



USE AN API CONTRACT  
FOR TESTING AND  
DEVELOPMENT!

# DANNY VERPOORT

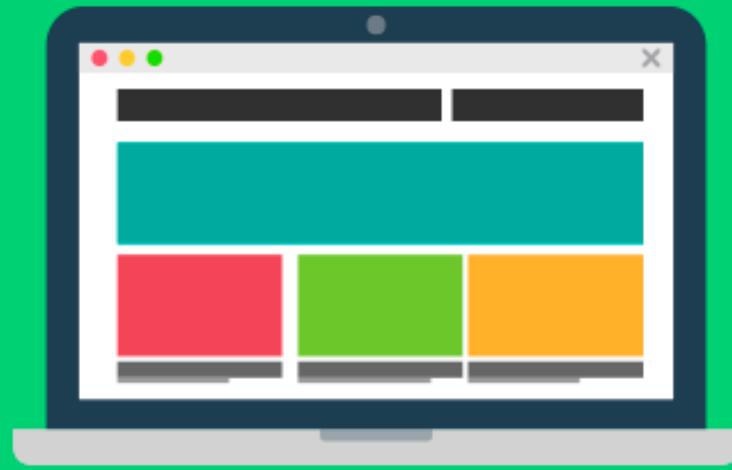
SOFTWARE ENGINEER

- PHP, Java and Typescript enthusiast
- Lifeguard
- Ironically allergic to cats
- Software developer  
@ BauWatch Technology Group

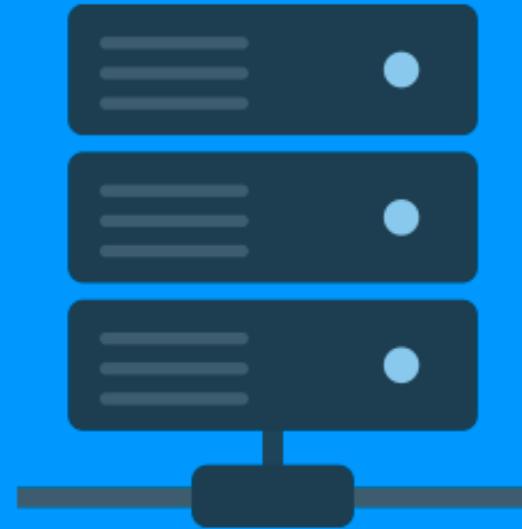


@DANNYVERP





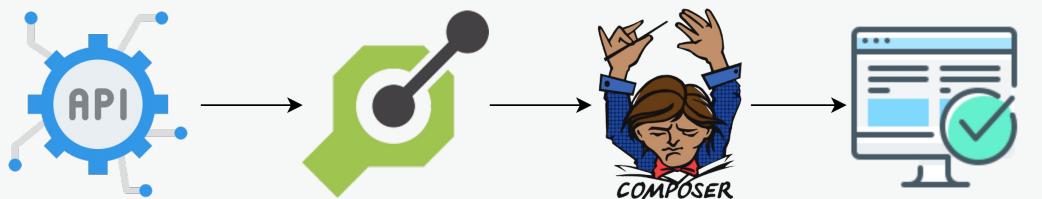
**FRONTEND**



**BACKEND**

# Let's be lazy

- Generate API client package from backend
- Use GitLab pipelines for publishing package
- Install API client in frontend
- Automatically test backend changes in frontend
- Profit

