



Visual Studio

SQL Server

TECHMENTOR

Office & SharePoint

Modern Apps

VSS02 – HOL Xamarin Resilient Connected Apps

The Ultimate Education Destination

2017
Orlando

Roy Cornelissen &
Marcel de Vries

X Xpirit

Level: Introductory - Intermediate

HAPPY USER



GRUMPY USER

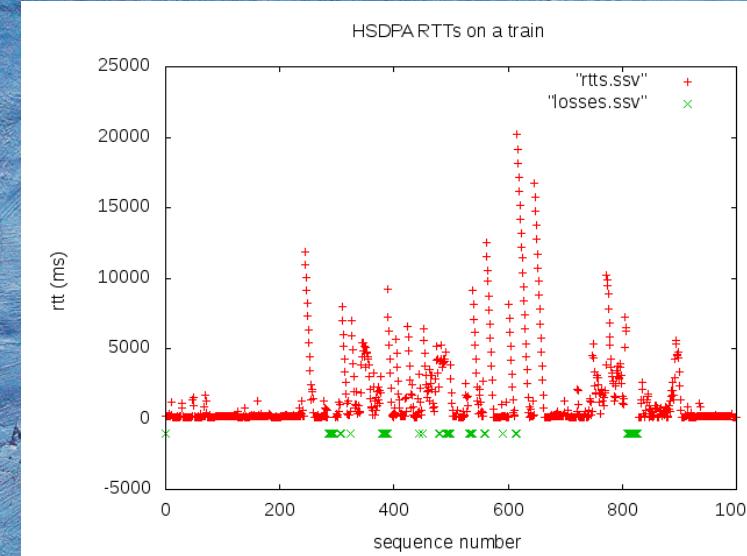


8 FALLACIES OF DISTRIBUTED COMPUTING

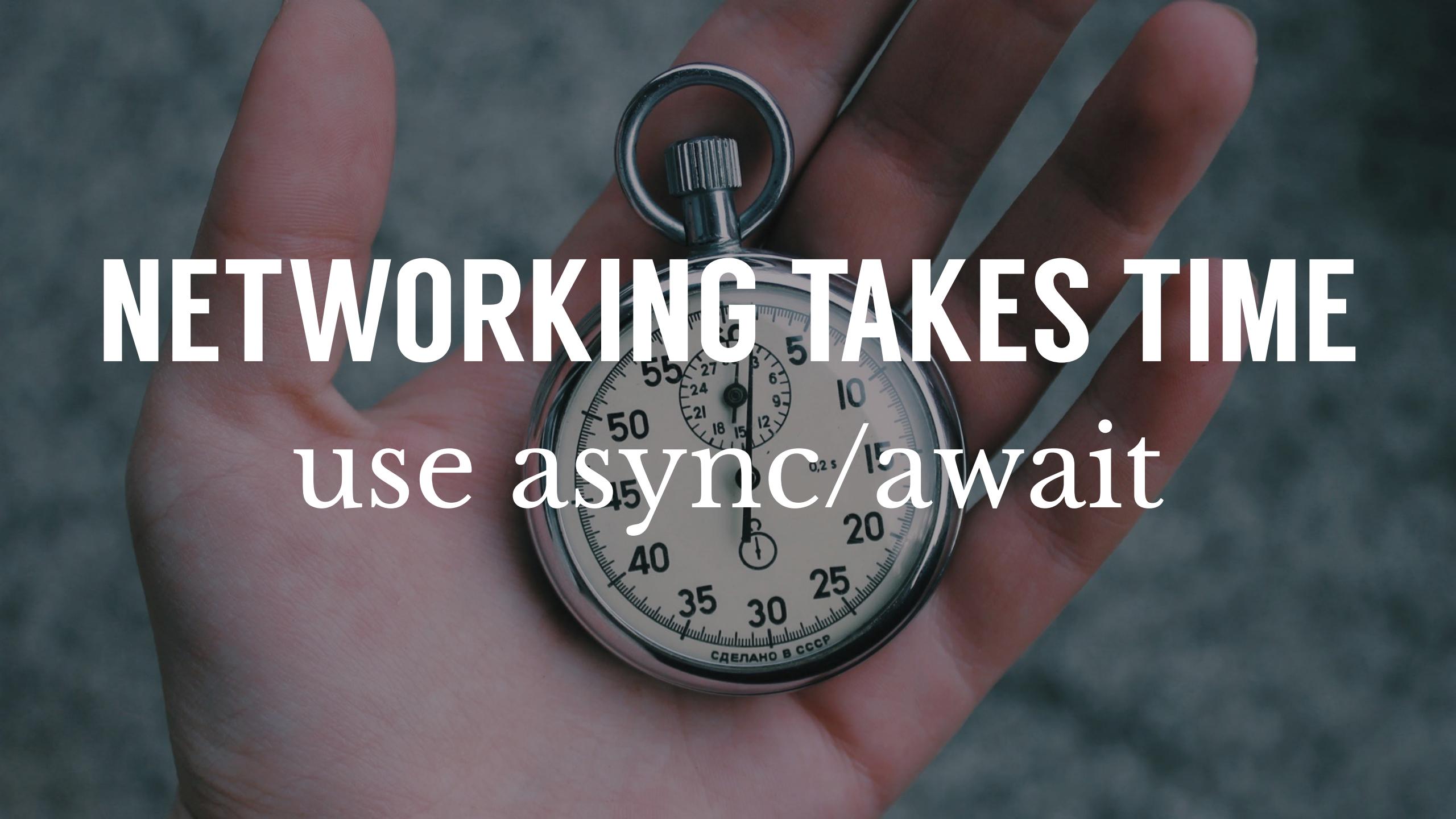
1. THE NETWORK IS RELIABLE.
2. LATENCY IS ZERO.
3. BANDWIDTH IS INFINITE.
4. THE NETWORK IS SECURE.
5. TOPOLOGY DOESN'T CHANGE.
6. THERE IS ONE ADMINISTRATOR.
7. TRANSPORT COST IS ZERO.
8. THE NETWORK IS HOMOGENEOUS.



ESPECIALLY ON MOBILE, THIS IS CHALLENGING



<http://blog.davidsingleton.org/mobiletcp>

A close-up photograph of a person's hand holding a vintage mechanical stopwatch. The stopwatch has a silver case and a black dial with three concentric rings of markings. The outermost ring goes from 20 to 55 seconds. The middle ring has markings at 10, 15, and 20, with '0,2 s' written above it. The innermost ring has markings at 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 24, 21, 18, 15, 12, 9, 6, 3, and 2. The brand name 'СДЕЛАНО В СССР' (Made in the USSR) is visible at the bottom of the dial. The hand holding the stopwatch is positioned diagonally across the frame.

