DevOpsCon

Cloud Agnostic Serverless with Fn Project

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Todor Todorov

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- .NET developer;
- clean code fanatic;
- DevOps evangelist;
- speaker;
- father of 3 boys;
- karaoke enthusiast;

The serverless explained

	DIY	Bare Metal	PaaS	K8s-aaS	Serverless
Hardware					
OS					
Hypervisor					
Virtual OS					
Container Orchestration					
Application Code					

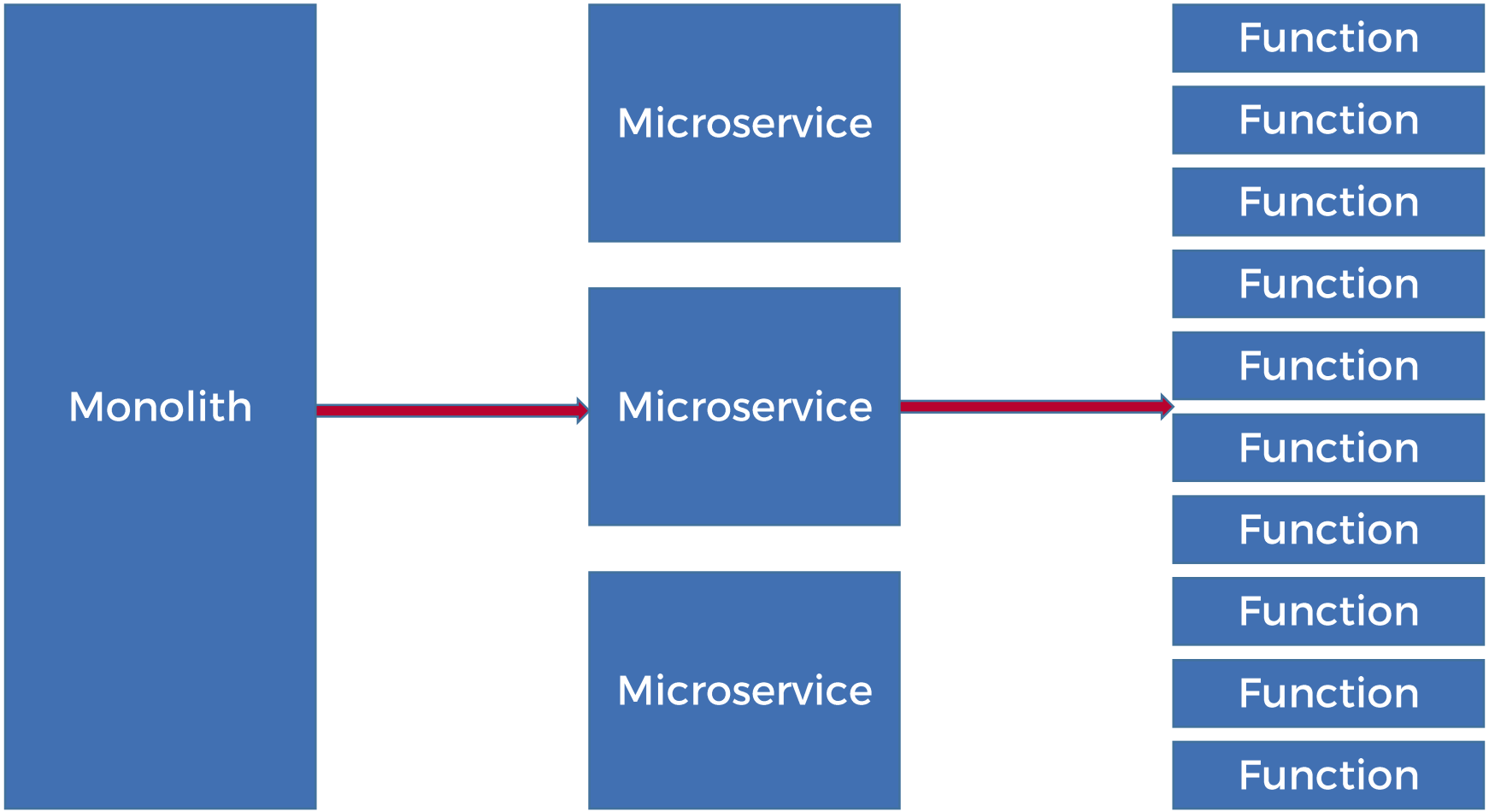
Your problem

¯_(ツ)_/¯

Somebody else's problem

Credits: Matthew Gilliard


MONOLITH


Monolith
Microservice
Microservice
Microservice
Function
Function
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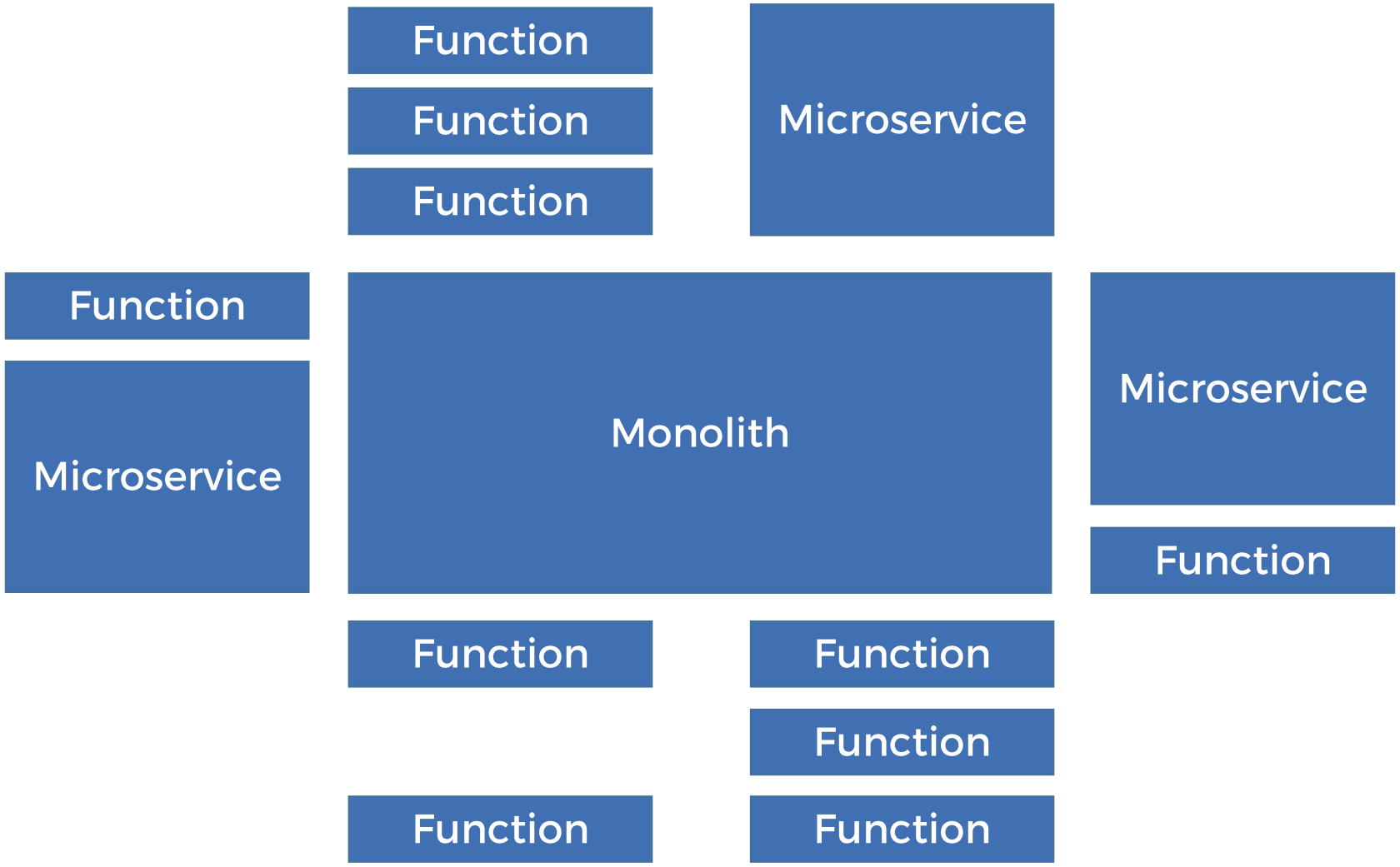
Function


