

# Microservices with Service Fabric

Easy... or is it?

# Goals

Stateless and **Stateful** Services

**Partitioning** of Business Data

**Message Patterns** and Partitioning

# Premise

A Tale of

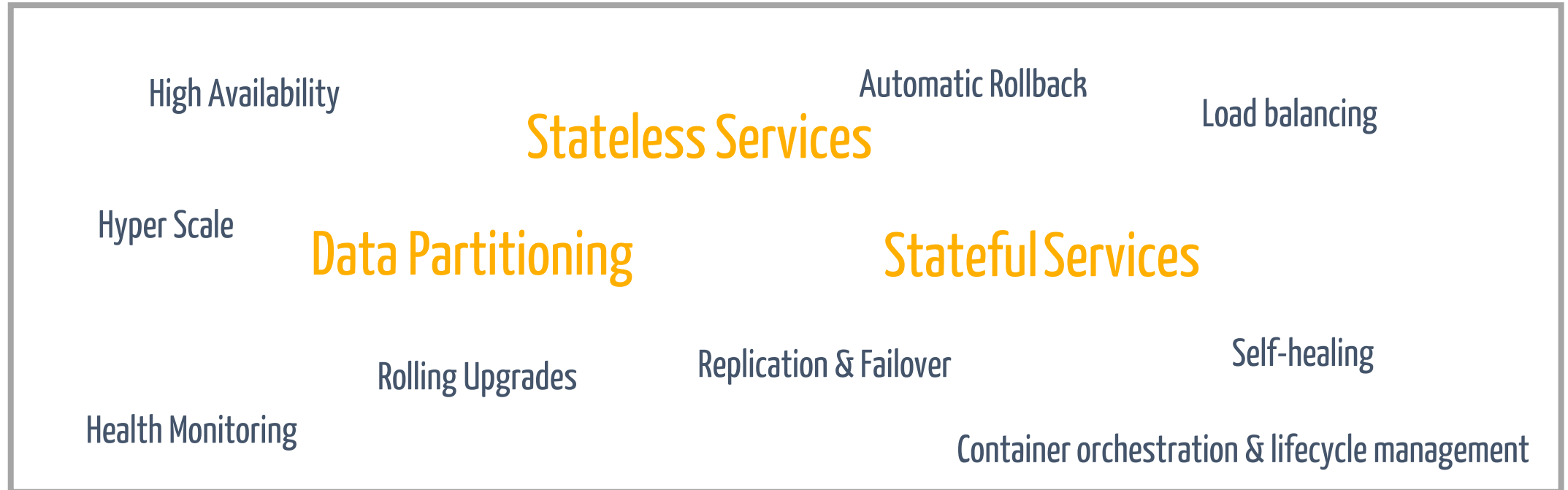
chocolate

# Horrible death of easter bunnies



# Karl's Sales Pitch

# Our Chocolate Microservices



On-premises or in the cloud

<https://channel9.msdn.com/Blogs/Azure/Azure-Service-Fabric>

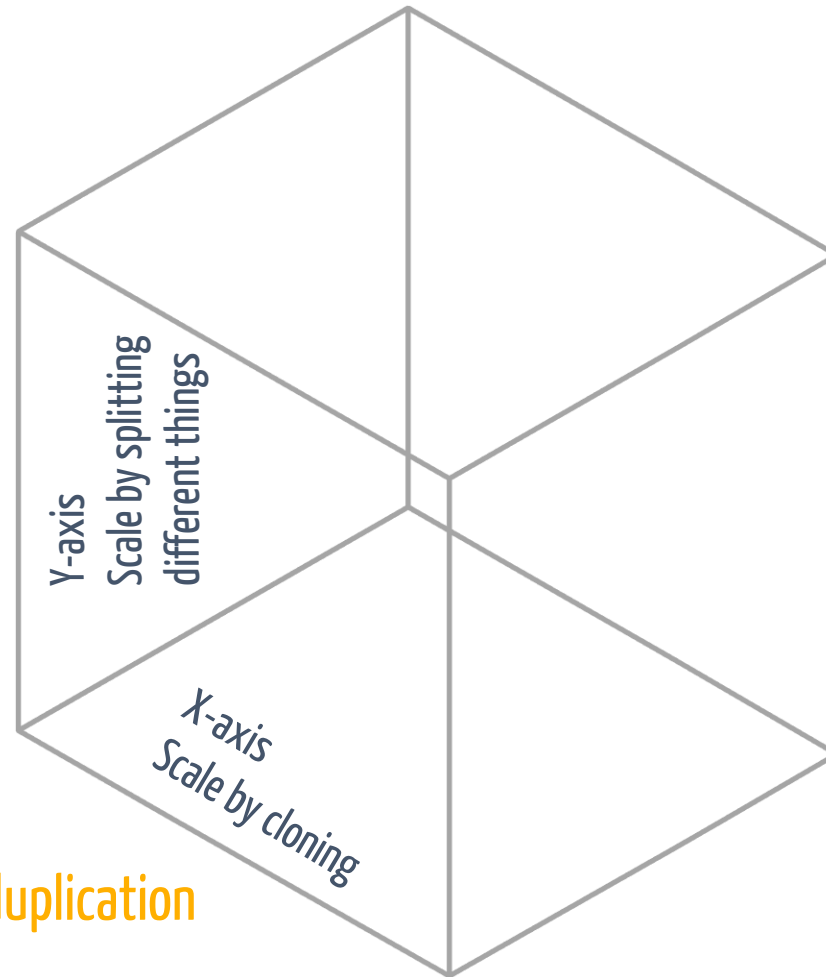
<https://docs.microsoft.com/en-us/azure/service-fabric/service-fabric-overview>