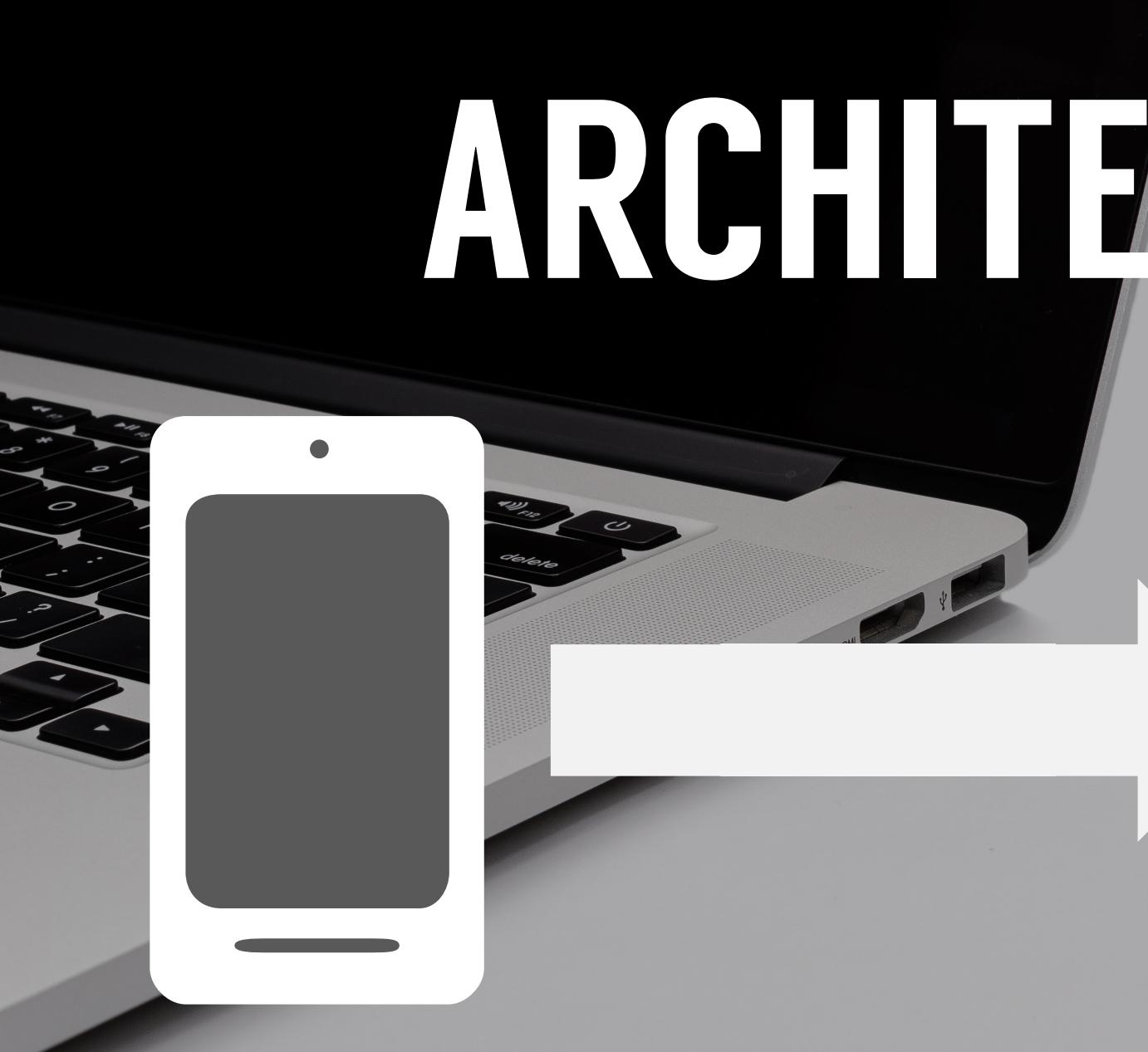
NETWORKING TAKES TIME
use `async/await`

SAMPLE REPO



[roycornelissen/ConquerTheNetwork](https://github.com/roycornelissen/ConquerTheNetwork)

ARCHITECTURE



OUR GOALS

- 1.Do less coding
- 2.Speed!
- 3.Work offline
- 4.Deal with errors



TIP KNOW YOUR TOOLS

CHARLES / FIDDLER

or any network monitor

NETWORK LINK CONDITIONER

<https://developer.apple.com/download/more/?q=Additional%20Tools>

ANDROID EMULATOR



GOAL #1
be a lazy dev

(do less coding)



be a lazy dev

> Install-Package Refit

(thanks Paul Betts!)