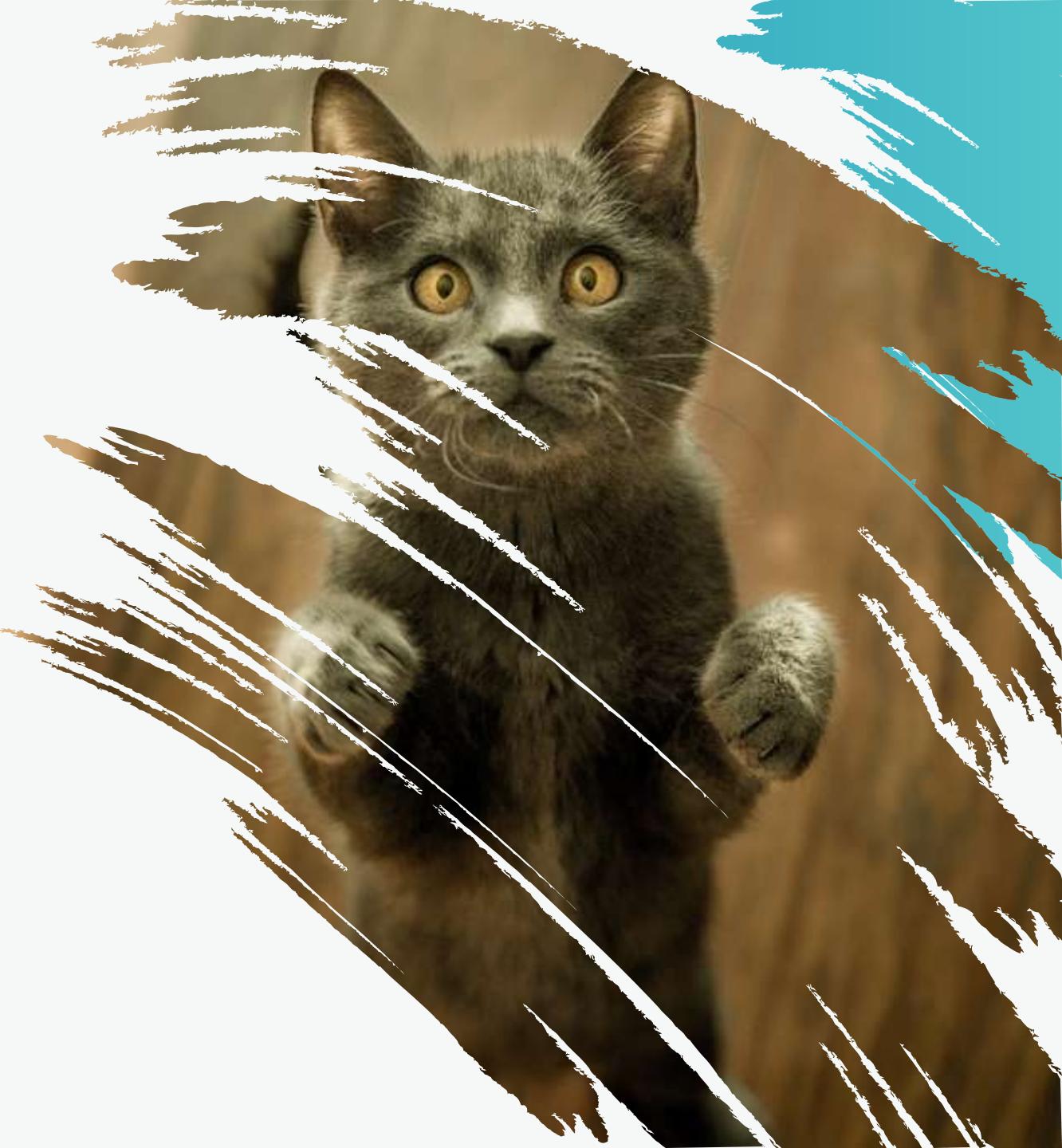


# Our Use Case



- My wife adores cats!
- I'm allergic as can be
- I still love cats so let's find a cat that we could adopt!

# Our Use Case



- Using the cats API
  - ThatApiCompany
- Generate an API client package
- Make API calls with the package in the frontend
- Test the frontend when the backend changes

# OpenAPI Spec

- YAML or JSON specification
- Models
- Authentication / Authorization
- Documentation
- ...