Function
Function
Function
Microservice
Function
Microservice
Monolith
Microservice
Function
Function
Function
Function
Function
Function

Google Cloud

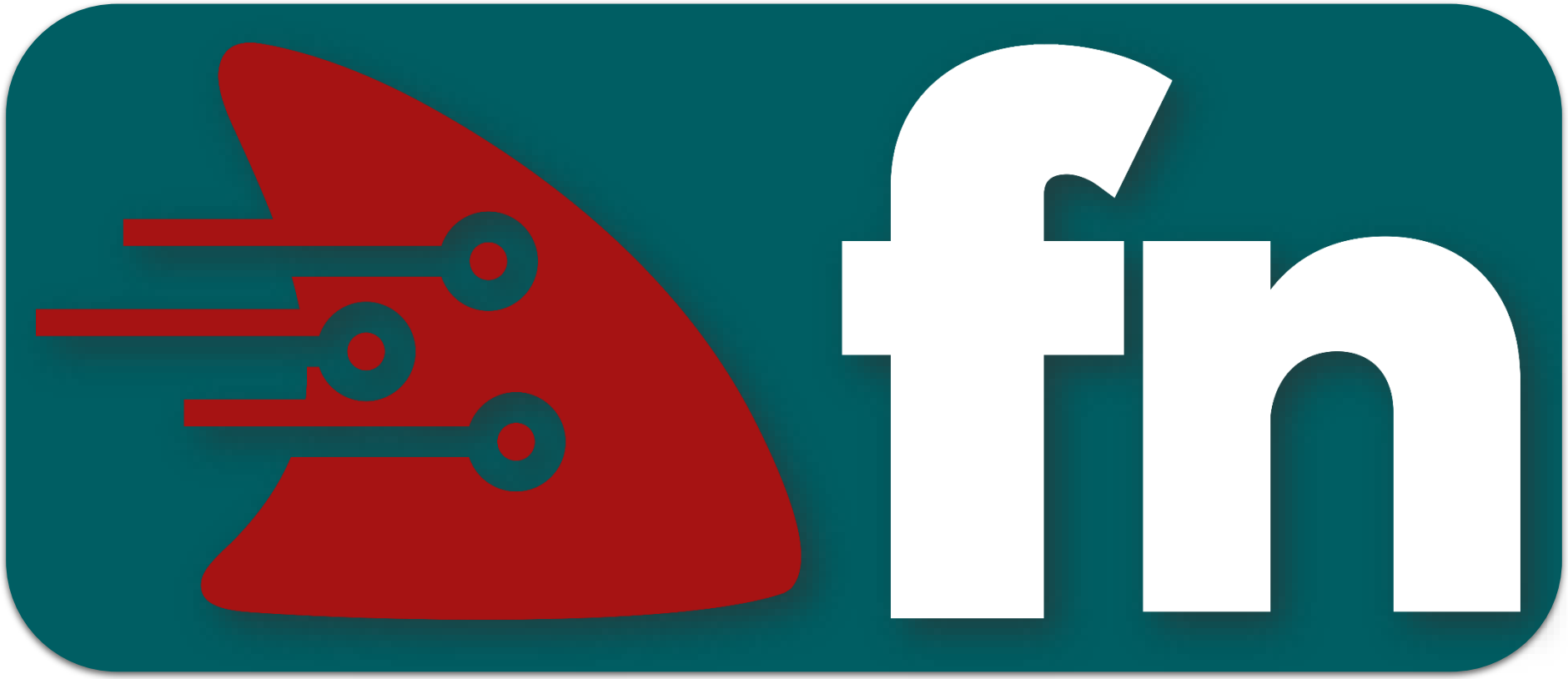
- C#
- F#
- JavaScript
- Java (**ver 2.x only**)
- PowerShell (**ver 2.x only**)
- Python (**ver 2.x only**)
- TypeScript (**ver 2.x only**)
- *some experimental*