# Demo

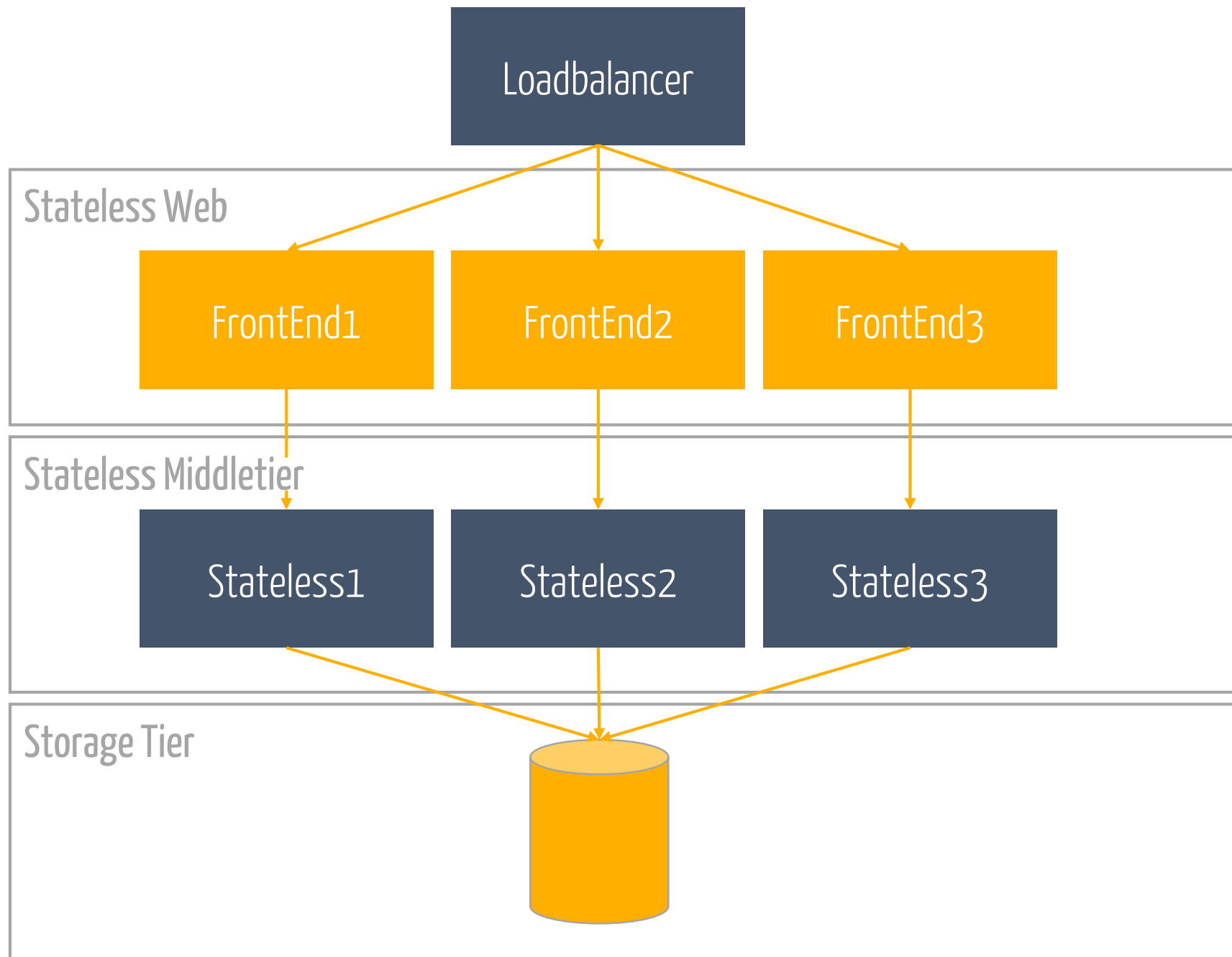


Let's scale  
chocolate

Functional decomposition



Horizontal duplication



and then

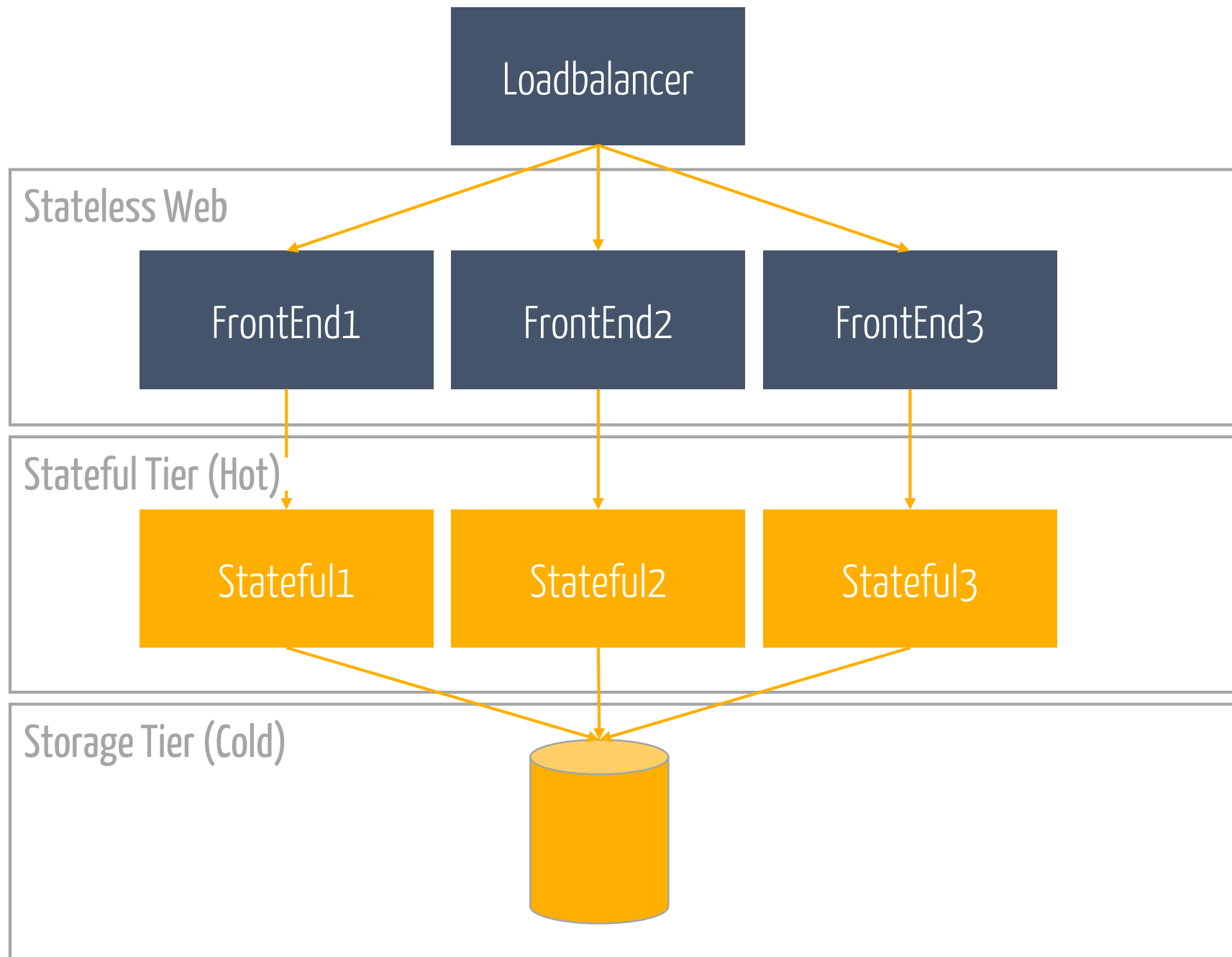
Mandy spoke up

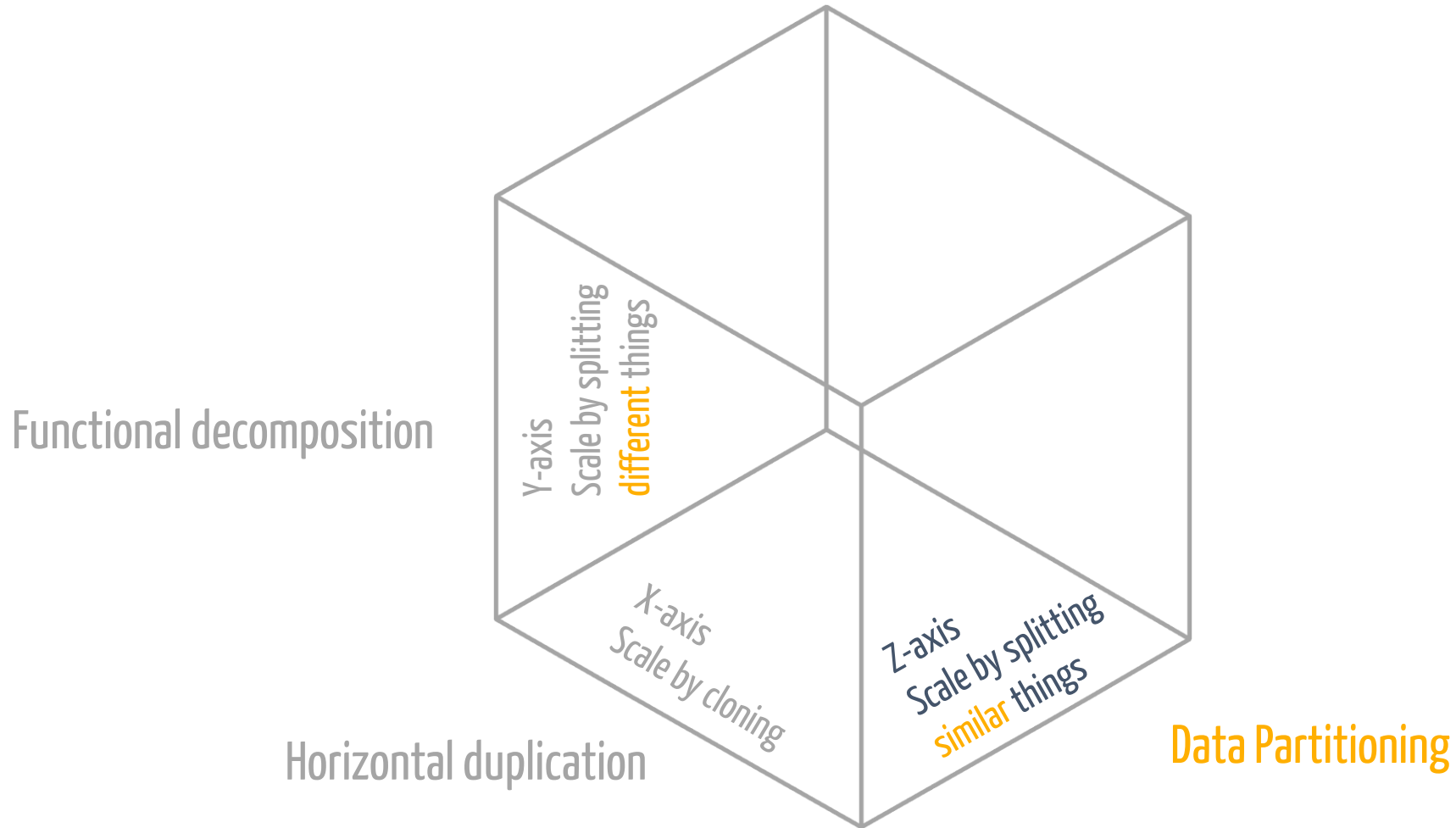
and then

