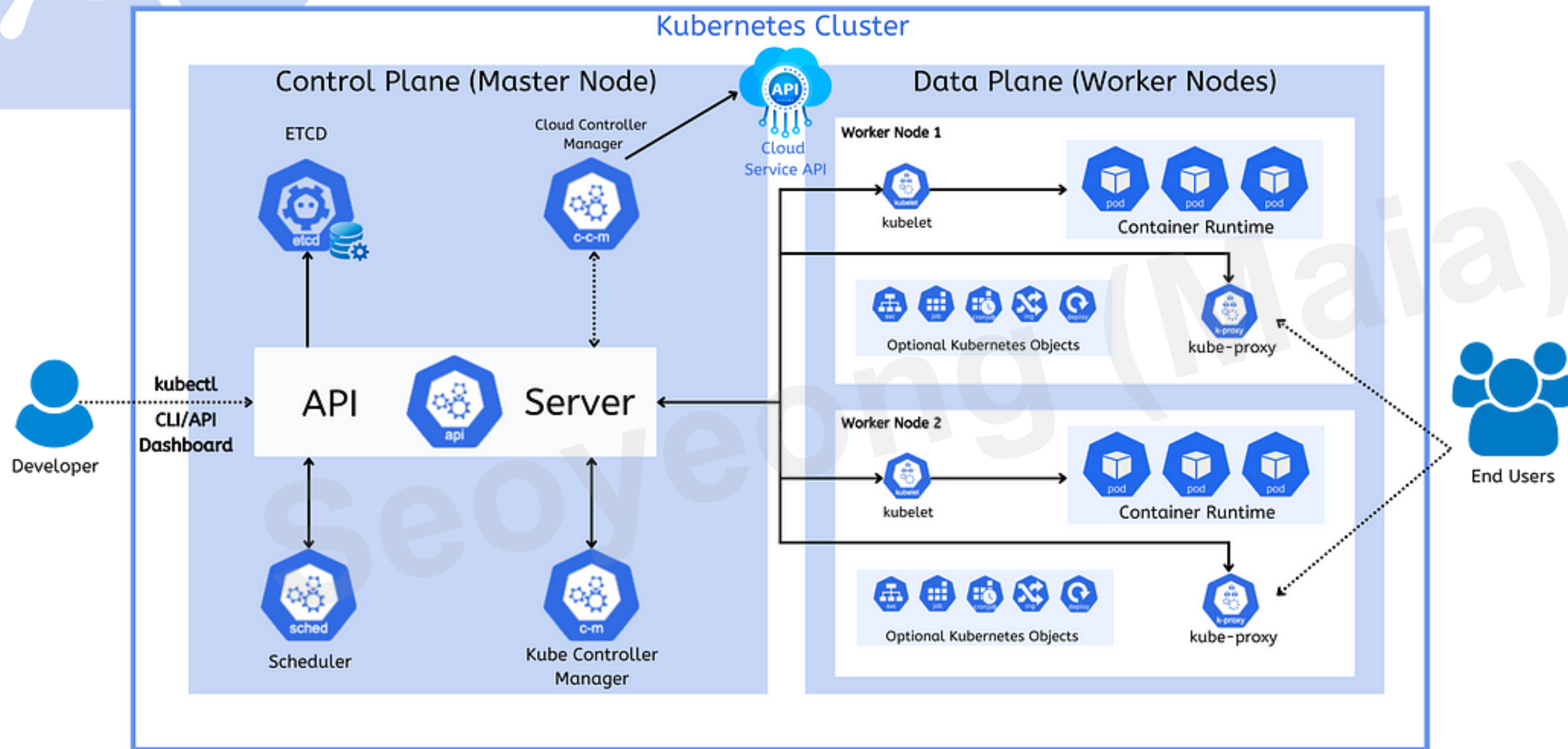
What Is Kubernetes?

Kubernetes is an orchestration tool that automates deployment, scaling, and management of containers.



Kubernetes & Docker work together to build & run containerized applications

Key Components of Kubernetes



Pods

Smallest units that run containers

Nodes

Machines that run pods

Cluster

Group of nodes working together

Control Plane

Manages the cluster, including scheduling and health checks

Pros & Cons of Containerization

Pros

Portability

Efficiency

Consistency

Scalability

Isolation



Cons

Complexity

Debugging

Networking

Container Sprawl

Resource Overhead

Works Cited

- ℞ <https://blog.risingstack.com/the-history-of-kubernetes/>
- ℞ <https://cloud.google.com/learn/what-is-kubernetes>
- ℞ <https://d2iq.com/blog/brief-history-containers#:~:text=The%20original%20idea%20of%20a,to%20better%20isolate%20application%20code>
- ℞ https://youtu.be/gAkwW2tulqE?si=GTzGq3uF_kXuHViH
- ℞ <https://medium.com/@sakshiinfoway/introduction-to-containerization-docker-and-kubernetes-explained-a3f7c4b4c606>



Thank You!

—
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