- ❑ JavaScript
- ❑ Python
- ❑ Java (**8, 11**)
- ❑ C# (**dotnetcore2.1**)
- ❑ Go (**1.x**)
- ❑ Ruby (**2.5**)

Google Cloud

- ❑ JavaScript
- ❑ Go
- ❑ Python

That's it?!?


fn


MIND THE GAP

What is Fn Project?

- Independent **open-source** serverless compute platform

- Not tied to any cloud vendor
- Can be run on premises
- Supported by **Oracle**
- Containers are primitives
- Strong enterprise in mind

What is a function container?

- Sandboxed process
- Short running
- Event-driven
- Stateless (-ish)

Anatomy of an Fn function

- Small chunk of code wrapped in a container
- Gets input from http-stream and environment
- Sends output to http-stream
- Logs to STDERR / syslog

FDK (Function Development Kit) support

Officially supported

Community supported

Go

Java

Node.js

Python

Ruby

C#

The Fn Server

- Runs in a container also
- Handles as an API gateway
- Exposes REST interface
- Storing logs

The Fn CLI

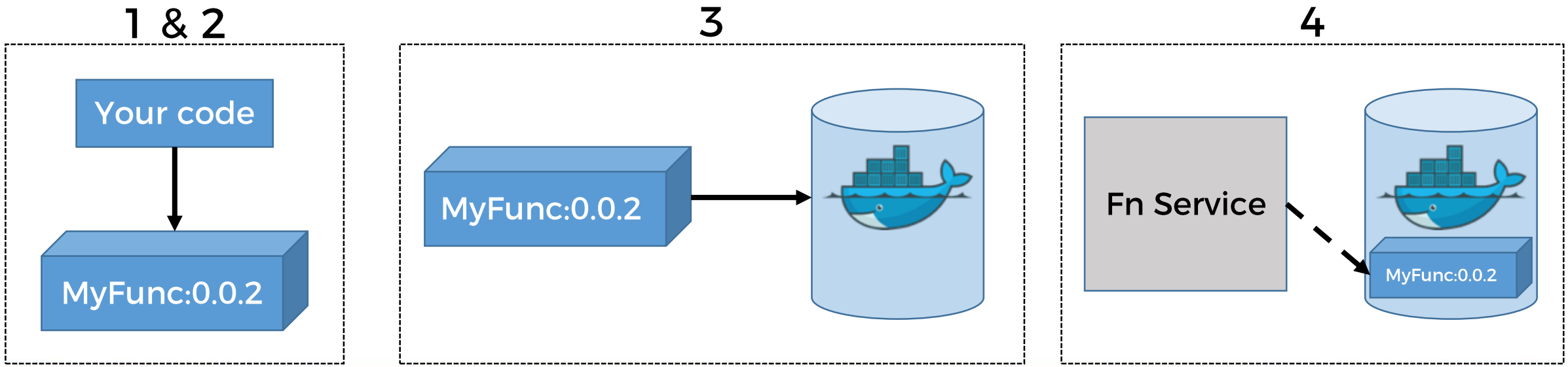
- Of course we have a CLI!
- Used to interact with Fn Server
- Initialization
- Deployment
- Invokation