The Cat API 1.0.0 OAS3

/open-api.yaml



The **CAT API**

An open, free, read & write API all about Cats

The Cat API gives you access to 10000's of cat images

- Upload your own images
- Favourite or Vote on images
- Get stats on your requests
- Save a custom value with each request for each of your users

Servers  Authorize 

**Breeds** These routes will allow you to retrieve details of cat breeds.

**GET** /breeds

**GET** /breeds/{breed\_id}

**Images** These routes will allow you to retrieve images of cats

**Image**

**GET** /images/{image\_id}

**Schemas**

breed >

breeds >

image >



openapi: 3.0.0

info:

title: The Cat API

version: 1.0.0

description: >-

*## An open, ree, read & write API all about Cats*

The Cat API gives you access to 10000's of cat images

- Upload your own images
- Favourite or Vote on images
- Get stats on your requests
- Save a custom value with each request for each of your users





## tags:

- **name:** Breeds

**description:** >-

These routes will allow you to retrieve details of cat breeds.

- **name:** Images

**description:** >-

These routes will allow you to retrieve images of cats



```
components:  
  schemas:  
    breed:  
      type: object  
      properties:  
        dog_friendly:  
          type: integer  
          minimum: 1  
          maximum: 5  
        description: "The Abyssinian is easy to care for..."  
        hairless:  
          type: boolean
```





```
/breeds/{breed_id}:
  get:
    operationId: getBreedById
    tags:
      - Breeds
    parameters:
      - name: breed_id
        in: path
        schema:
          type: string
          required: true
    responses:
      '200':
        description: OK
        content:
          application/json:
            schema:
              $ref: "#/components/schemas/breed"
```



# swagger-api/ swagger-ui



Swagger UI is a collection of HTML, JavaScript, and CSS assets that dynamically generate beautiful documentation from a Swagger-compliant API.

468

Contributors

33k

Used by

22

Discussions

22k

stars

8k

Forks



# OpenAPITools/openapi-generator-cli

A node package wrapper for  
<https://github.com/OpenAPITools/openapi-generator>



16  
Contributors

18  
Issues

627  
Stars

86  
Forks



# Generate API Clients

---

- Actionscript
- Ada
- Apex
- Bash
- C
- C#
- C++
- Clojure
- Crystal
- Dart
- Elixir
- Elm
- Eiffel
- Erlang
- Go
- Groovy
- Haskell
- Java
- Javascript
- K6
- Kotlin
- Lua
- Nim
- Objective-C
- OCaml
- Perl
- **PHP**
- PowerShell
- Python
- R
- Ruby
- Rust
- Scala
- Swift
- Typescript