Mandy spoke up

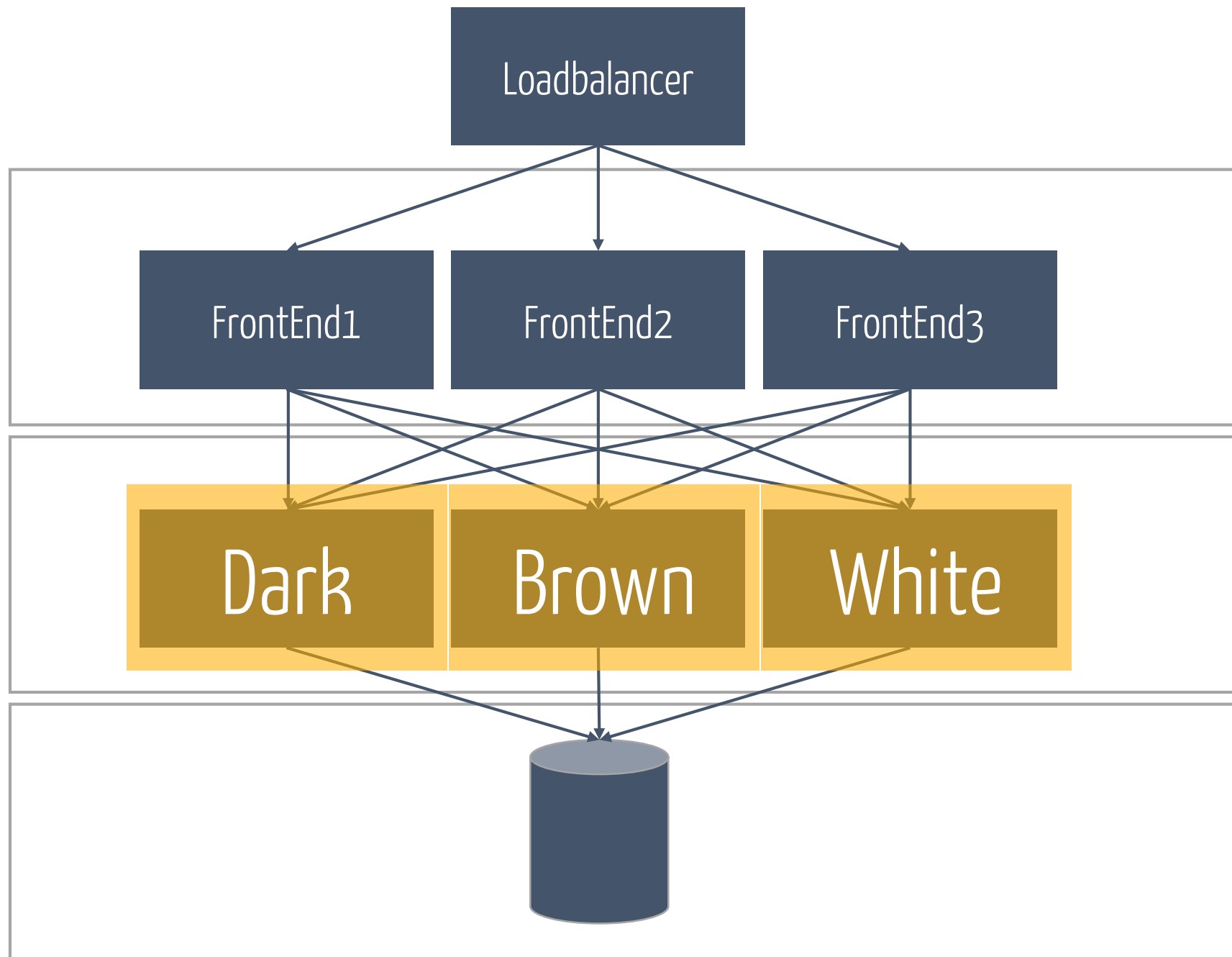
and then

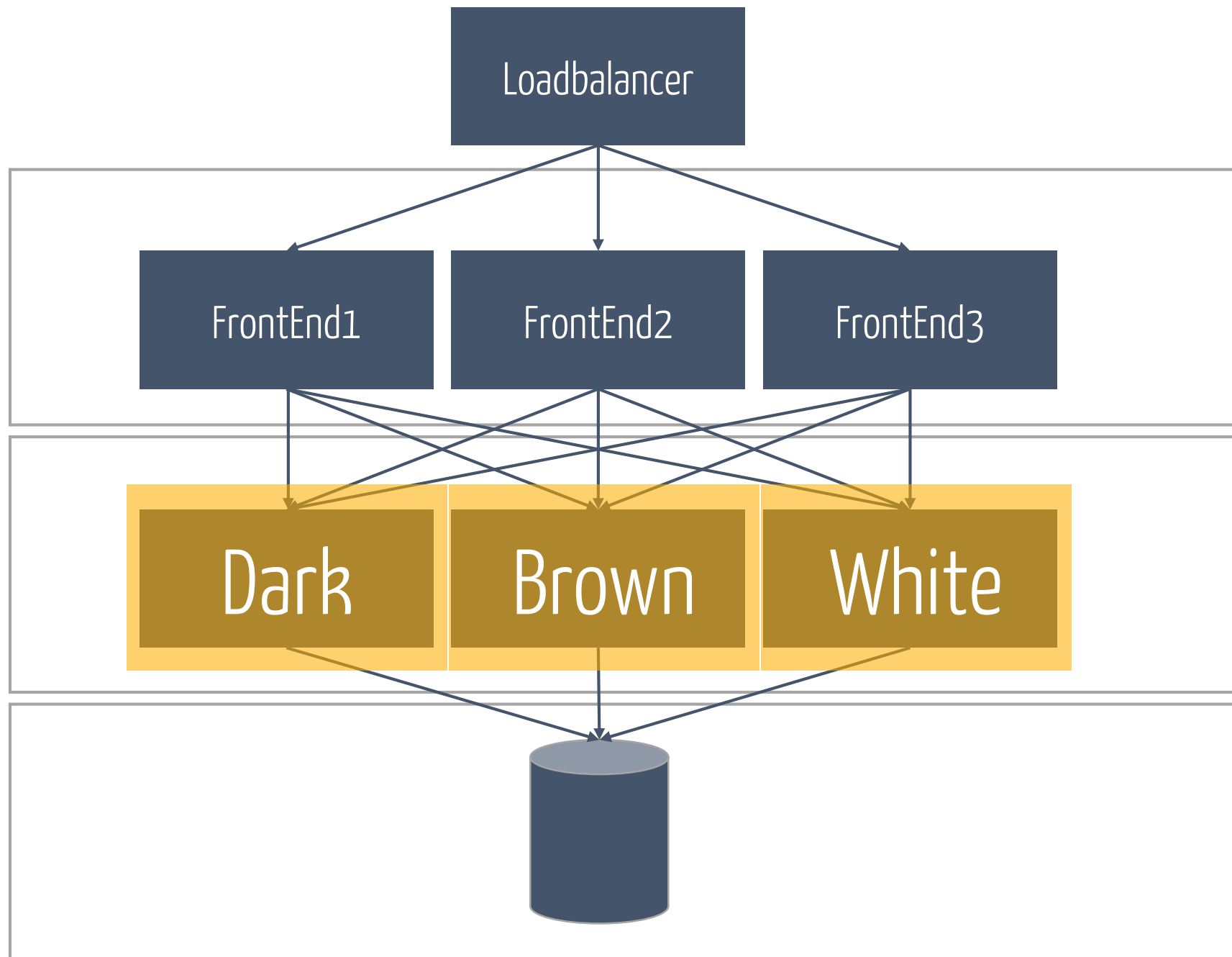
Mandy spoke up





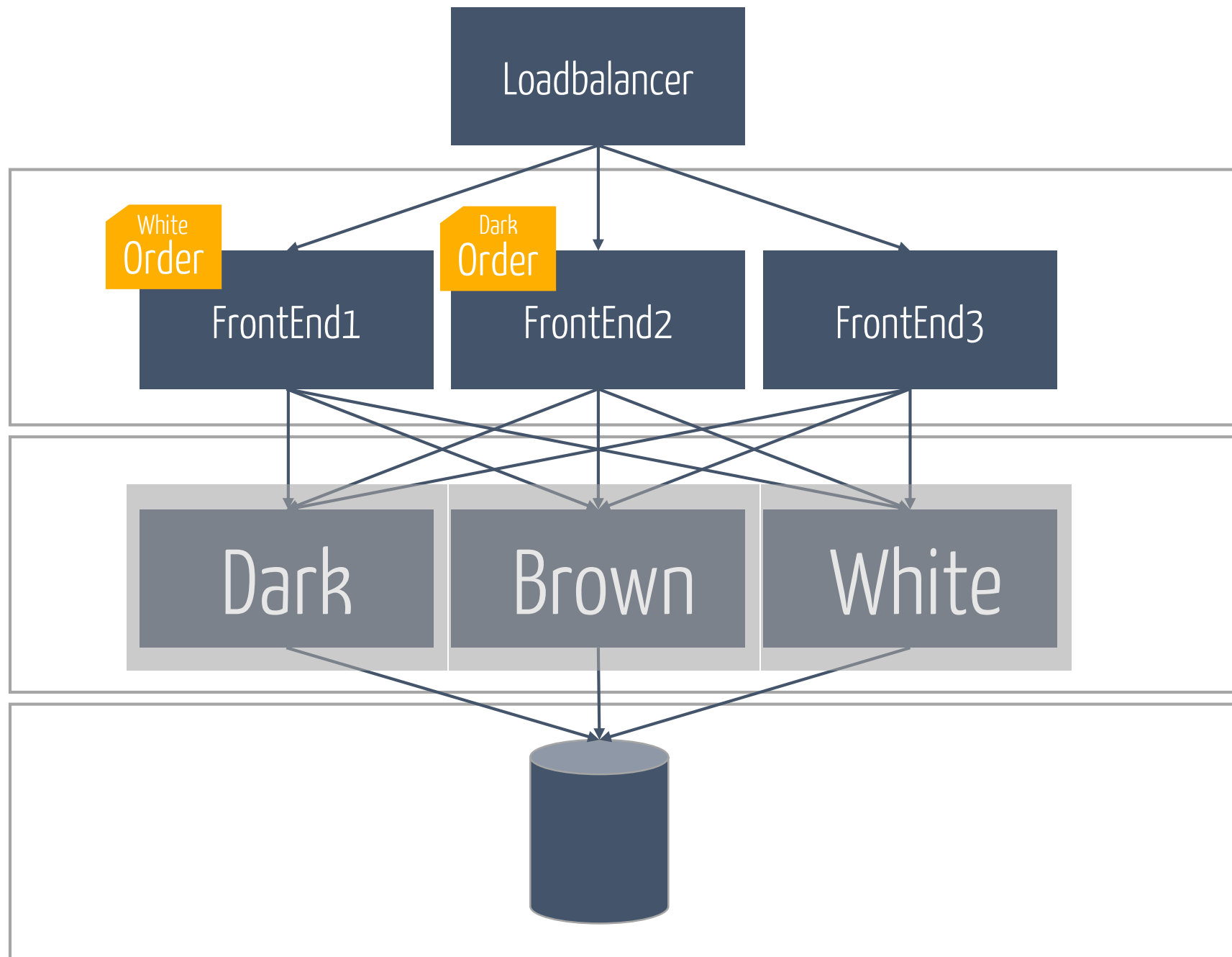






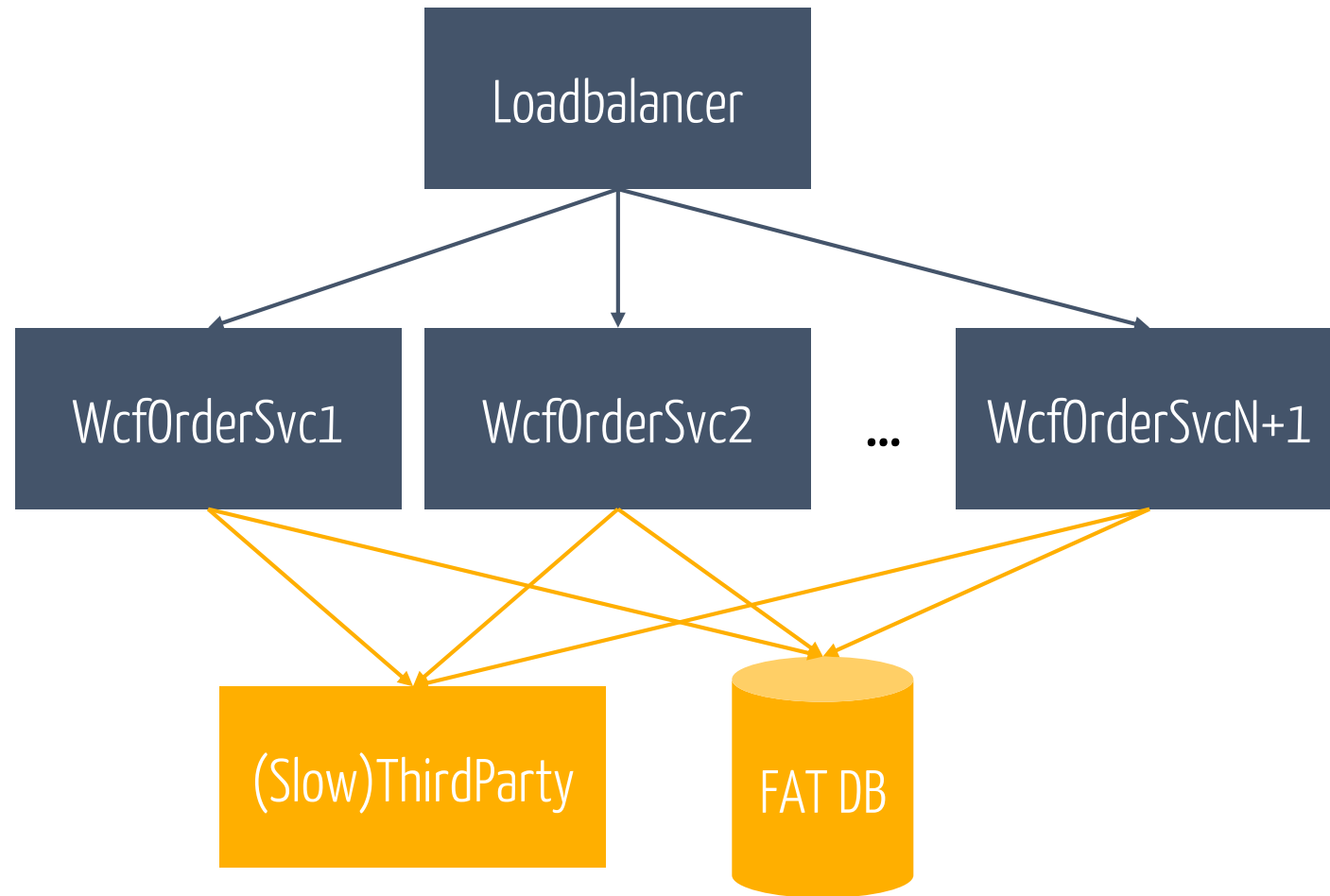
# However

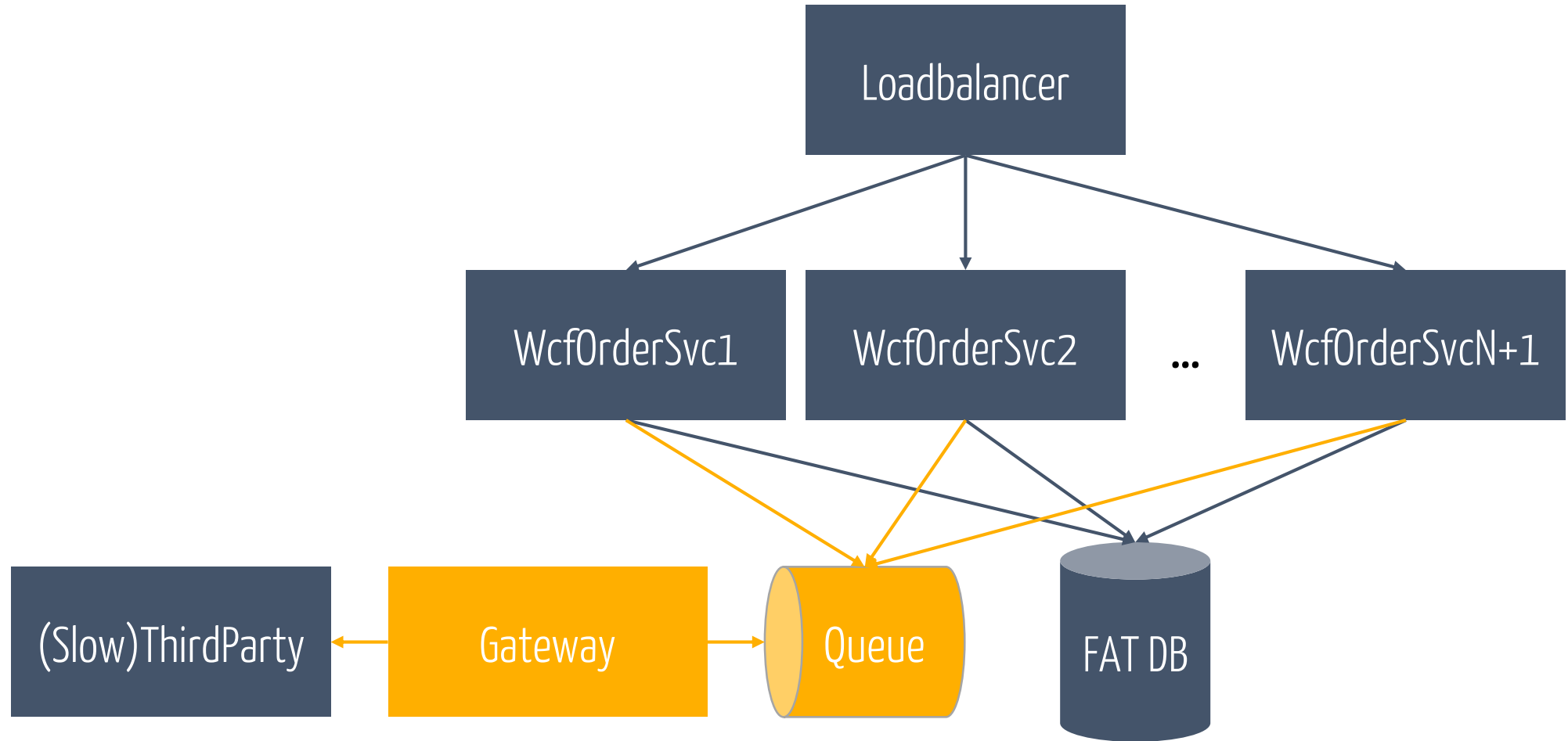