Initialization of functions

- Calling **fn init** to create a boilerplate in a folder
- Does not do anything on the server
- Boilerplate includes: **Dockerfile**, **func.yaml** & **code**

How deployment works

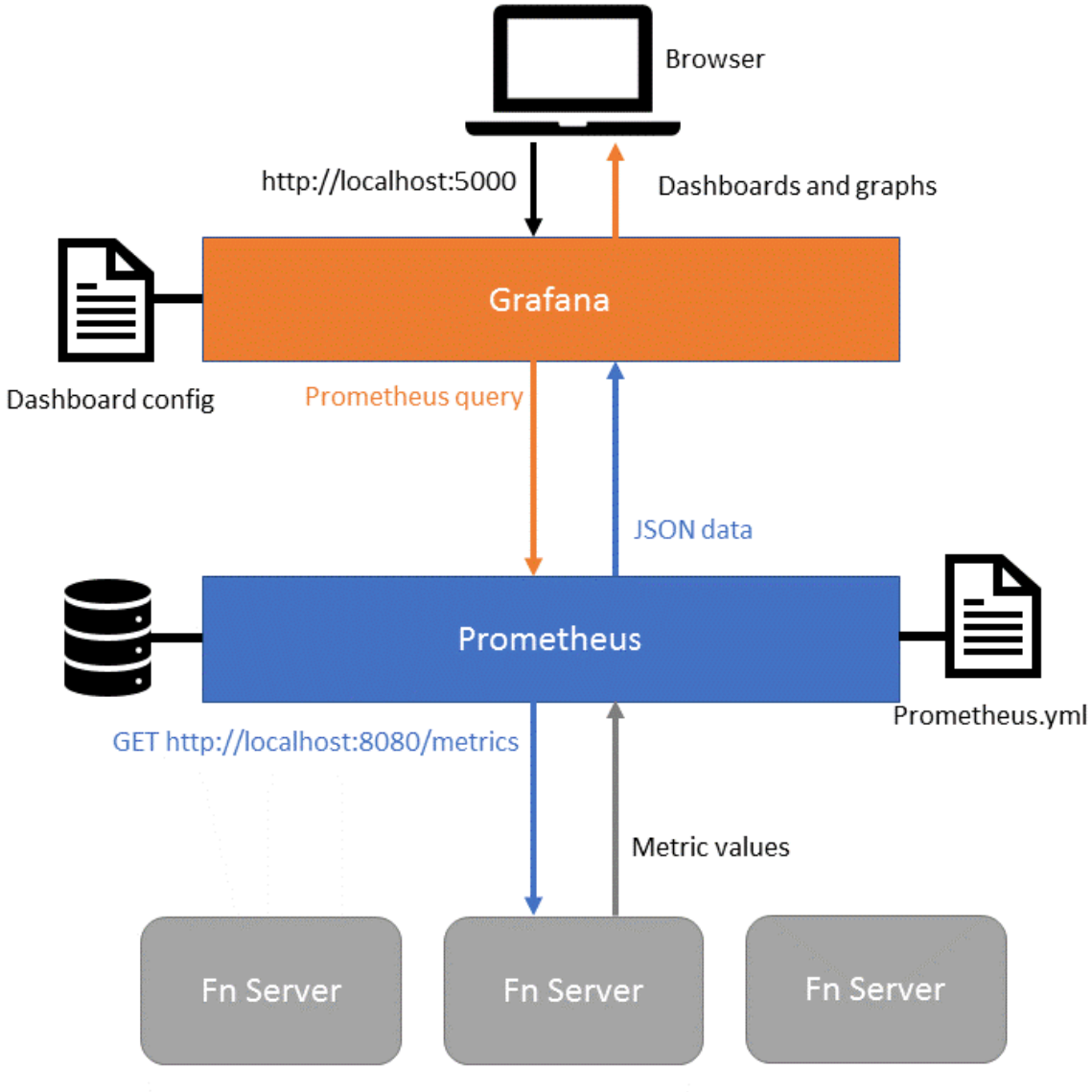
1. Bumps function version
2. Builds container
3. Pushes it to registry
4. Creates or update function & trigger in server