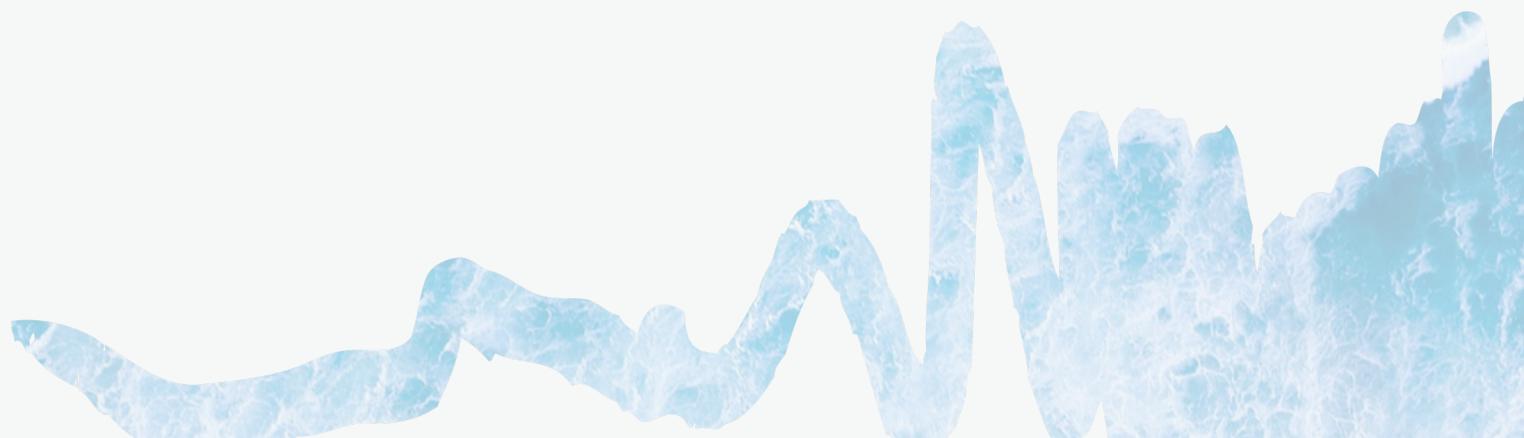


# Server stubs



Generates PHP server stubs for:

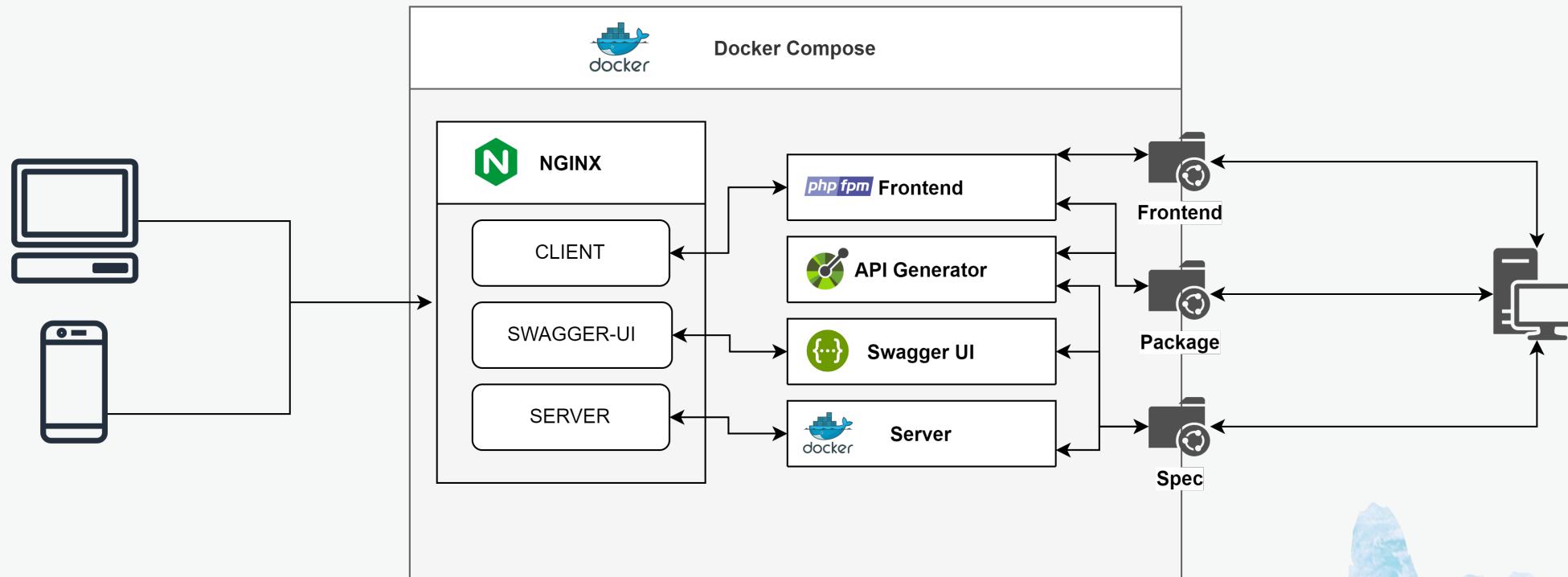
- Laravel
- Lumen
- Mezzio
- Slim
- Silex
- Symfony