Joe couldn't understand it

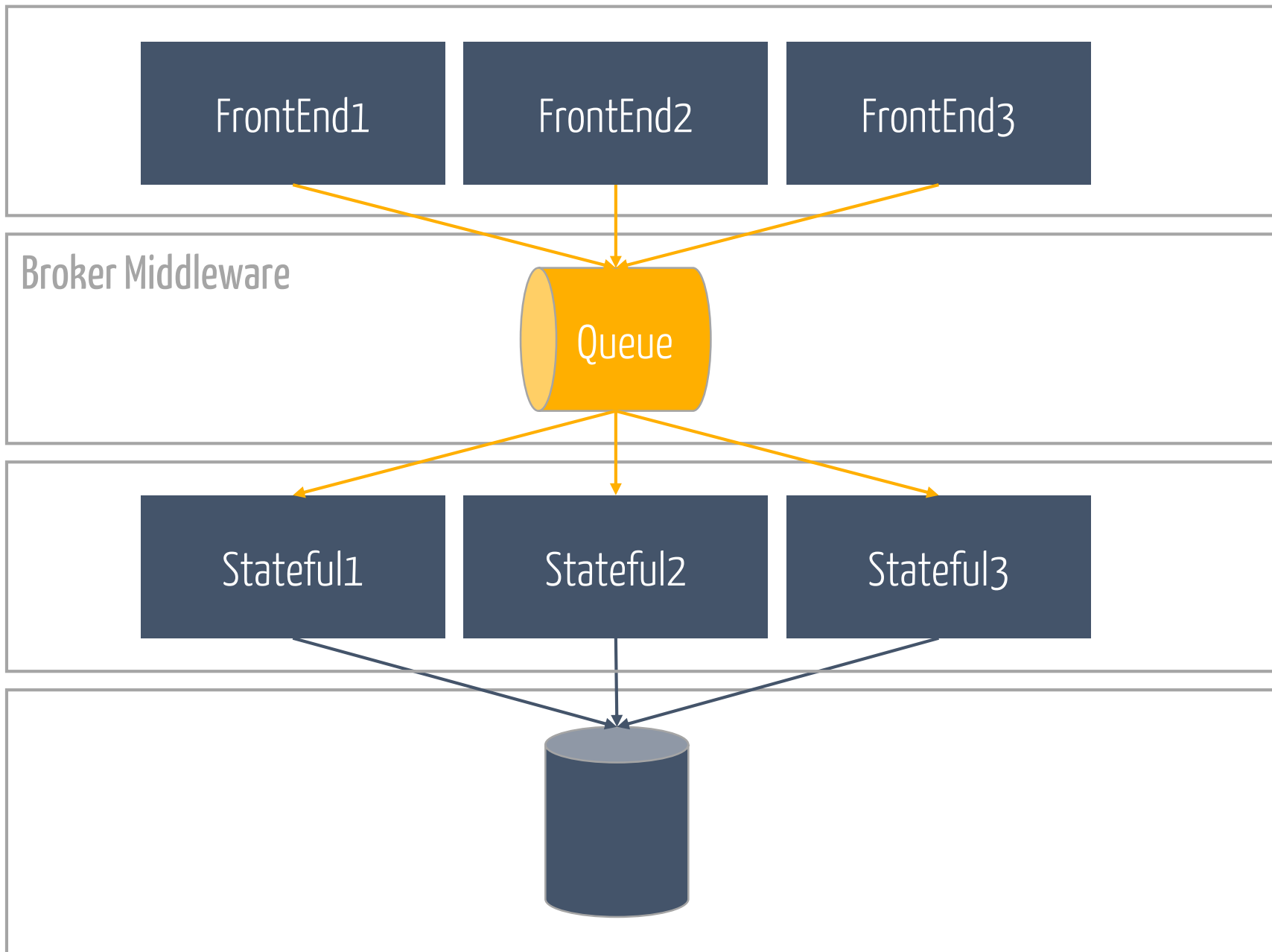


# And then

Sophia threw a grenade







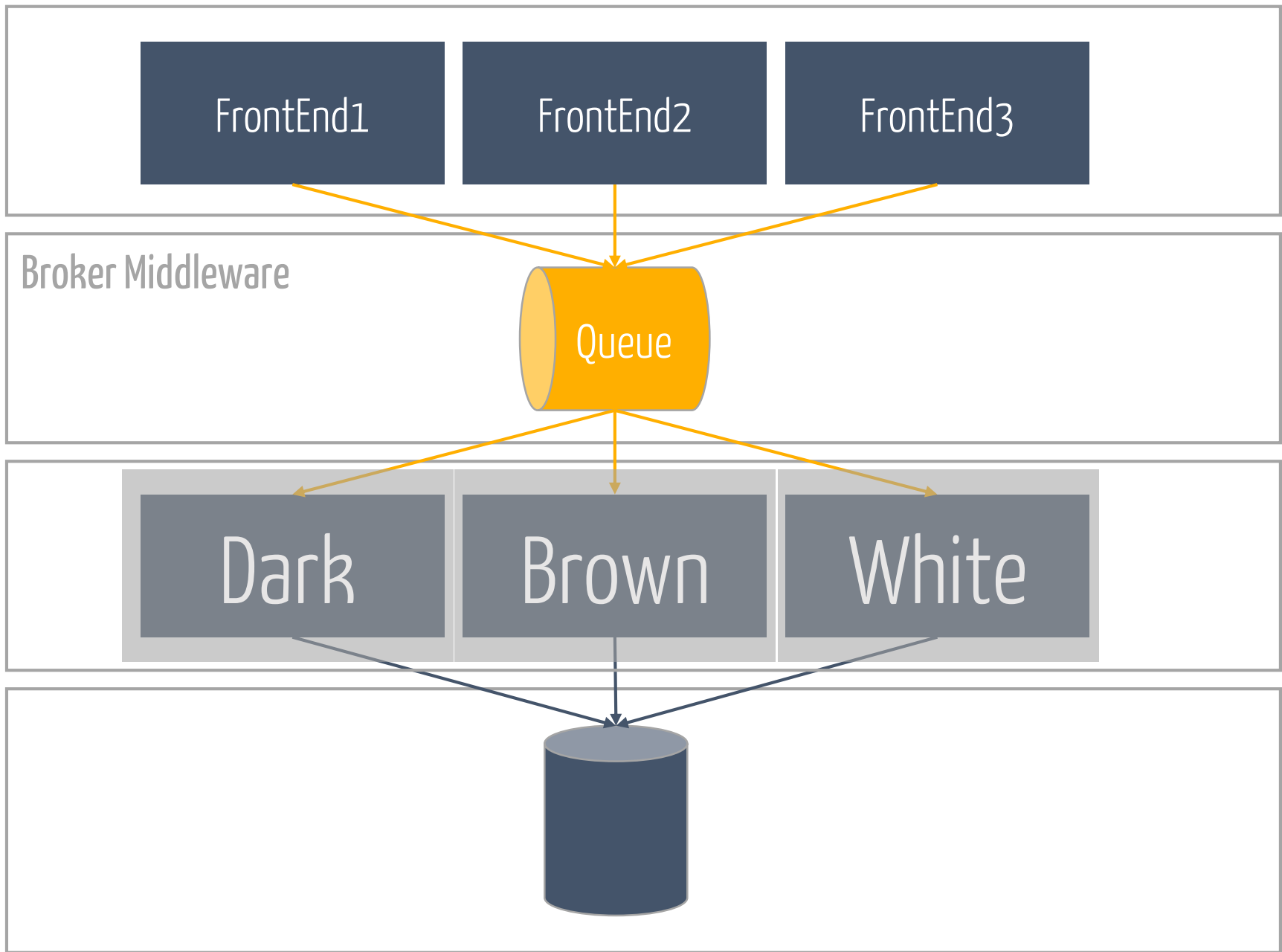


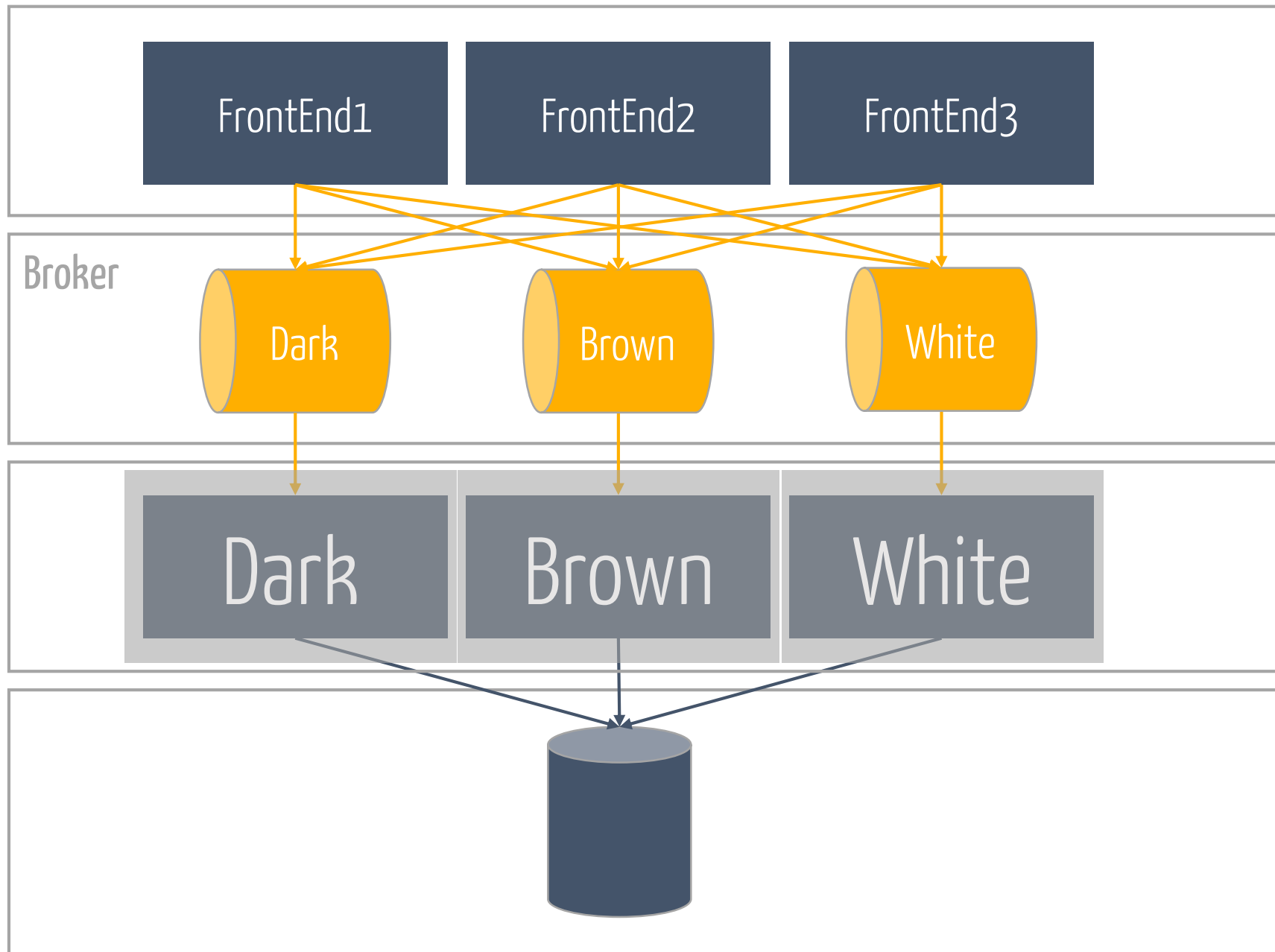
# Peter snatches

the whiteboard markers