Invocation of functions

- From the CLI
- With HTTP request
- From the UI


DEMO



Source: https://fnproject.io/tutorials/grafana/

See metrics with Grafana & Prometheus

Source: https://fnproject.io/tutorials/grafana/

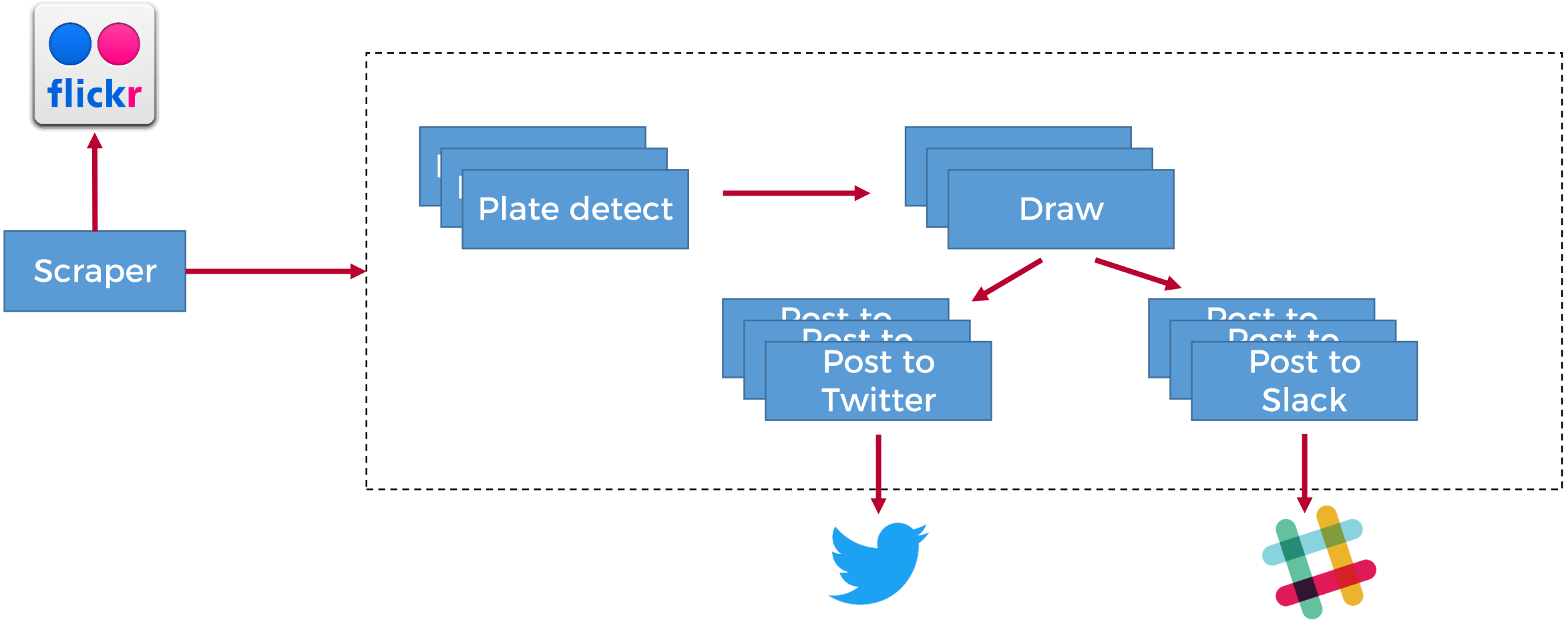
Using it in Kubernetes

- Recommended way of deployment for production