EVERGREEN

# Local Development



```
openapi:
  image: swaggerapi/swagger-ui:v4.11.0
  environment:
    SWAGGER_JSON: "/app/open-api.yaml"
    LAYOUT: "BaseLayout"
    BASE_URL: "/api-docs"
  volumes:
    - './server/spec/open-api.yaml:/app/open-api.yaml'

package:
  image: openapitools/openapi-generator-cli:v5.4.0
  command: generate -i /local/open-api.yaml
    -g php -o /local/output
    --minimal-update
    -p composerPackageName=danny-talks/cats-api,packageName=DannyVerpoort\\ CatsApi,invokerPackage=DannyVerpoort\\ CatsApi
  volumes:
    - './server/spec/open-api.yaml:/local/open-api.yaml'
    - './output:/local/output'
  restart: unless-stopped
```



topsporters





```
use DannyVerpoort\CatsApi\Configuration;
use GuzzleHttp\Client;
use HaydenPierce\ClassFinder\ClassFinder;

class AppServiceProvider extends ServiceProvider
{

    public function register()
    {
        $client = new Client();

        $configuration = new Configuration();
        $configuration->setHost(env('API_HOST', $configuration->getHost()));

        $apiClasses = ClassFinder::getClassesInNamespace('DannyVerpoort\CatsApi\Api');

        foreach ($apiClasses as $apiClass) {
            $this->app->bind($apiClass,
                function () use ($client, $apiClass, $configuration) {
                    return new $apiClass($client, $configuration);
                }
            );
        }
    }
}
```





```
Route::get('/', function (BreedsApi $breedsApi) {

    $breeds = [];
    $fallbackImage = 'https://via.placeholder.com/200?text=No+Image';

    try {
        $breeds = $breedsApi->getBreeds();
    } catch (CatsApiException $exception) {
        // Handle API exceptions like 404, 500, etc.
    }

    return view('welcome', ['breeds' => $breeds, 'fallbackImage' => $fallbackImage]);
});
```





### Abyssinian

The Abyssinian is easy to care for, and a joy to have in your home. They're affectionate cats and love both people and other animals.



### Aegean

Native to the Greek islands known as the Cyclades in the Aegean Sea, these are natural cats, meaning they developed without humans getting involved in their breeding. As a breed, Aegean Cats are rare, although they are numerous on their home islands. They are generally friendly toward people and can be excellent cats for families with children.

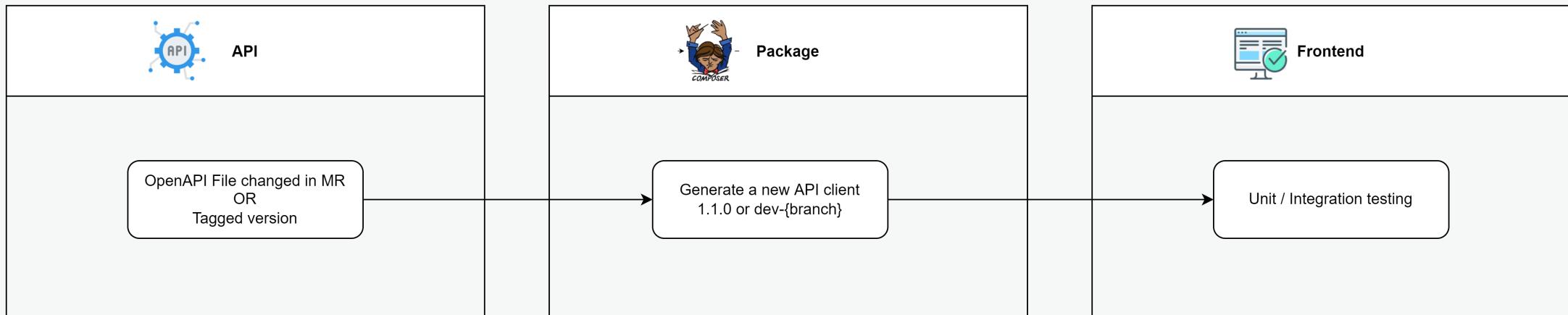






# GitLab

# Gitlab Pipeline



# Triggering downstream



```
build:client:
  stage: build
  trigger:
    project: danny-talks/api-contract-client/client-packages
    branch: main
    strategy: depend
  only:
    refs:
      - tags
      - merge_requests
  changes:
    - server/spec/open-api.yaml
```



