Experiment as a Service

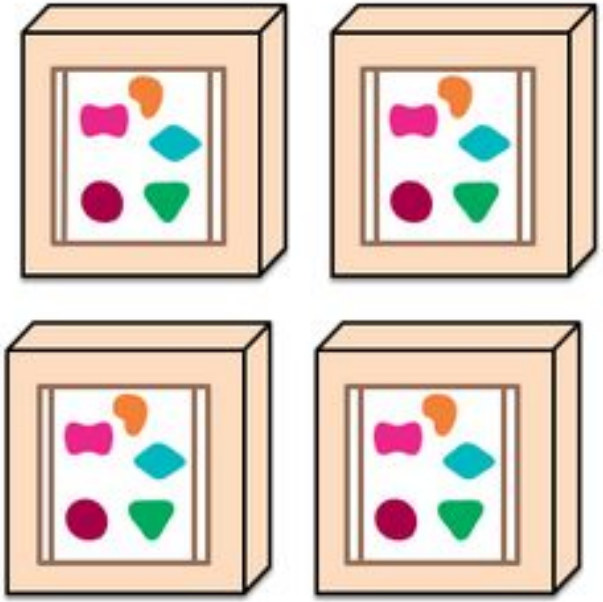
Student: Vishal Kaja, 201401065
Faculty: Venkatesh Choppella

Monolith V/S Microservice

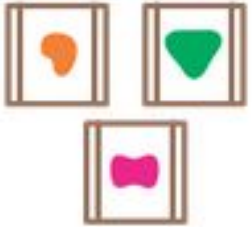
- **Monolith**
  - A single logical executable
  - All your logic for handling a request runs in a single process
  - A change made to a small part of the application, requires the entire monolith to be rebuilt and deployed
- **Microservice**
  - Services are independently deployable and scalable, each service also provides a firm module boundary, even allowing for different services to be written in different programming languages.

A monolithic application puts all its functionality into a single process...

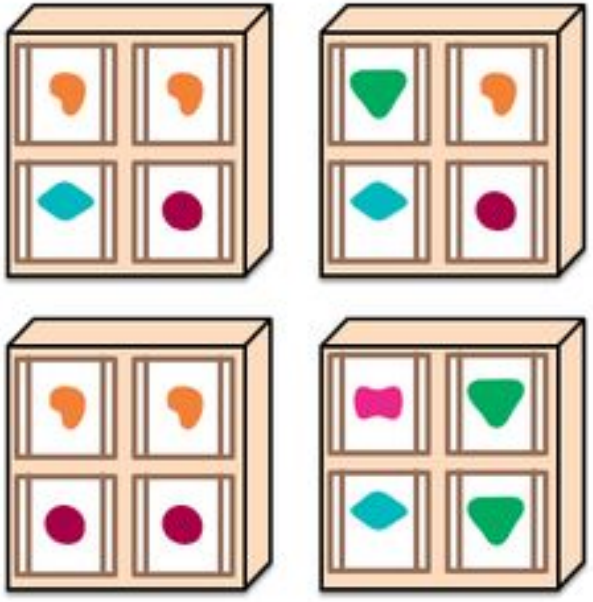
... and scales by replicating the monolith on multiple servers



A microservices architecture puts each element of functionality into a separate service...

