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Dashboard as Code

Bottega52

Boutique Consulting

- Specialized
- Quality
- Application Lifecycle

Life @ Bottega52

Our structure

- A lot of customers with **different needs**
- **Different use cases**
- But we are a **small team**
- **People first** (a.k.a., “bottegai”)

Our Approach

Automation

- **Infrastructure** (Terraform, Ansible)
- **Deployments** (CI/CD, AWX)
- **Monitoring** (Kubernetes, Prometheus)
- **Dashboards?**

Why dashboards

Our system at a glance

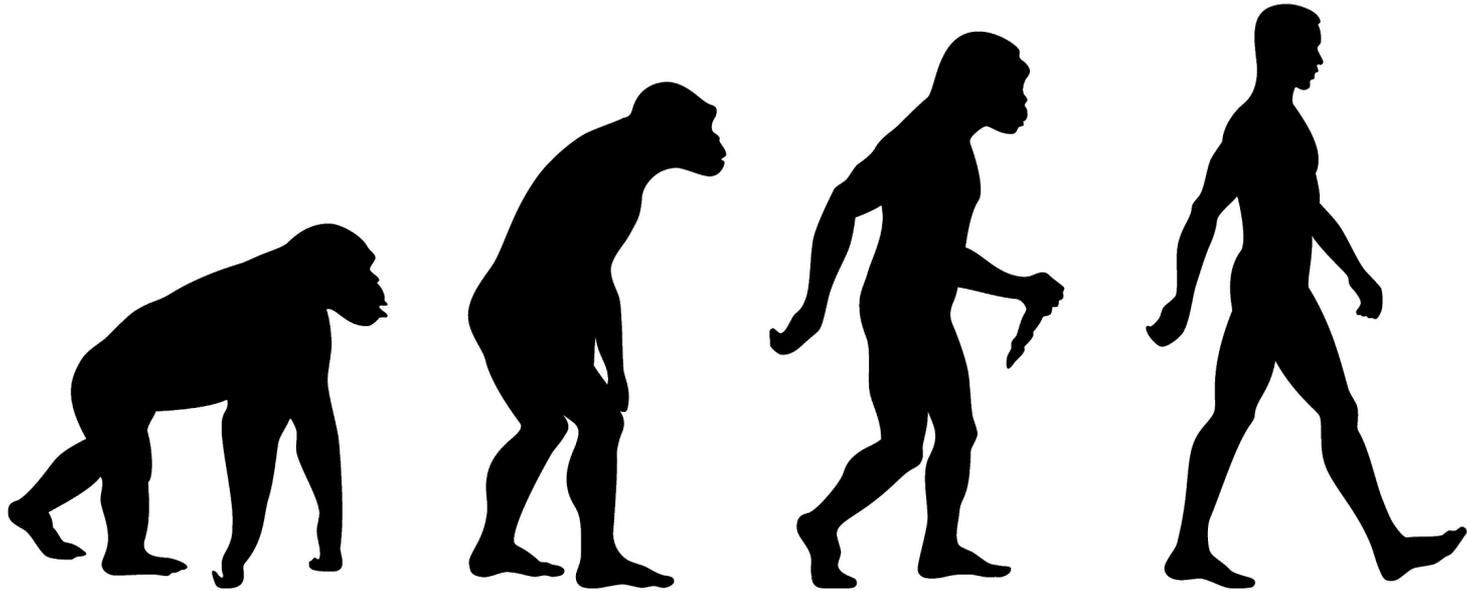
- **Visibility**
- **Aggregations**
- **Quick Overview**
- **Proactive**

