

TYPES & STATIC ANALYSIS



TYPES ARE GOOD, I PROMISE.

SAM GREENWOOD

@SAMTGREENWOOD

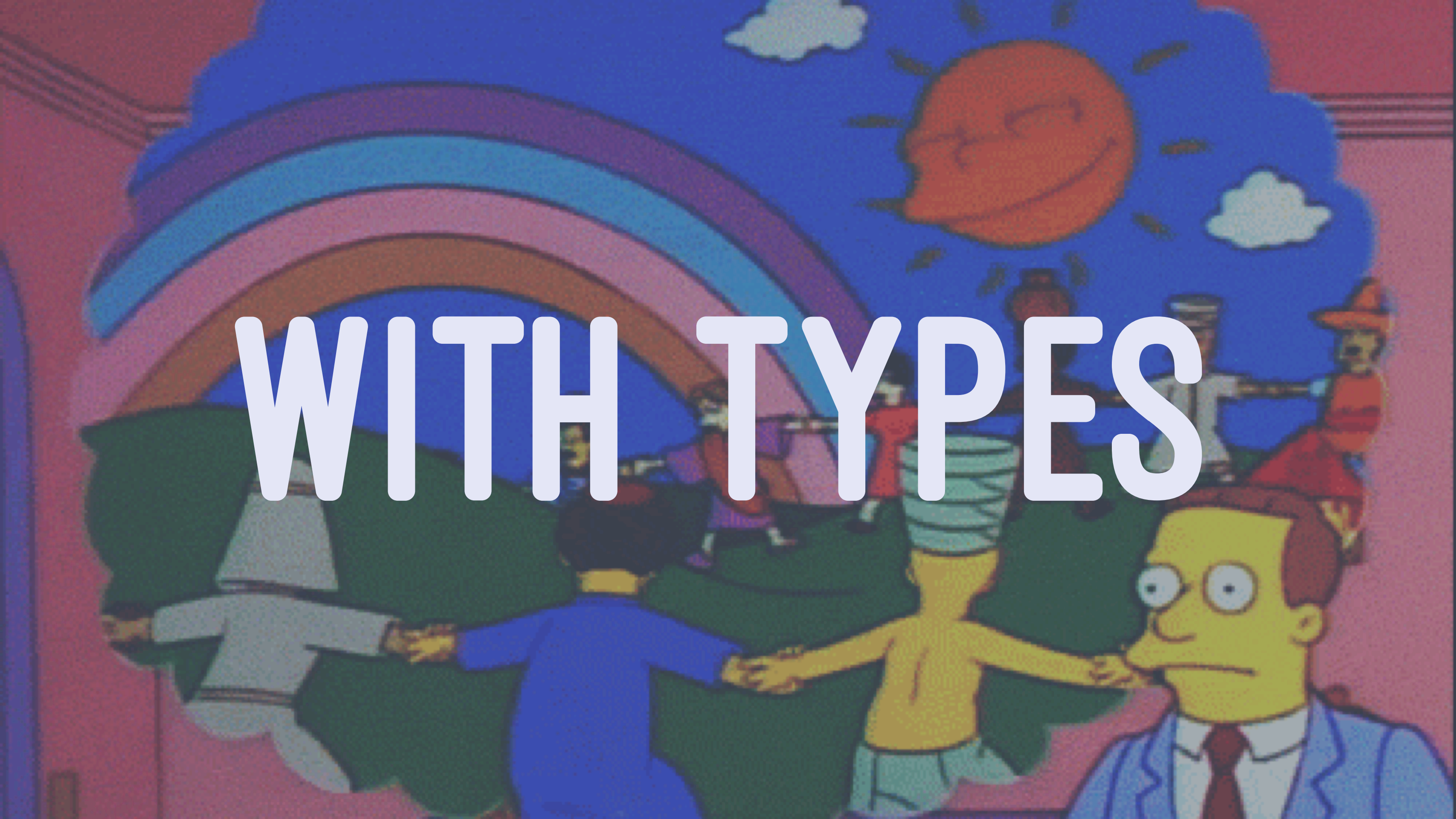
TECHNOLOGY MANAGER @ UNITI GROUP

I LIKE TYPES.

A blurry background image showing a fire in a room. The fire is bright orange and yellow, rising from a source. To the left, there is a dark door and a small framed picture on the wall. The overall scene is dimly lit, with the fire providing the main light source.

WITHOUT TYPES

WITH TYPES



Thanks

for coming to my

TED Talk

WHAT ARE
TYPES?