and furiously

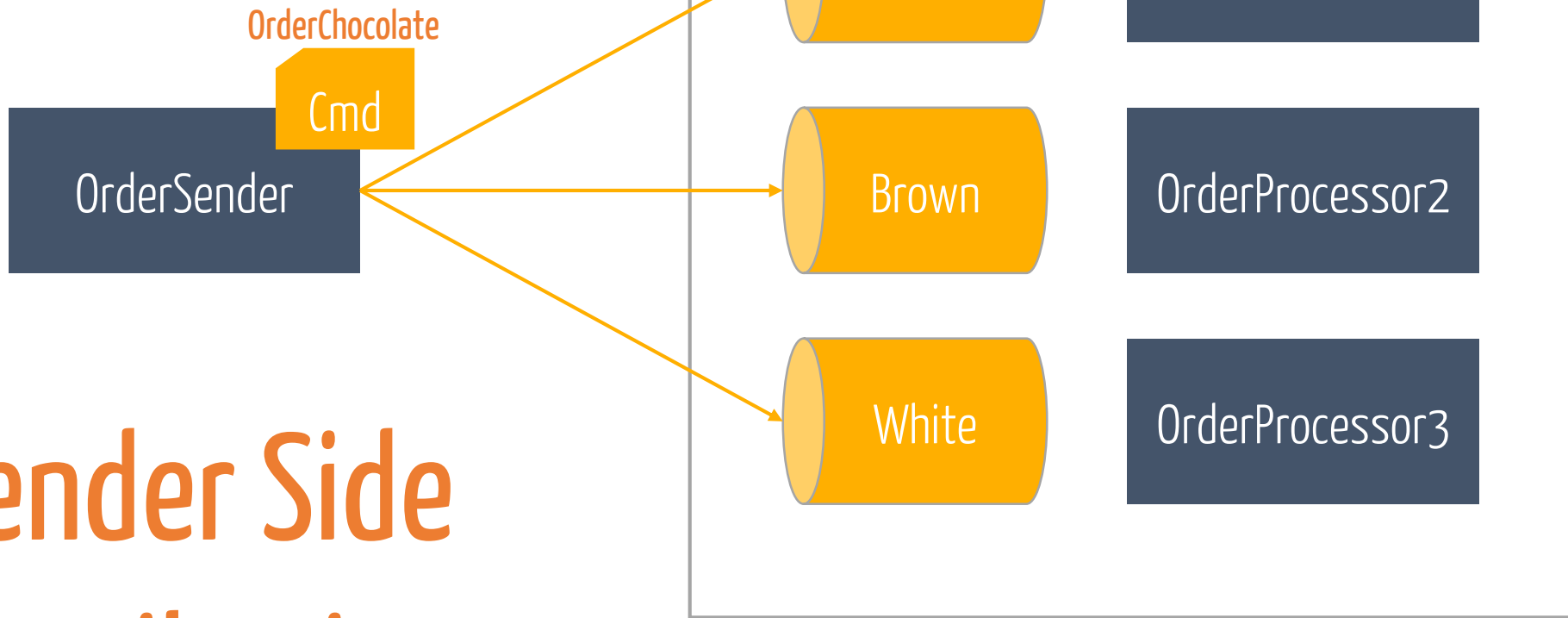
screams





# Commands

Same bounded context



Sender Side  
Distribution

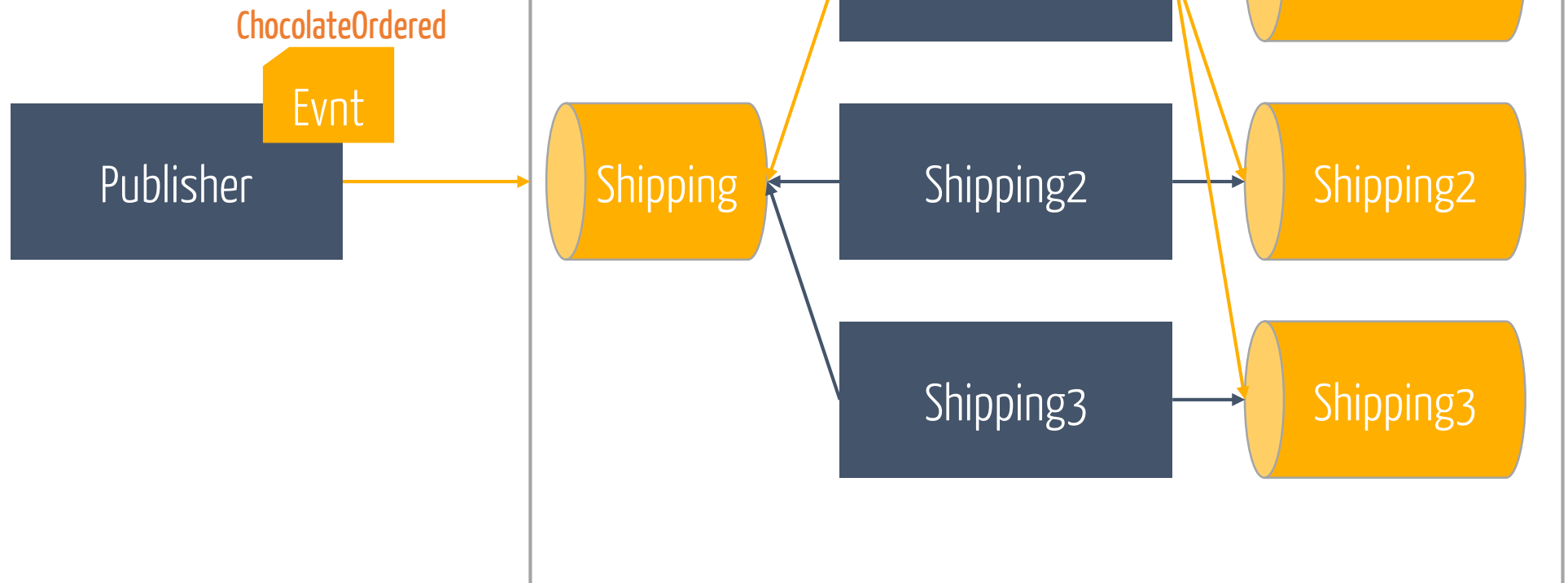
# The PhD dude

acts like a smart ass

# Events



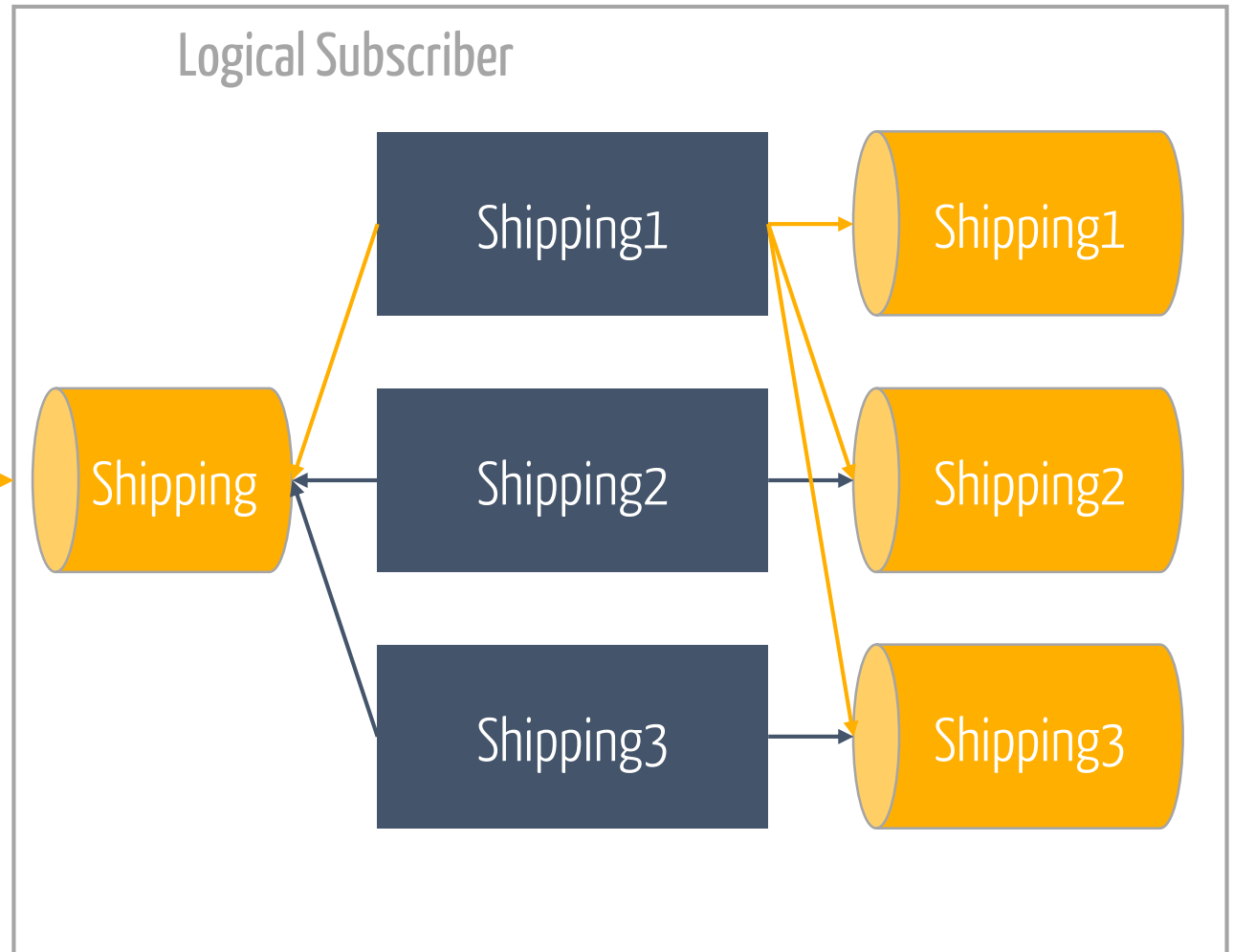