How we like our dashboards

Dev-Ops Approach

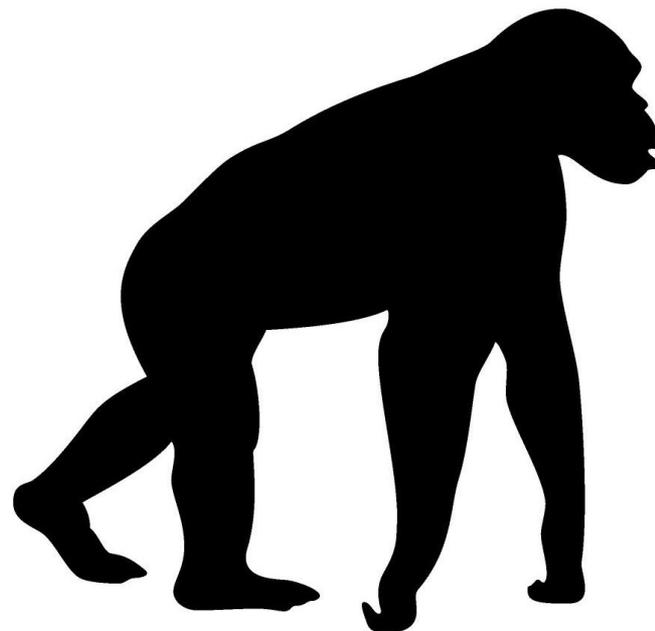
- Configurable
- Extensible
- Reusable

Evolution of dashboard automation



Australopithecus

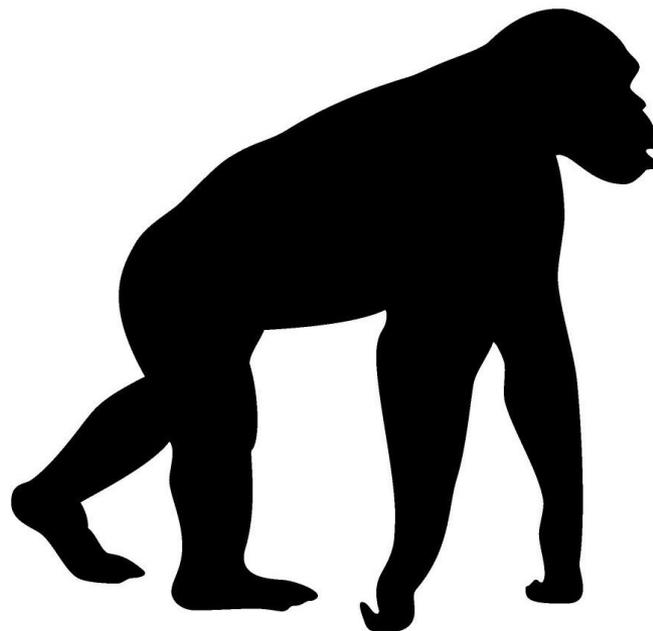
Create and edit dashboards
manually



Australopithecus

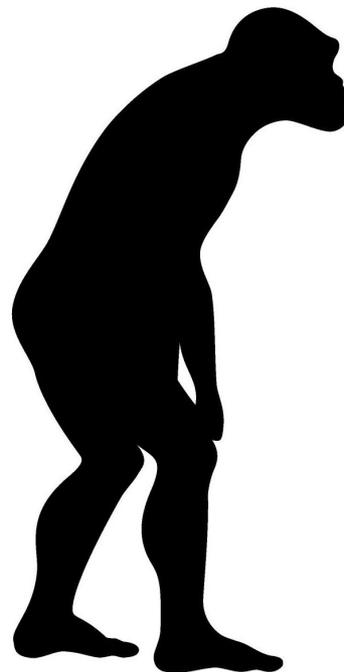
Create and edit dashboards manually

- Configurable ✘
- Extensible ✘
- Reusable ✘



Homo Habilis

Create dashboards manually then
export them as JSON

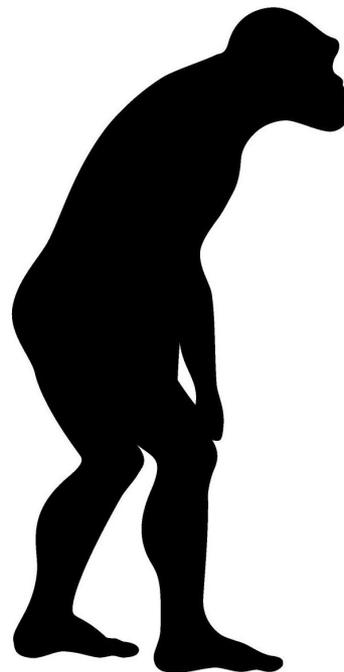


Homo Habilis

Create dashboards manually then export them as JSON

- Configurable ✓
- Extensible ✗
- Reusable ✗

(40K SLOC for single client dashboards)



Homo Erectus

Don't reinvent the wheel (yet)



Grafana Cloud

All dashboards » [Kubernetes cluster monitoring \(via Prometheus\)](#)



Kubernetes cluster monitoring (via Prometheus) by [Instrumentisto Team](#)

DASHBOARD

Monitors Kubernetes cluster using Prometheus. Shows overall cluster CPU / Memory / Filesystem usage as well as individual pod, containers, systemd services statistics. Uses cAdvisor metrics only.

Last updated: 2 years ago

Downloads: 22735

Reviews: 2



Add your review!