- Helm chart available on GitHub

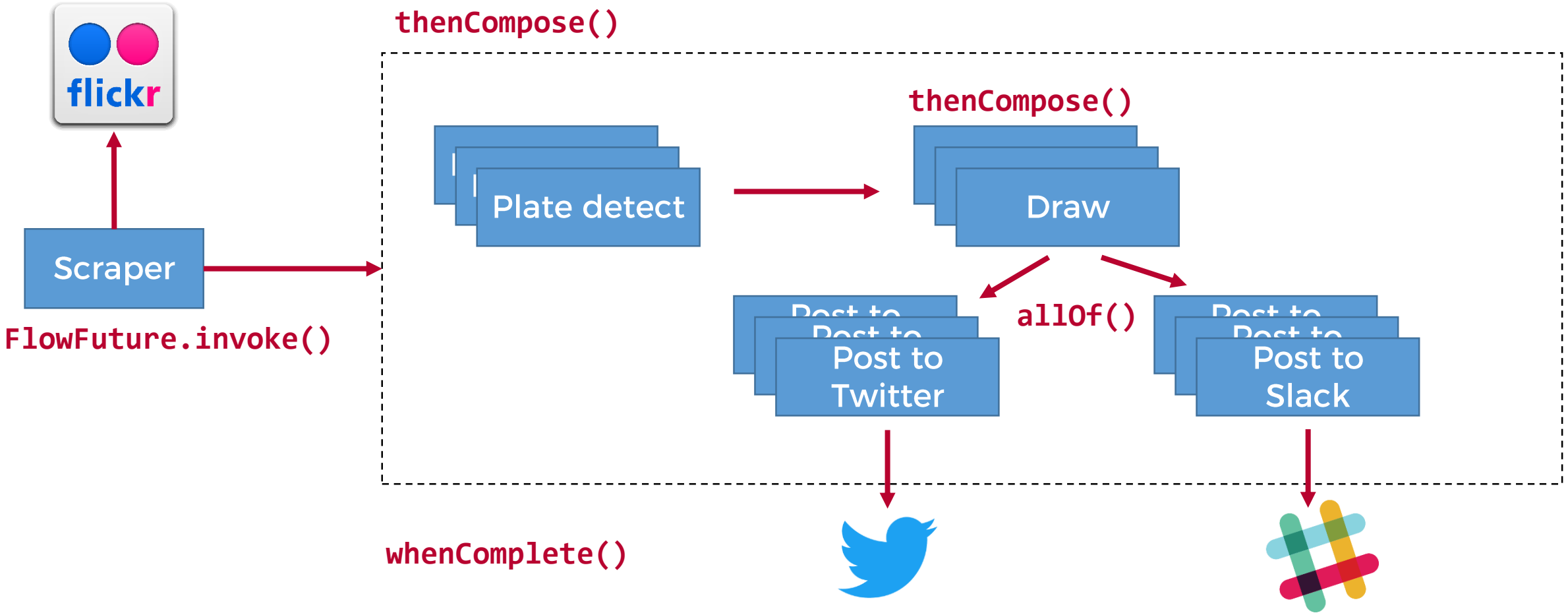
Fn Flow

- Building scalable distributed applications out of functions
- Flows are functions also
- Support complex parallel processes with error handling, which is testable
- Flow functions scale as normal functions
- Currently supports Java, hopefully more to come