Different bounded context



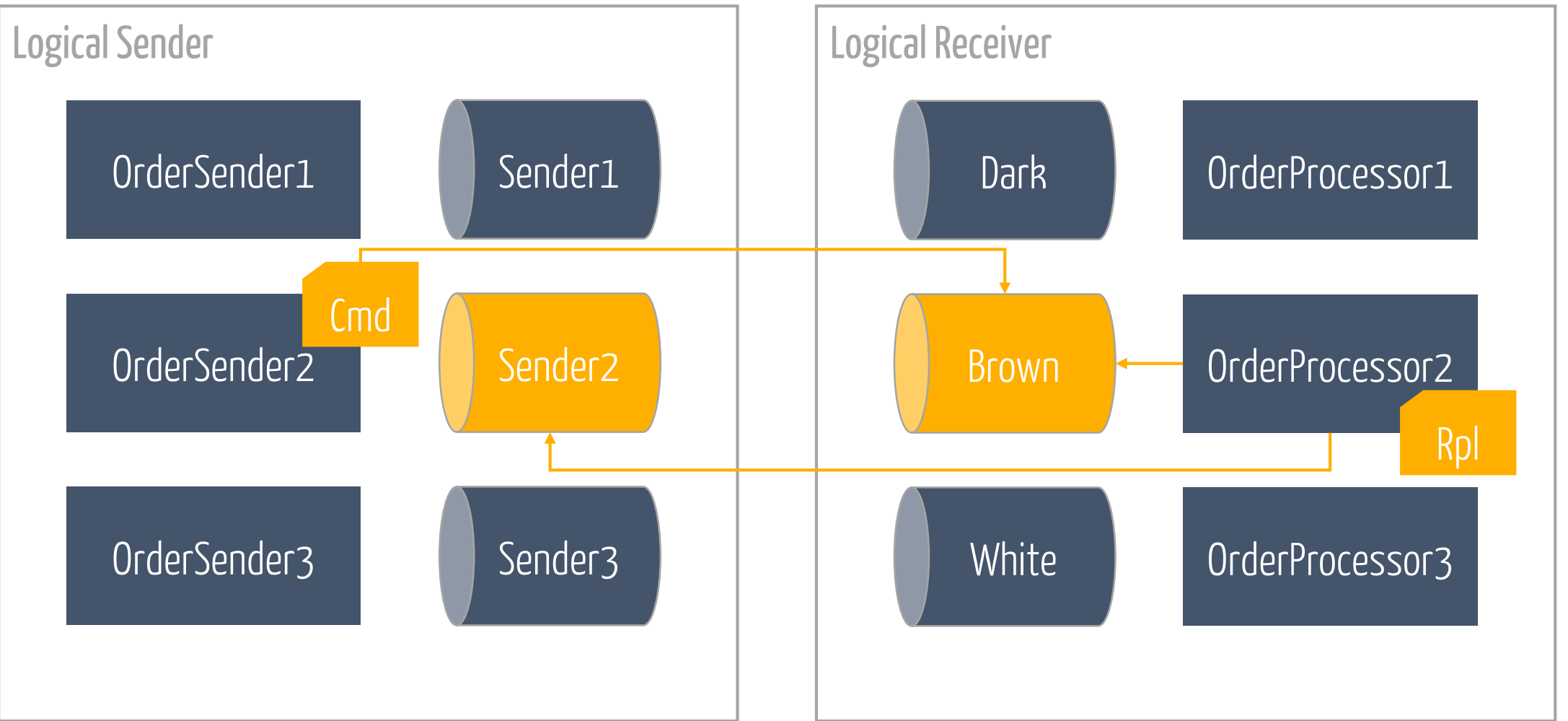
Different bounded context



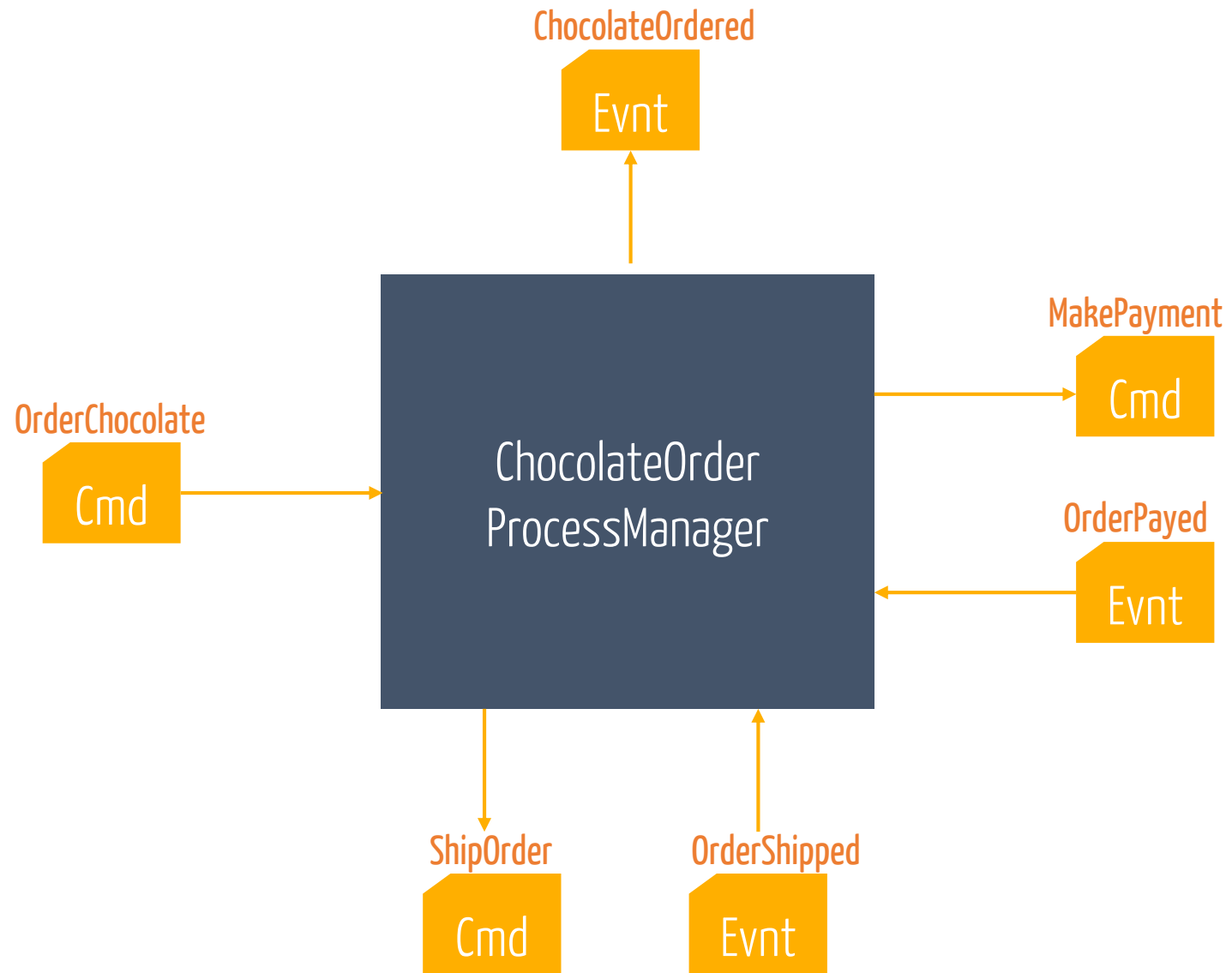
# Receiver Side Distribution



Request / Reply



# Process Manager



# Demo

# Recap

It is always more difficult than  
**Microsoft** tells you ;)

Stateful computation with low latency  
requires **smart routing**

Service Fabric with stateless and  
**stateful** services **combined with**  
**messaging** gives you best of two  
worlds