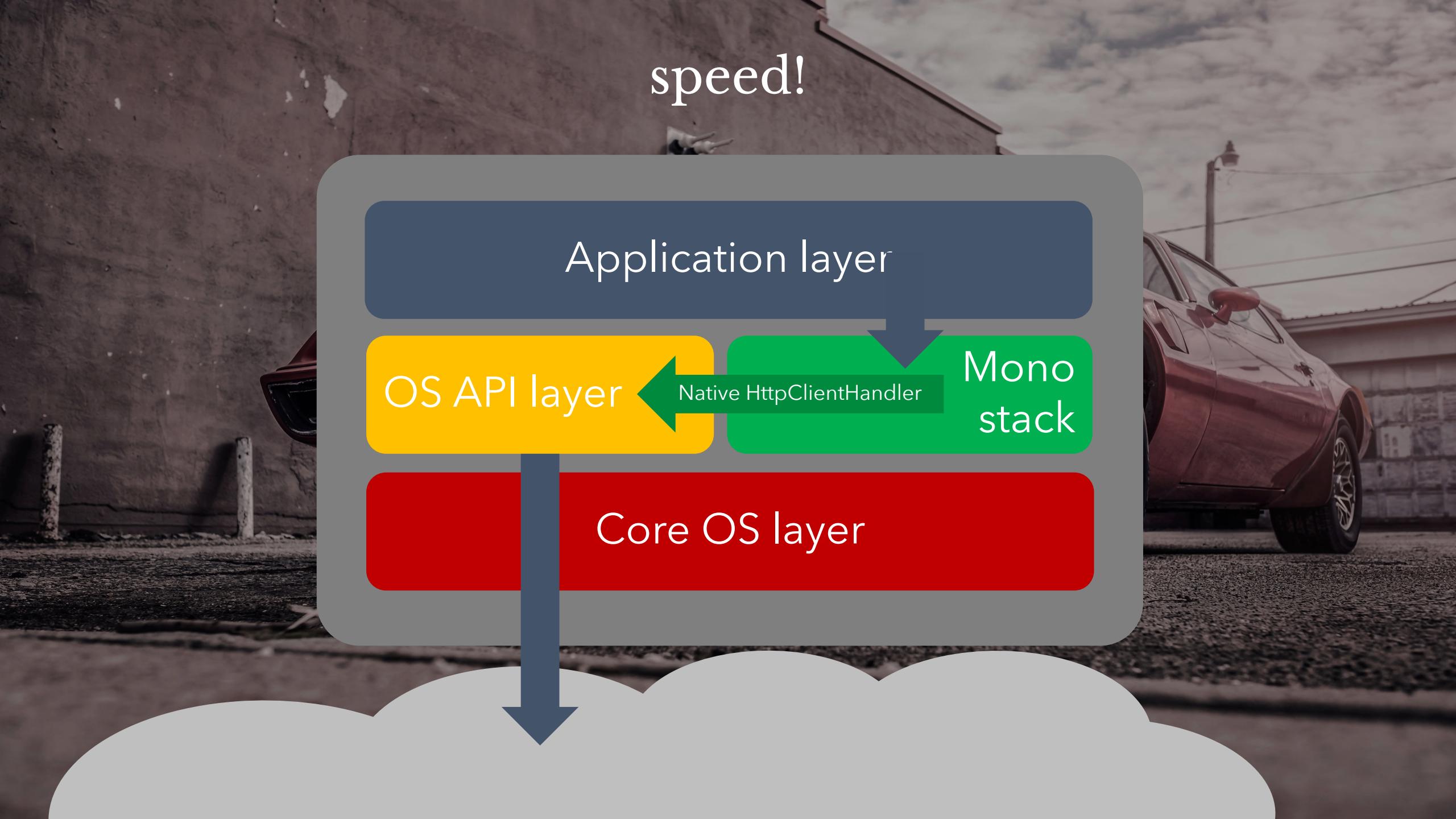
A red sports car, possibly a Ford Mustang, is parked on a gravel surface in front of a weathered, brown brick building. The car is angled towards the left. The background shows a cloudy sky and some utility poles.

