WORKSHOP

Building Cloud Native applications with .NET 5 and AKS

Johnny Hooyberghs

Who am I

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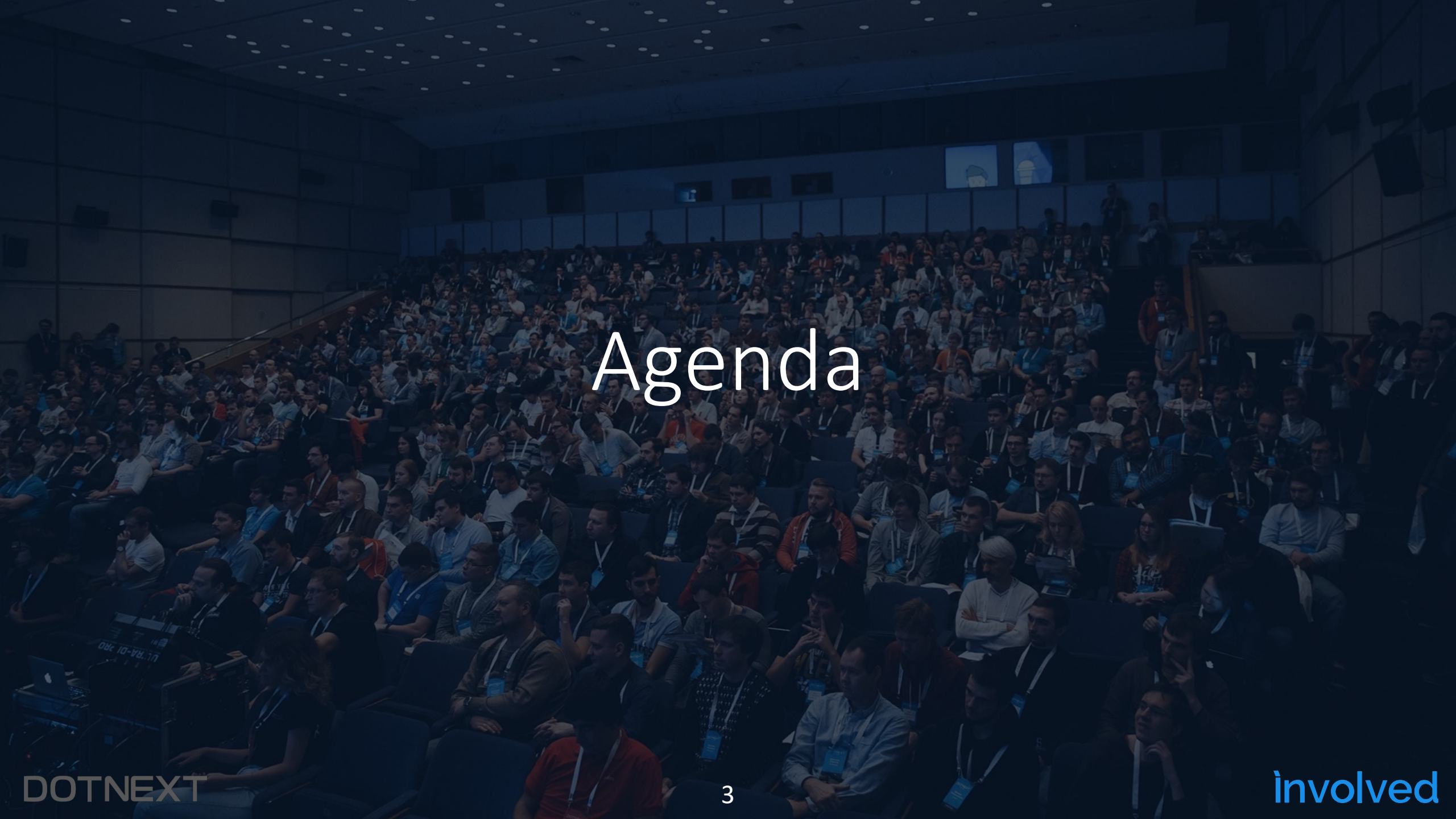
involved

www.involved-it.be


Agenda

Building Cloud Native applications…

- ***Part 1*** *(75 minutes, day 1)*
  - *Cloud native in .NET 5*
  - *ASP.NET WebApi, Worker Services, gRPC*
  - *Project Tye*
  - *Configuration & Logging*
  - *Cloud services (Azure KeyVault, ...)*
- ***Part 2*** *(75 minutes, day 1)*
  - *Containers and Docker*
  - *Project Tye and Docker*
  - *Local Docker development*
  - *Azure Container Registry (ACR)*
- ***Part 3*** *(75 minutes, day 2)*
  - *Azure Kubernetes Service (AKS)*
  - *Kubernetes, Pods, Deployments, Replicas, Services,*