Fn Flow | Licence plate example



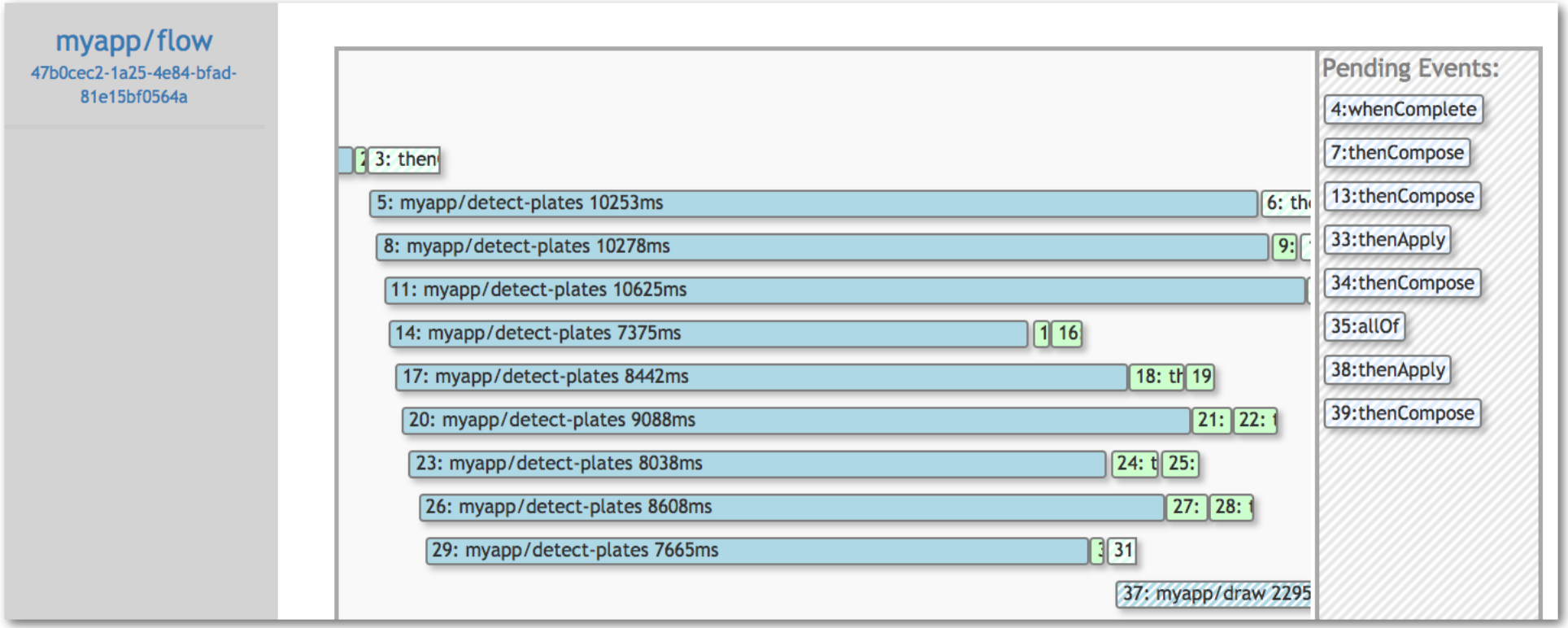
Fn Flow | Licence plate example



```
1   public class VistaFlow {
2     public void handleRequest(ScrapeReq input) throws Exception {
3
4     FlowFuture<ScrapeResp> scrapes = currentFlow().invokeFunction("scraper");
5
6     scrapes.thenCompose(resp -> {
7       List<FlowFuture<?>> pendingTasks = results.stream().map(scrapeResult -> {
8
9         String id = scrapeResult.id;
10
11        return currentFlow().invokeFunction("detect-plates").thenCompose((plateResp) -> {
12
13          return currentFlow().invokeFunction("draw").thenCompose((drawResp) -> {
14
15            return currentFlow().allOf(
16              currentFlow().invokeFunction("twitter"),
17              currentFlow().invokeFunction("slack"));
18          });
19        });
20      });
21
22    }).whenComplete((v, throwable) -> {
23        if (throwable != null) {
24          postMessageToSlack("An Error Occurred.");
25        } else {
26          postMessageToSlack("Finished Scraping.");
27        }
28      });
29    }
30  }
```

Fn Flow | Licence plate example

Fn Flow UI



Source: https://github.com/fnproject/flow


DEMO

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