GOAL #2
speed!

A red sports car, possibly a Ford Mustang, is parked on a gravel surface in front of a brown brick building. A two-prong electrical outlet is mounted on the side of the building. The sky is overcast. The car's front grille has a small orange decal.

speed!

STEP 1
use native stack



speed!

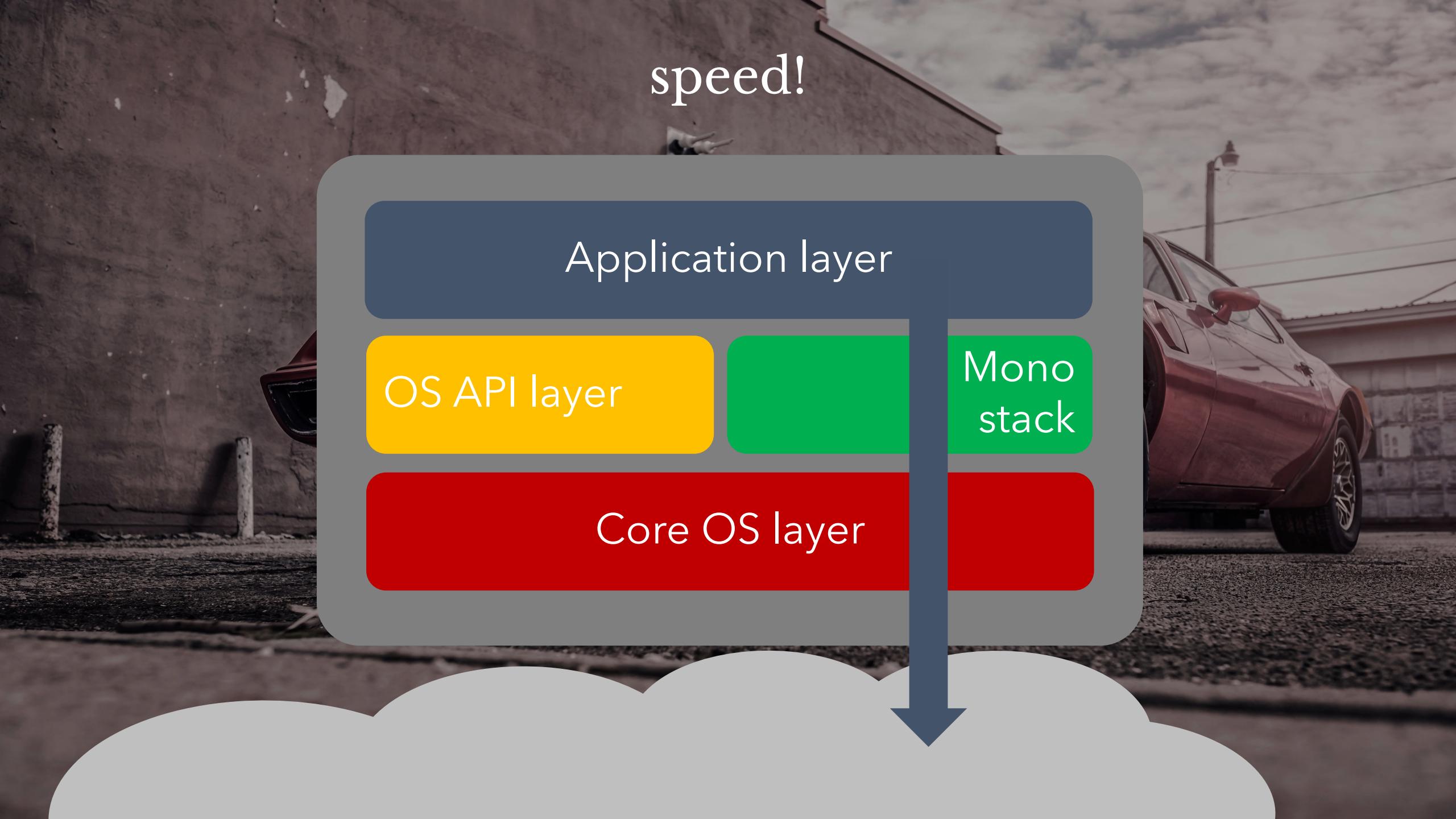
Application layer

OS API layer

Mono
stack

Core OS layer

Native HttpClientHandler



speed!