Cloud Native

Cloud Native Technologies

Cloud native is **microservices** hosted in **containers** and/or **serverless** apps, that can run in **multi-cloud** environments and are managed by **DevOps** processes


.NET 5

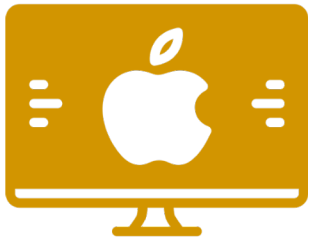
.NET 5

- Platform independent
- High performance
- Very lightweight
- Future-proof
- Cloud Native compatible
- The way to go for new apps

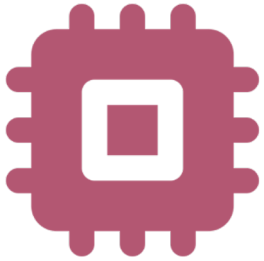
.NET 5 is platform independent

Windows

Linux

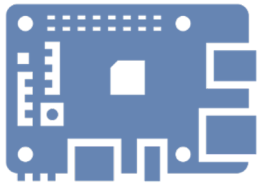


Mac



x86, x64, arm64

Cloud



IoT

Docker

.NET 5 SDK is not bound by tools

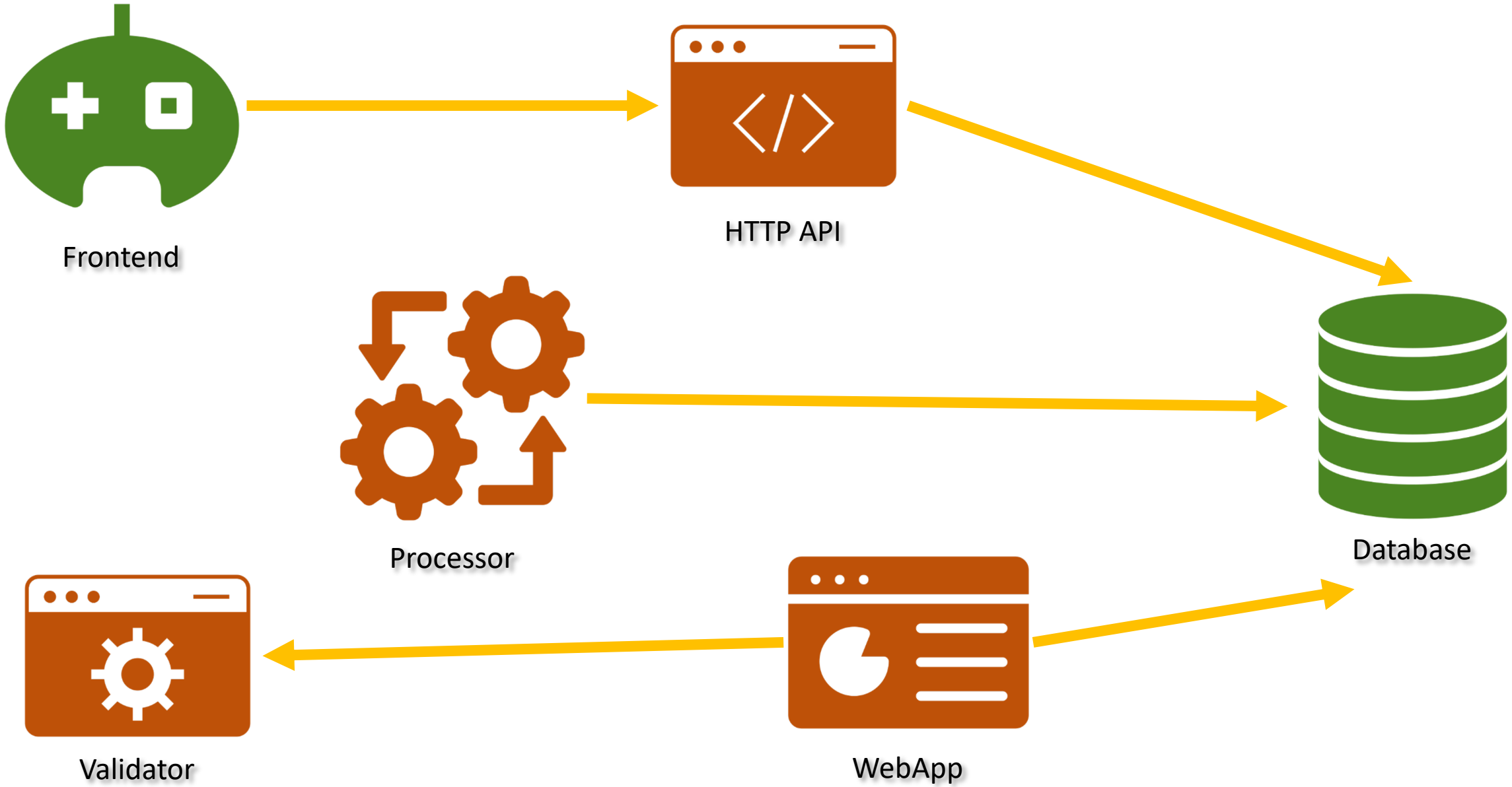
```
Welcome to .NET 5 SDK CLI…
> dotnet new
> dotnet restore
> dotnet build
> dotnet publish
> dotnet test
> dotnet run
```