Overview

Revisions

Reviews

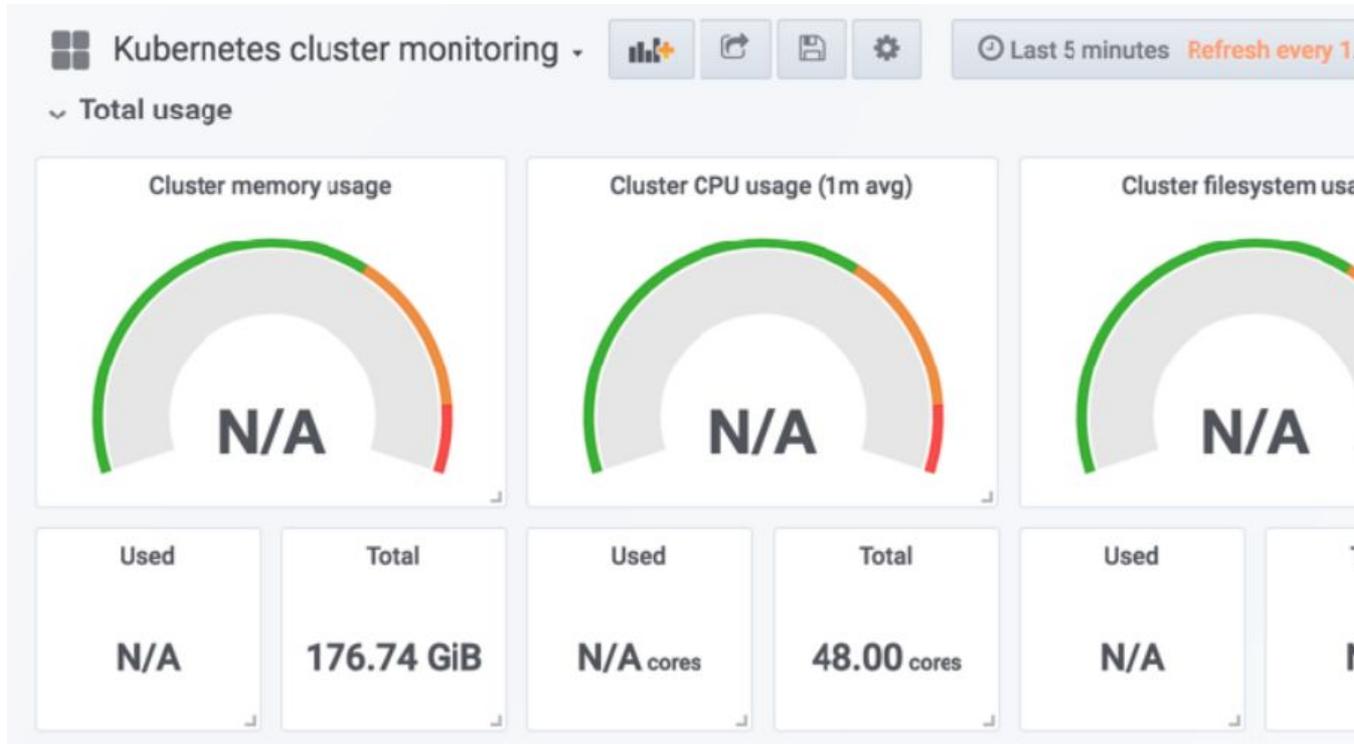


Get this dashboard:

315

Copy ID to Clipboard

N/A Problem



Variables

```
sum(container_memory_working_set_bytes{  
    id="/",  
    kubernetes_io_hostname=~" ^$Node$"  
})  
  
/  
sum(machine_memory_bytes{  
    kubernetes_io_hostname=~" ^$Node$"  
})
```

Homo Erectus

Don't reinvent the wheel (yet)

- Configurable ✘
- Extensible ✘
- Reusable ✔



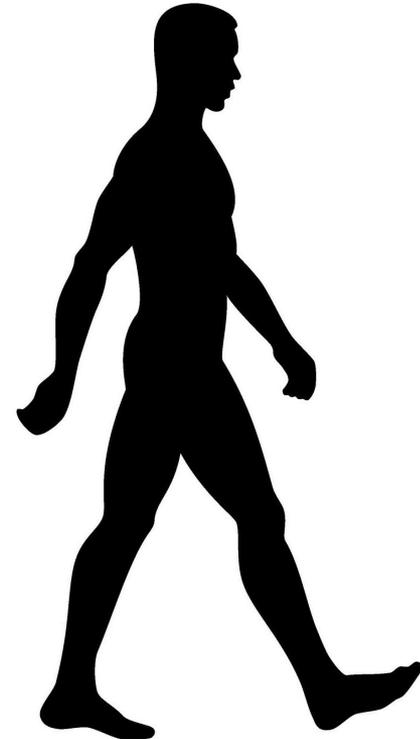
Variables

Dashboards and alerts should not be opinionated about labels - this should be configuration.