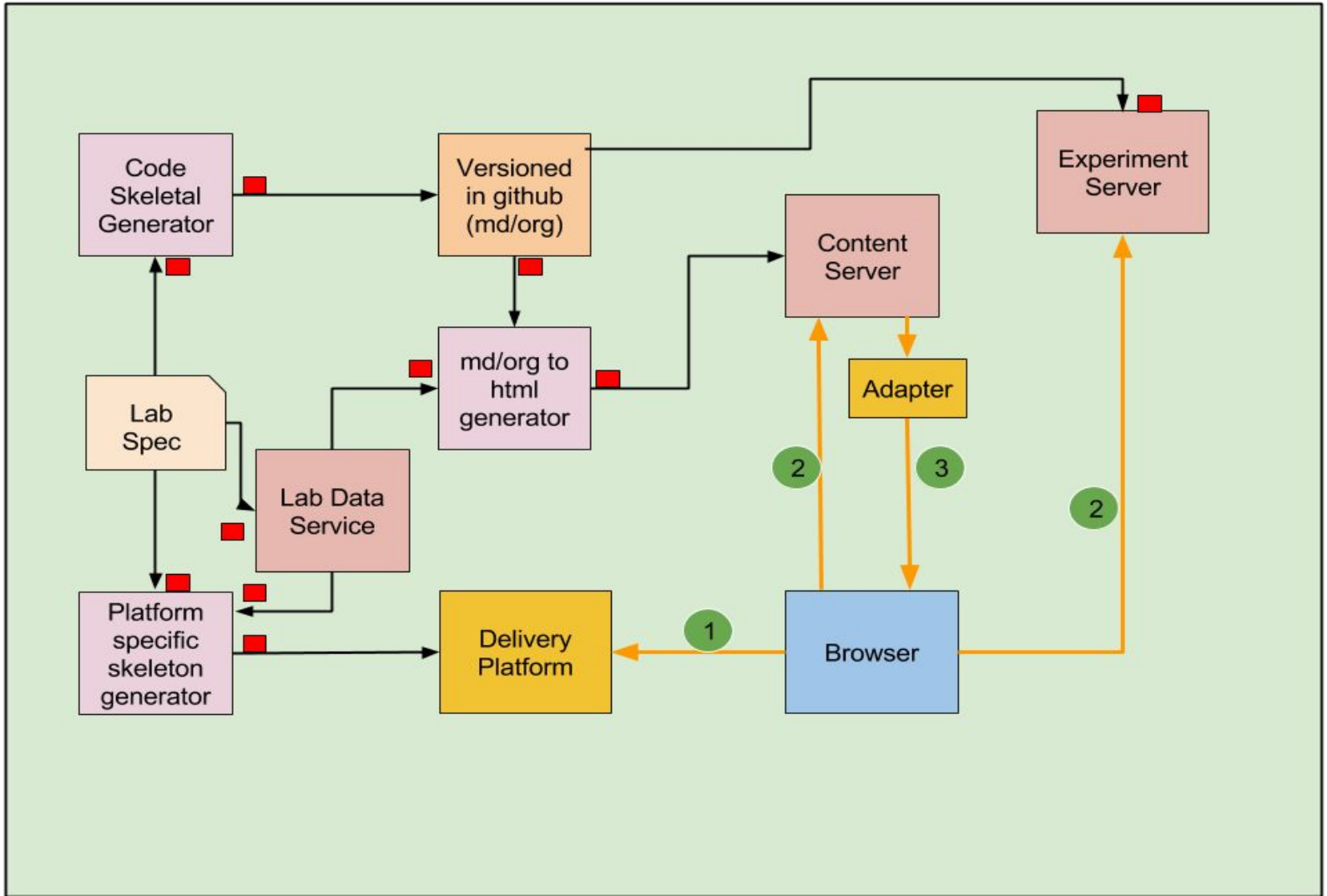


... and scales by distributing these services across servers, replicating as needed.



Vlabs Platform

- Virtual Labs platform is a slew of micro-services collaborating with each other while providing a mechanism to author and deliver content of Virtual Labs.
- Virtual Labs platform is currently using Open edX as the platform for serving virtual labs.


Code Skeletal Generator
Versioned in github (md/org)
Experiment Server
Content Server
Lab Spec
md/org to html generator
Adapter
Lab Data Service
2
3
2
Platform specific skeleton generator
Delivery Platform
1
Browser

Experiment as a Service

Virtual Labs is happy to leverage the features of LMS (Learning Management System) such as single-sign-on, persistence, uniform UI. However, the CMS becomes a bottleneck since content editing is done through Open Edx studio. The tying of content editing through the studio undermines the freedom of using different editors and formats that are more flexible to generate content that a browser can interpret.

Solution ?

- **Translators**
  - Generate lab and experiment templates from requirements
  - Github versioning for remote access
- **Content-Adapter**
  - Used in CMS applications.
  - Modify / style content according to needs.

How Translators works ?

- Accepts Lab / Experiment specification from Lab Data Service.
- Generates templates for either OpenEdx, or Org/Md resources or HTML.
- Creates Github repos for Org/Md resources

How Content Adapter works ?

- Accepts resource from Content Server.
- Modifies resource according to Configuration.
- Returns modified resource to Content Server.

Further Development in Content Adapters

- UI interface to create manage different configurations.
- Automated content parsing (requires restrictions on user content ?)
  - Can run analytics tools on content ?

THE END