My personal examples

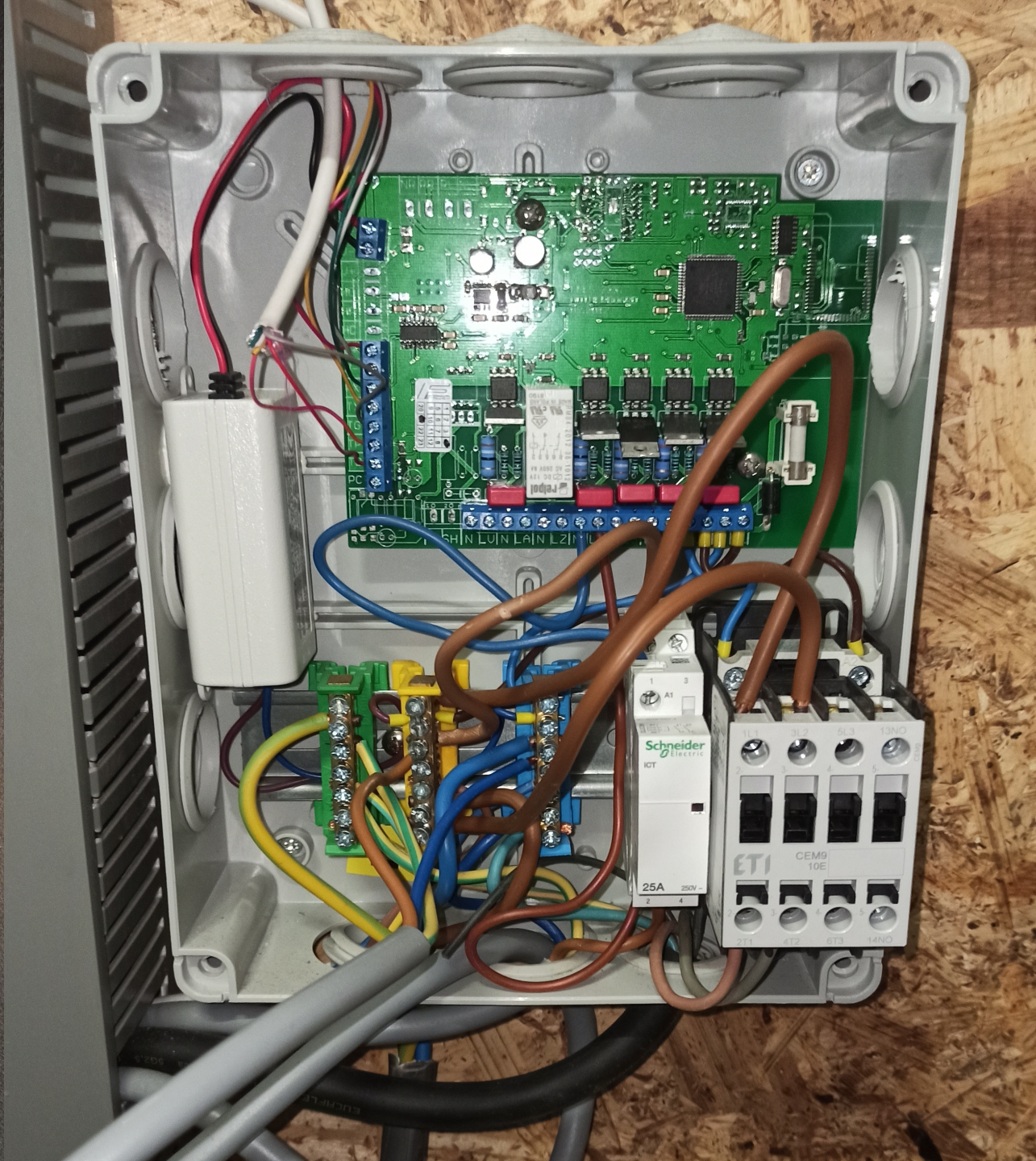

geert (geert)
killer (djohnnie)
geert (geert)