# Passing artifacts



## Trigger job configuration keywords

Trigger jobs can use only a limited set of the GitLab CI/CD [configuration keywords](#). The keywords available for use in trigger jobs are:

- `trigger`
- `stage`
- `allow_failure`
- `rules`
- `only` and `except`
- `when` (only with a value of `on_success`, `on_failure`, or `always`)
- `extends`
- `needs`, but not `needs:project`



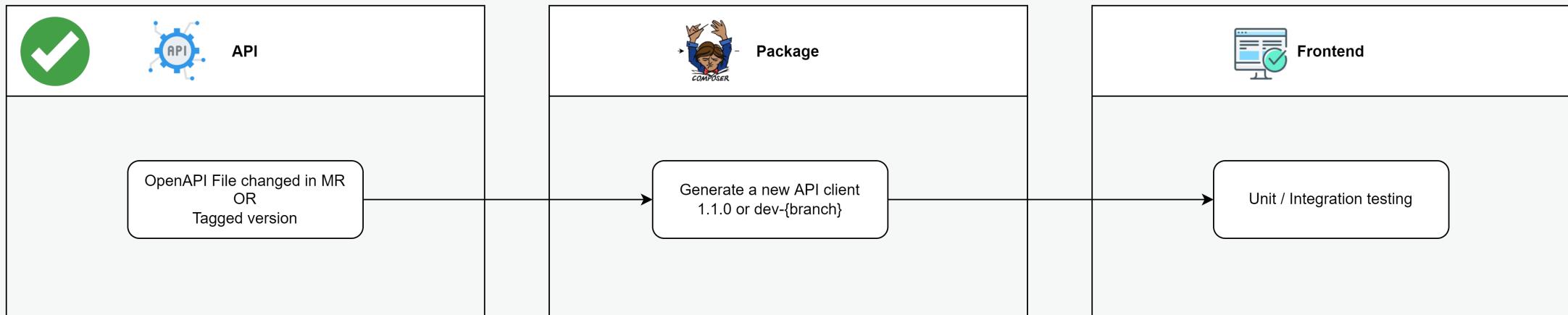
# Passing artifacts



```
export:openapi:  
  stage: .pre  
  script:  
    - echo "JOB_ID=$CI_JOB_ID" >> build.env  
  artifacts:  
    paths:  
      - server/spec/  
    reports:  
      dotenv: build.env  
  
build:client:  
  stage: build  
  variables:  
    OPEN_API_SPEC: server/spec/open-api.yaml  
    PROJECT_ID: $CI_PROJECT_ID  
    JOB_ID: $JOB_ID  
  trigger: ...  
  only: ...
```



# Gitlab Pipeline



# Generating the package



```
build:composer-client:
  stage: build
  before_script:
    - curl --location --output downloadedspec.yml
      "${CI_API_V4_URL}/projects/${PROJECT_ID}/jobs/${JOB_ID}/artifacts/${OPEN_API_SPEC}?
      job_token=${CI_JOB_TOKEN}"
    script:
      - java -jar /opt/openapi-generator/modules/openapi-generator-cli/target/openapi-
        generator-cli.jar generate -i downloadedspec.yml -g php -o ./output --minimal-update -
        --additional-properties=composerPackageName=danny-talks/cats-
        api,packageName=DannyVerpoort\\CatsApi,invokerPackage=DannyVerpoort\\CatsApi
    artifacts:
      paths:
        - ./output
  only:
    - pipelines
```



# Package Repository



## Create a package

Create a Composer package from a Git tag or branch:

```
POST projects/:id/packages/composer
```