DYNAMIC TYPES

DEFINED WHEN WE USE THEM

STATIC TYPES

DEFINED BEFORE WE USE
THEM

STRONG TYPES

CAN NEVER CHANGE

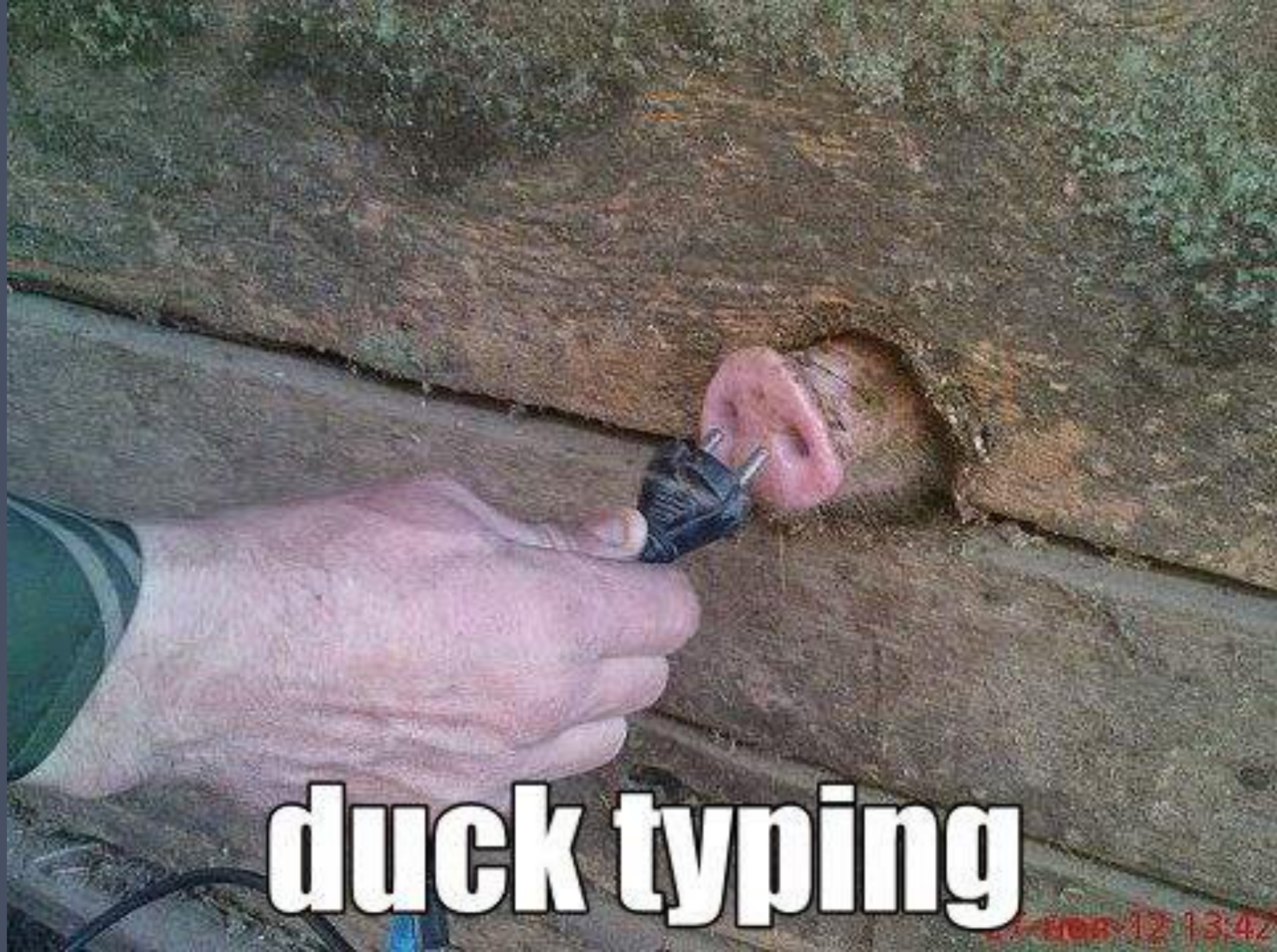
WEAK TYPES

IT HAS A TYPE RIGHT
NOW, BUT IT CAN CHANGE.

WHAT IS PHP?