CSharpWars Robot Scripting

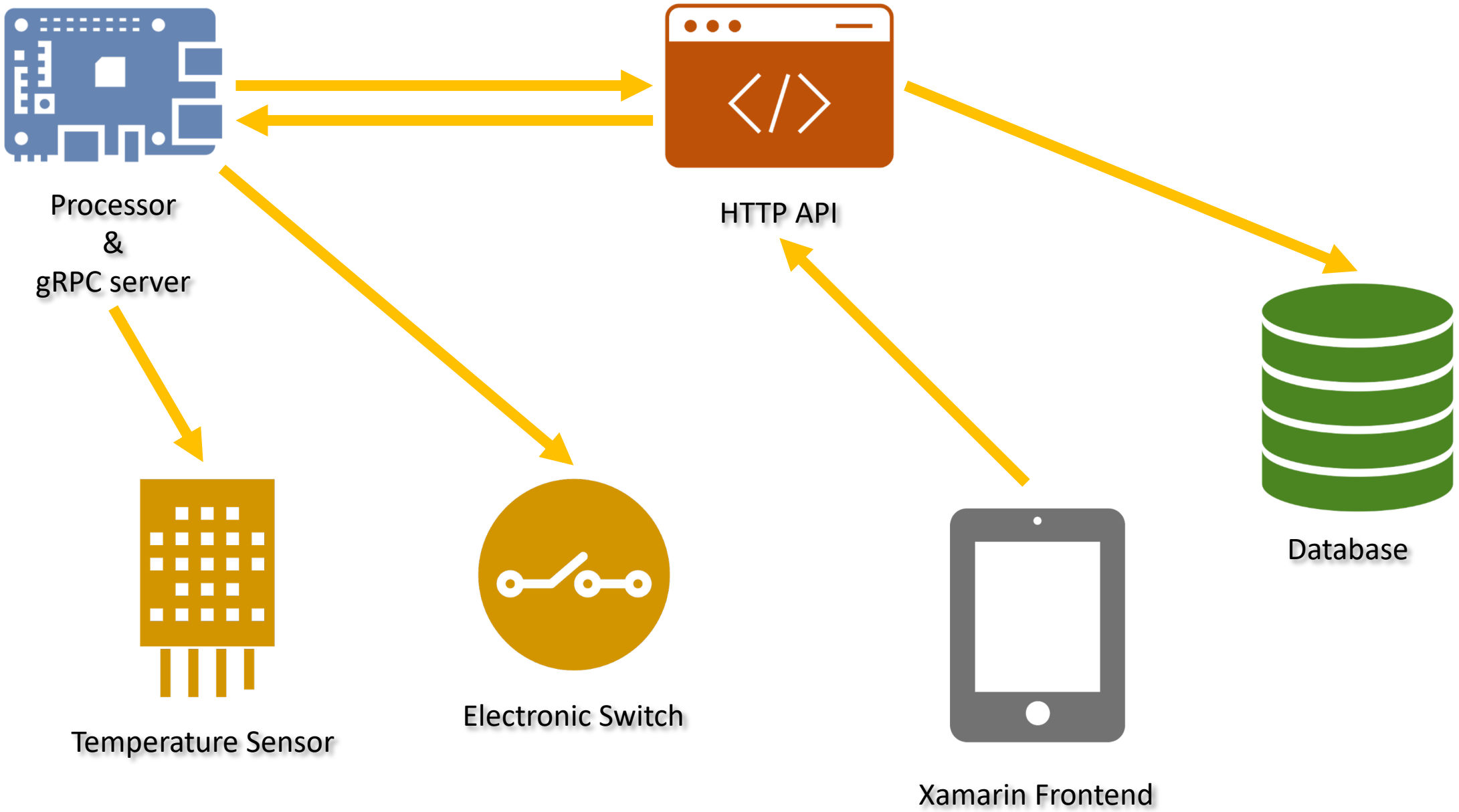
```
var step = LoadFromMemory<Int32>("STEP");
if( step % 3 == 0 )
{
   TurnLeft();
}
else
{
   WalkForward();
}
step++;
StoreInMemory<Int32>("STEP", step);
```


Frontend
HTTP API
Processor
Database
Validator
WebApp


FES
MENU
ON
OK
OFF
STOP


Schneider
Electric
ICT
25A
CEM9
10E
ETI


zaterdag 2 mei 2020
17:02
sauna
106 °C
52:45
Lenovo


Processor
&
gRPC server
HTTP API
Database
Temperature Sensor
Electronic Switch
Xamarin Frontend


Containers & Docker

What are containers?

- OS-level virtualization
- Software packages
- Includes dependencies, libraries and configuration
- Isolated from one another
- Communication via well defined channels
- More lightweight than Virtual Machines
  - Single operating system kernel, multiple containers
- Resource limiting

What about application state?

- Containers should not hold state!
- Use environment variables or volume mapping for configuration
- Use external caching services like Redis
- Use external storage services like databases


Kubernetes

Thank You

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github.com/Djohnnie/BuildCloudNativeApplicationsWithDotNet5-DotNextPiter-2021