Attribute	Type	Required	Description
id	string	yes	The ID or full path of the group.
tag	string	no	The name of the tag to target for the package.
branch	string	no	The name of the branch to target for the package.

```
curl --request POST --user <username>:<personal_access_token> \
--data tag=v1.0.0 "https://gitlab.example.com/api/v4/projects/1/packages/composer"
```

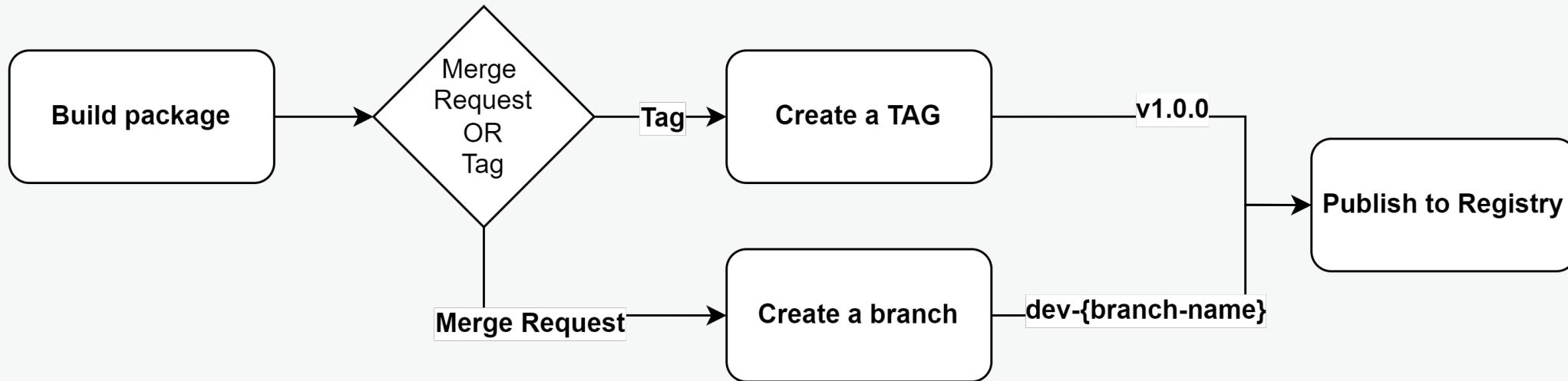


Example response:

```
{
  "message": "201 Created"
}
```



# Package Repository





## C Client Packages

Project information

Repository

Issues 0

Merge requests 0

CI/CD

Deployments

Packages &amp; Registries

## Package Registry

Container Registry

Infrastructure Registry

Monitor

Analytics

Wiki

Snippets

Talks &gt; api-contract-client &gt; Client Packages &gt; Package Registry

## Package Registry

2 Packages

Filter results

danny-talks/cats-api main -o 28b48551

Created 3 weeks ago

0.1.0 published by Danny Verpoort Composer

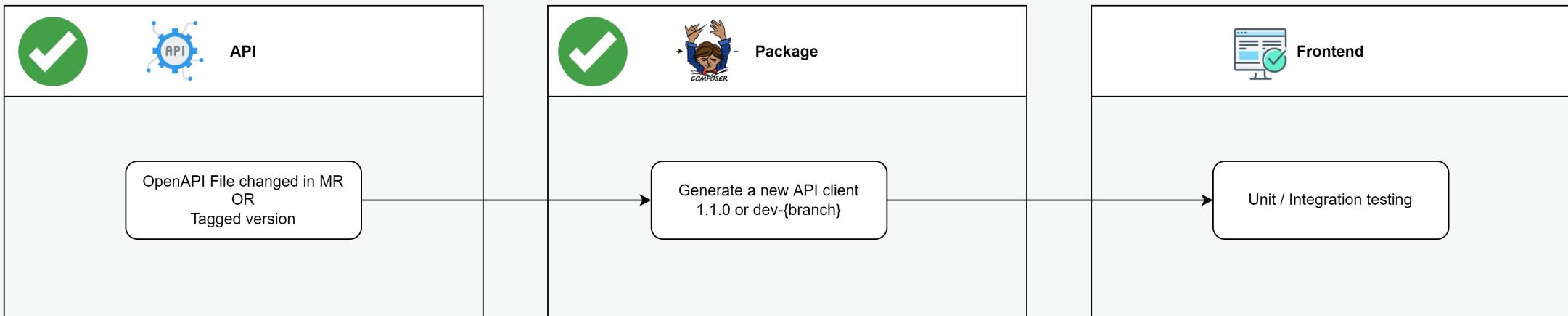
danny-talks/cats-api

main -o 28b48551

Created 3 weeks ago

dev-feature/add-image-api published by Danny Verpoort Composer

# Gitlab Pipeline



# Using the package



```
composer config repositories.<group_id> composer  