Application layer

OS API layer

Mono
stack

Core OS layer

A red sports car, possibly a Ferrari, is parked on a street in front of a concrete building. A power outlet is visible on the wall above the car. The sky is cloudy.

speed!

STEP 2
cache data locally

A red Pontiac Firebird Trans Am is parked in front of a weathered, light-colored concrete wall. A standard two-prong electrical outlet is mounted on the wall above the car's front bumper. The car has its headlights on and is positioned at a three-quarter front view. The background shows a clear sky and some utility poles with wires.

speed!

> Install-Package Akavache

(thanks again Paul Betts!)

A vintage-style motorhome with a light-colored exterior, red and yellow stripes, and multiple windows is parked in a field of tall, dry grass. The motorhome is angled towards the right. In front of it, a small outdoor table and chairs are set up. The background features a vast landscape with mountains and a sky filled with large, billowing clouds, some of which are illuminated with a fiery orange glow.

GOAL #3
work offline

A vintage motorhome with a yellow and white exterior and red stripes is parked in a field of tall grass. The sky above is filled with large, billowing clouds in shades of red, orange, and grey, suggesting either a sunrise or sunset. The overall atmosphere is nostalgic and adventurous.

work offline

> `Install-Package
Xam.Plugin.Connectivity`

(thanks James Montemagno!)

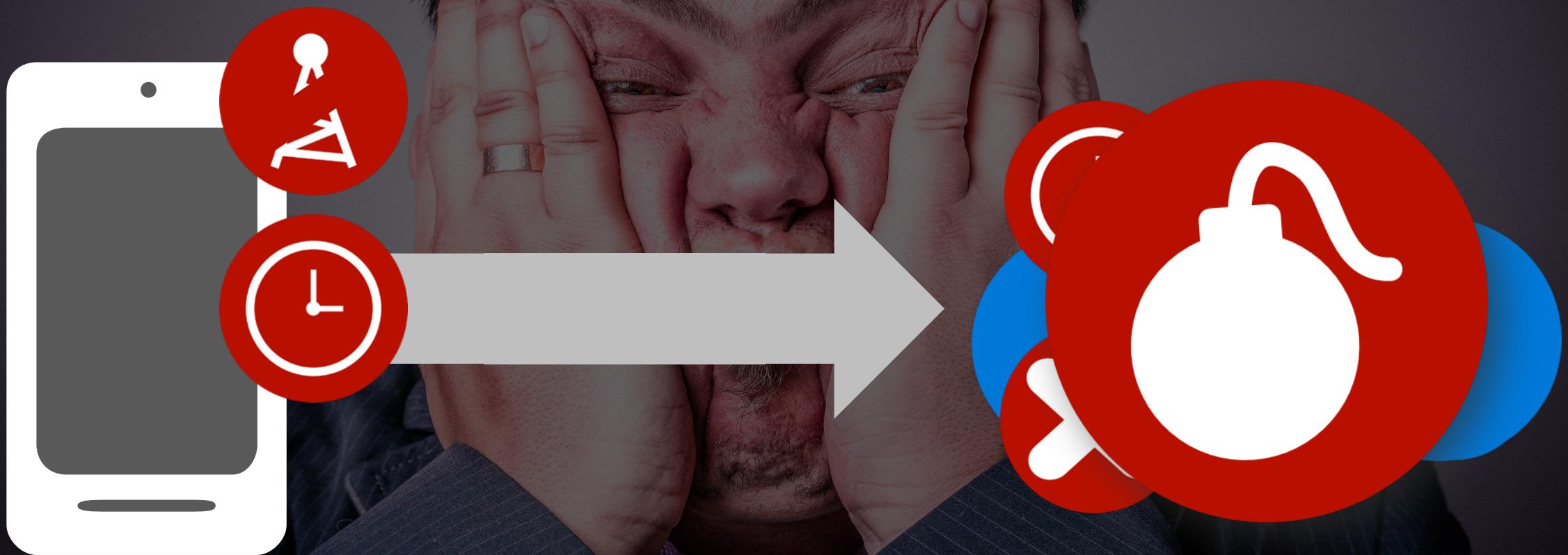
A close-up photograph of a man with light brown hair, wearing a dark blue pinstripe suit jacket over a purple and white checkered shirt. He is holding his hands up to his face, with his fingers covering his eyes and nose, appearing to be in distress or despair. The background is a solid, muted grey.