- > DYNAMIC, WEAK!
- > DO WE WISH IT WAS SOMETHING ELSE?
- > THERE ARE TOOLS THAT CAN HELP!
 - > PHP 7.4

TYPES SHOW
INTENT



duck typing

TYPES MAKE YOUR CODE
EASIER TO READ

AVOID THE FEAR CYCLE 🤪

- > SMALL CHANGES HAVE UNPREDICTABLE, SCARY, OR COSTLY RESULTS.
 - > WE BEGIN TO FEAR MAKING CHANGES.
- > WE TRY TO MAKE EVERY CHANGE AS SMALL AND LOCAL AS POSSIBLE.
- > THE CODE BASE ACCUMULATES WARTS, KNOBS, AND SPECIAL CASES.

**WHAT IS STATISTIC
ANALYSIS?**

STATIC
ANALYSIS IN

PHP



STATIC ANALYSIS **SUCKS**
UNLESS IT KNOWS ABOUT
YOUR CODE!

PROVIDE TYPES WHERE
YOU CAN

GENERATED DOC BLOCKS?



WONT SOMEONE PLEASE



THINK OF THE FACADES

LOTS OF TOOLS!

- > PSALM – PSALM.DEV
- > PHPSTAN – GITHUB.COM/PHPSTAN/PHPSTAN
- > LARASTAN – GITHUB.COM/NUNOMADURO/LARASTAN
 - > RECTOR – GETRECTOR.ORG

PSALM

PSALM.DEV

- > ADDITIONAL TYPE INFORMATION
 - > GENERICS
 - > TYPED VARIABLES
- > DIFFERENT STRICTNESS LEVELS
 - > 78 RULES!

PHPSTAN

[GITHUB.COM/PHPSTAN/PHPSTAN](https://github.com/phpstan/phpstan)

- > SIMILAR TO PSALM
- > COMMUNITY PLUGINS FOR MORE FUNCTIONALITY
 - > PLAYGROUND @ PHPSTAN.ORG


LARASTAN

[GITHUB.COM/NUNOMADURO/LARASTAN](https://github.com/nunomaduro/larastan)

- > PHPSTAN
- > LARAVEL FLAVOURED
- > THAT MAKES IT BETTER, RIGHT?
- > KNOW'S ABOUT FACADES AND LARAVEL INTERNALS

RECTOR

GETRECTOR.ORG

- > INSTANT CODE UPGRADES
- > GENERATE GOOD DOC BLOCKS WHERE NEEDED
 - > PHP 7.4 PROPERTY TYPES
- > REFACTOR LARAVEL FACADES TO DI 
- > GREAT FOR LEGACY

5 THINGS **SOMEONE** HATES

- > CODE IN COMMENTS
- > USELESS DOCBLOCKS
- > TYPES DECLARATIONS
 - > CIDER WITH ICE
- > ME AFTER THIS TALK



STATIC ANALYSIS



DOCBLOCKS

NOT NOW 🐱💧

```
class Account
{
    private Owner $owner;

    public function deposit(Money[] $money) : Transaction
    {
    }
}
```

EXTRA TOOLS 🥰

```
class Account
{
    /**
     * @var Owner
     */
    private $owner;

    /**
     * @var Money[] $money
     */
    public function deposit(array $money) : Transaction
    {
    }
}
```

EXTRA TOOLS & PHP 7.4 🥰

```
class Account
{
    private Owner $owner;

    /**
     * @var Money[] $money
     */
    public function deposit(array $money) : Transaction
    {
    }
}
```


**DON'T USE
UNNECESSARY
DOC BLOCKS!**

IT'S NOT ALL  AND 



```
$user = User::find(1); // could be User or NULL
```

```
if(!$user) // Let's check!
```

```
{  
    throw new UserNotFoundException(1);  
}
```

```
$user->say('Types are great'); // Error! Calling function on possible null.
```

```
/**  
 * @var User $user  
 */
```

```
$user->say('Types are great'); // I guess we'll make do.
```



```
$transactions = Transaction::all();
```

```
$isOver9000 = function($number) : bool {  
    return $number > 9000;
```

```
});
```

```
$over9000 = $transactions->map(function($t) use($isOver9000) {  
    return $isOver9000($t->amount());
```

```
});
```



```
/**
 * @var Collection<Transaction>
 */
$transactions = Transaction::all();

$isOver9000 = function(int $number) : bool {
    return $number > 9000;
});

$over9000 = $transactions->map(function(Transaction $t) use($isOver9000) : Transaction {
    return $isOver9000($t->amount());
});
```

THERE ARE NO SOLUTIONS
ONLY TRADEOFFS.

WHERE TO FIND ME

[@SAMTGREENWOOD](#) ON TWITTER

[SAMGREENWOOD](#) ON PHP AUSTRALIA SLACK

[SAMGREENWOOD.ME](#)