https://gitlab.example.com/api/v4/group/<group_id>/-/packages/composer/
```



```
composer require <package_name>:<version>
```



# Test the frontend



```
<?php

namespace Tests\Integration;

use Tests\TestCase;

class Homepage extends TestCase
{
    /**
     * Test if we can get a cat of a certain category and that the API correctly
     * returns it.
     *
     * @return void
     */
    public function testHasCat()
    {
        $response = $this->get('/');

        $response->assertSeeText('Abyssinian');
    }
}
```



# Test frontend on new API



```
test:frontend:  
  stage: quality  
  trigger:  
    project: danny-talks/api-contract-client/frontend  
    branch: main  
    strategy: depend
```



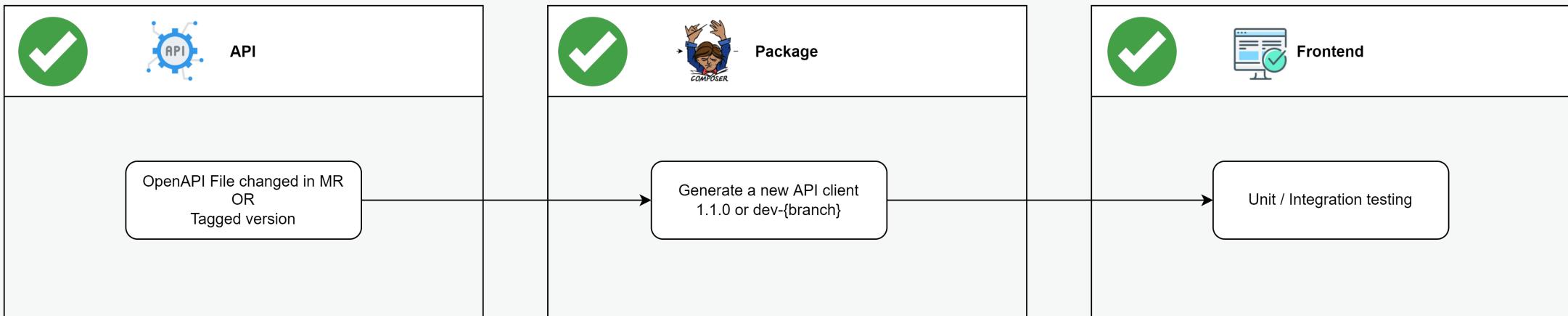
# Test frontend on new API



```
test:  
  stage: quality  
  image: php:8.1.7  
  script:  
    - phpunit --configuration phpunit_myapp.xml  
only:  
  - pipelines
```



# Gitlab Pipeline



## F U R T H E R   R E C O M M E N D A T I O N S

- Look at [Artifactory](#) for a broader package registry
- Use [Pact](#) for contract testing
- Going Async? Use [AsyncAPI!](#)



THAT'S ALL FOLKS

 <https://gitlab.com/danny-talks/api-contract-client>

 @dannyverp

 hallo@dannyverpoort.dev

THANKS FOR ATTENDING