GOAL #4

deal with errors

deal with errors

WHAT COULD GO WRONG?



deal with errors

WHAT DO YOU DO?

RETRY

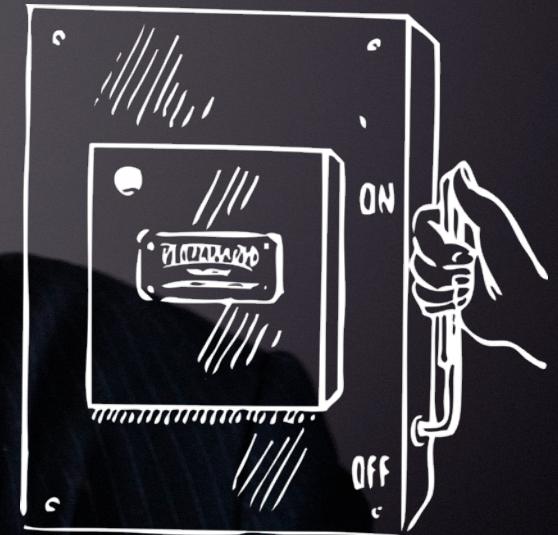
How often?

At what interval?

What if the server is already busy?

CIRCUIT BREAKER

Fail fast in case of downstream errors



A close-up photograph of a man with dark hair and a beard. He is wearing a dark blue pinstripe suit jacket over a white shirt. His hands are covering his eyes, with his fingers resting against his temples. He appears to be in a state of distress or exhaustion. The background is a plain, light-colored wall.

> Install-Package Polly

(thanks Michael Wolfenden & the Polly Project!)

A close-up photograph of a man's face, appearing distressed or worried. He has dark hair and is wearing a dark suit jacket over a purple shirt. His hands are covering his eyes and forehead. The background is dark.

deal with errors

DON'T LOSE USER DATA

1. RETRY
2. SAVE DATA LOCALLY
3. RETRY LATER

this also applies to the server!

YAY!

- ✓ Less coding: Refit
- ✓ Speed:
 - Native network stack
 - Local caching: Akavache
- ✓ Work offline: Connectivity Plugin
- ✓ Deal with errors: Polly





LAB
explore
ConquerTheNetwork
app

RECOMMENDED READING

Improving HTTP Performance in Xamarin Applications

Jonathan Peppers

<http://jonathanpeppers.com/Blog/improving-http-performance-in-xamarin-applications>

Disconnected Mobile Device Seminar

Frank Krueger

<https://blog.xamarin.com/the-disconnected-mobile-device-seminar>

Resilient Network Services with Mobile Xamarin Apps

Rob Gibbens

<http://arteksoftware.com/resilient-network-services-with-xamarin>

Eight Fallacies of Distributed Computing

Gareth Wilson

<https://blog.fogcreek.com/eight-fallacies-of-distributed-computing-tech-talk>