Homo Sapiens (Sapiens)

Dashboard as Code

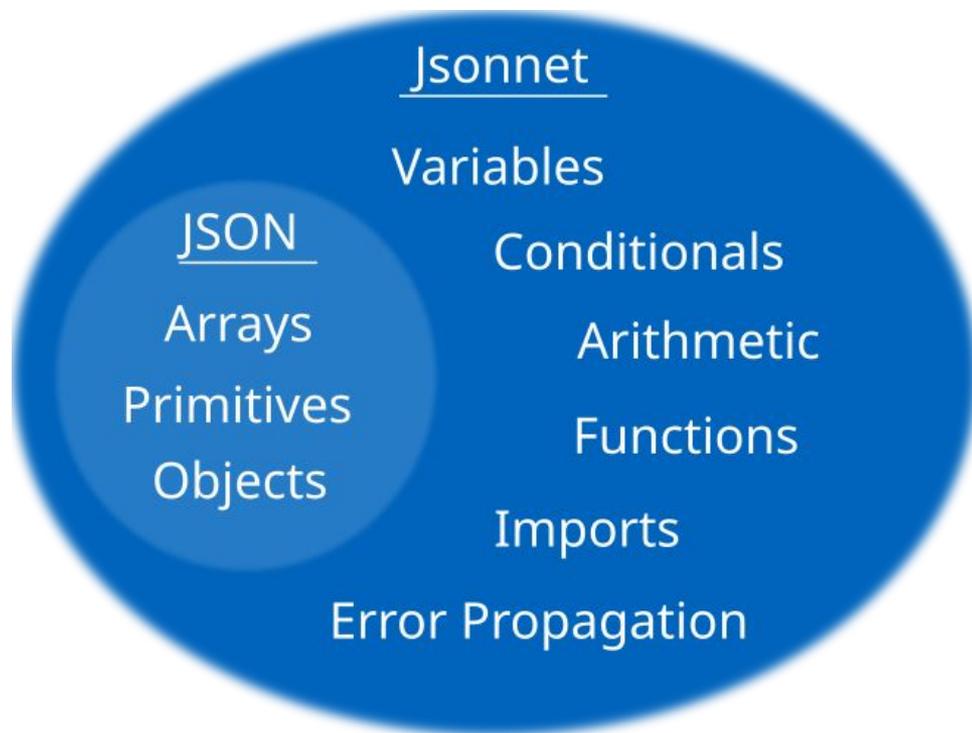
- Configurable ✓
- Extensible ✓
- Reusable ✓



Enters Jsonnet

A data templating language for app and tool developers.

A "*simple*" extension of JSON.



Jsonnet - Objects

```
{  
  person1: {  
    name: 'Alice',  
    welcome: 'Hello ' + self.name + '!',  
  },  
  person2: self.person1 { name: 'Bob' },  
}
```

Jsonnet - Objects

```
{ "person1" : {  
    "name" : "Alice",  
    "welcome" : "Hello Alice!"  
},  
  "person2" : {  
    "name" : "Bob",  
    "welcome" : "Hello Bob!"  
}  
}
```

Jsonnet - Variables

```
local conference_name = 'openinfraday';  
local conference_year = 2019;  
  
{  
  conference: conference_name,  
  edition: conference_year,  
}
```

Jsonnet - Variables

```
{  
  "conference": "openinfraday",  
  "edition": 2019,  
}
```

Jsonnet - Functions

```
local my_function(x, y=10) = x + y;  
  
{  
  result: my_function(2),  
}
```

Jsonnet - Functions

```
{  
  "result": 12,  
}
```

Jsonnet - Hidden fields and overriding

```
config+:: {  
  versions+:: {  
    grafana: '6.3.3',  
  },  
}
```

Grafonnet

```
dashboard.new(  
  'JVM',  
  schemaVersion=16,  
  tags=[ 'java' ],  
)  
.addTemplate(  
  grafana.template.datasource(  
    'PROMETHEUS_DS',  
    'Prometheus',  
    hide='label',  
  )  
)
```

Grafonnet

```
.addPanel(  
  singlestat.new(  
    'uptime',  
    format='s',  
    datasource='Prometheus',  
    span=2,  
  )  
  .addTarget(  
    prometheus.target(  
      'time() - process_start_time_seconds{env="$env",  
        job="$job", instance="$instance}"', )  
    )  
  )  
)
```

Demo





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Apache Kafka Meetup Milano

Bottega52 co-organize with
Confluent Inc. the **Milano
Apache Kafka Meetup**.

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