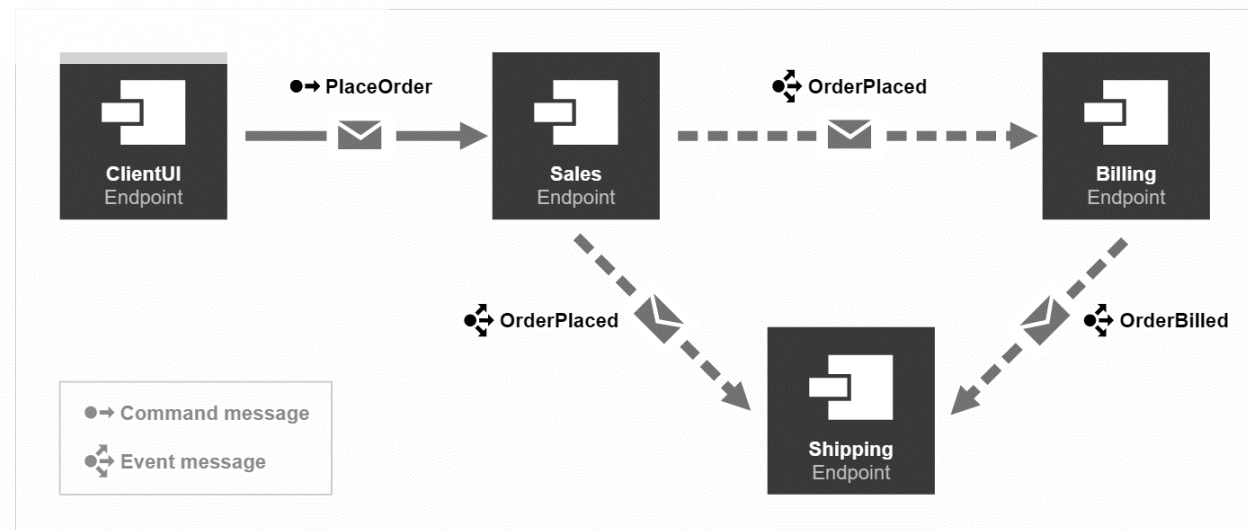
## Introduction to NServiceBus

The best way to get started with NServiceBus is to use it to build something realistic. In doing so you'll learn the architectural concepts behind the software, and start to learn its capabilities. In this tutorial, you'll be building a back end for a retail e-commerce system. You'll learn how to send asynchronous messages between processes, how to use the Publish/Subscribe pattern to decouple business processes, and the advantages of using reliable messaging to enable automatic retries after processing failures.

The tutorial is divided into five lessons, each of which can be accomplished in a half hour or less — perfect for your lunch break.

- **Lesson 1: Getting started** (10-15 minutes) - learn how to set up your development environment and create your very first messaging endpoint.
- **Lesson 2: Sending a command** (15-20 minutes) - learn how to define messages and message handlers, and send your first message.
- **Lesson 3: Multiple endpoints** (15-20 minutes) - learn how to create multiple endpoints and send messages between them.
- **Lesson 4: Publishing events** (25-30 minutes) - learn about the Publish/Subscribe pattern, how to publish events to multiple subscribers, and about the benefits of using this pattern to decouple business processes.
- **Lesson 5: Retrying errors** (25-30 minutes) - learn how to use the Particular Service Platform tools to gracefully recover from exceptions in your code, allowing you to build systems that are resistant to failure.

When you've completed all the exercises, your solution will look like this:



docs.particular.net/  
tutorials/intro-to-nservicebus

### Getting Started

Service Platform

#### Messaging Basics Tutorial

Step by Step Sample

Configuration choices Sample

Concepts

Platform Installer

License

Extensions

Contributing

Architectural Principles

Bus vs. Broker

### Upgrade Guides

### Messaging

### Hosting

### Handlers and Sagas

### Testing

### Recoverability

### Pipeline

### Serialization

### Containers

### Logging

### Security

### Operations

### Transports

### Persistence

### ServiceInsight

docs.particular.net/  
samples/azure/azure-service-fabric-routing/

## Service Fabric Partition Aware Routing

Download Nugets Used Edit Code

Component: NServiceBus | Nuget: NServiceBus (Version: 6.x)

This sample currently makes use of a pre-release version of NServiceBus.Persistence.ServiceFabric.

The sample demonstrates how the NServiceBus API can be used to implement partition aware routing for services hosted inside a Service Fabric cluster. It takes advantage of routing system extensibility points and custom pipeline behaviors to support various types of NServiceBus communication patterns. It is assumed that the NServiceBus users are able to define mapping between message type and service partition for each message. It is also assumed that `send local`, `timeout` and `reply` messages are partition affine i.e. should be processed in the context of originating partition. The sample consists of services hosted inside and outside the Service Fabric and enables proper communication between the two.

### Scenario

The scenario used in this sample covers a voting system. In this voting system the cast votes are counted by candidate. The endpoint responsible for counting candidate votes is subscribed to an event published when votes are cast.

Next to this the system also counts the total number of votes cast in each zip code. In order to achieve this the candidate voting endpoint issues a request to the zip code counting endpoint to track the zip code. The zip code counting endpoint will reply back with the intermediary results.

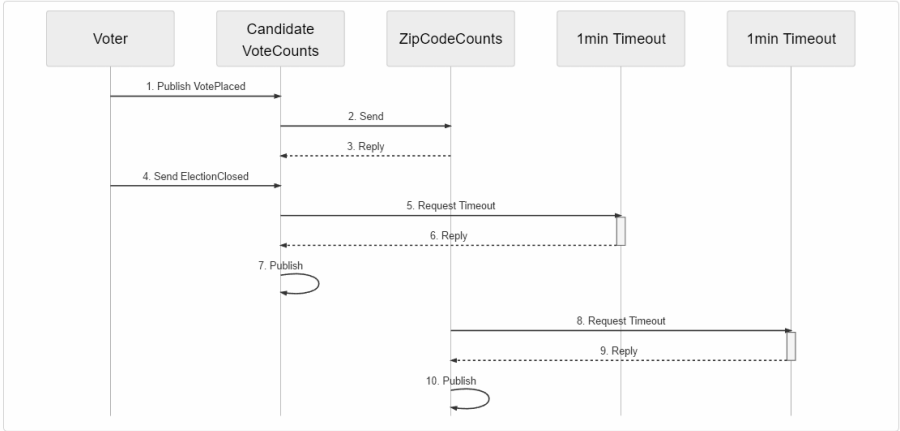
When the election is closed, the candidate vote counting endpoint will publish the results per candidate and report them using Service Fabric diagnostics infrastructure (ETW/ Event Viewer<sup>®</sup>).

When a request timeout occurs, the zip code counting endpoint sends a `local` command to report the results back to itself.

The sample assumes that:

- There are only 2 candidates in the election, called "John" and "Abby",
- Zip codes are integers in the range of 0 to 99000.

This simplifies partition id value calculation. In a real world scenario a hash function could be used to perform mapping from arbitrary input types.



NServiceBus

Transports

Persistence

ServiceInsight

ServicePulse

ServiceControl

Samples

General

Azure

Azure Service Bus Transport  
Long running operations with Azure Service Bus Transport  
**Service Fabric Partition Aware Routing**  
Azure Blob Storage DataBus  
Custom ASB Namespace Partitioning  
Custom Sanitization with Azure Service Bus Transport  
Native Integration with Azure Service Bus Transport  
Azure Service Bus Performance Tuning  
Polymorphic events with Azure Service Bus Transport  
Shared Hosting in Azure Cloud Services  
Azure Storage Persistence  
Azure Storage Queues Transport

Container

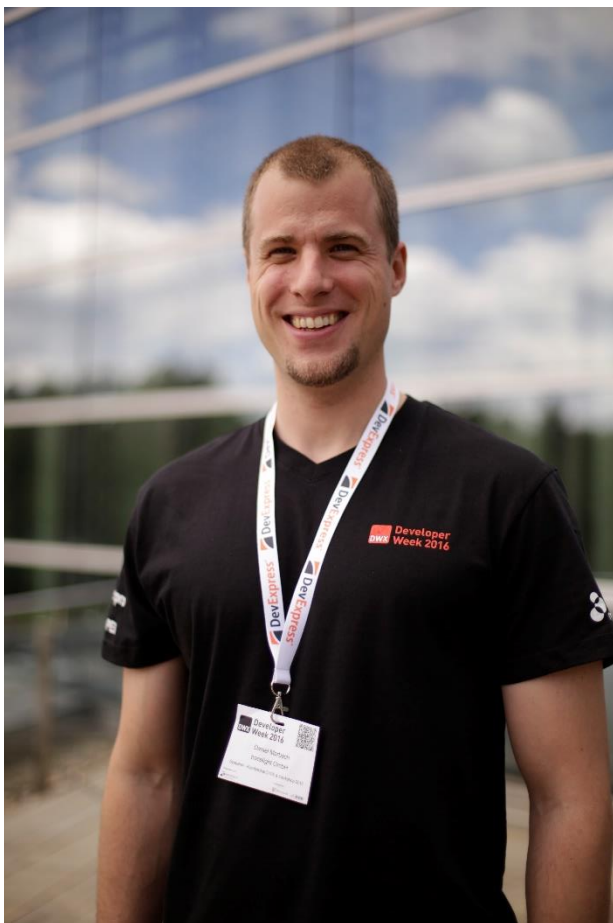
Custom Checks

Encryption

# Slides, Links...

[github.com/danielmarbach/Microservices.ServiceFabric](https://github.com/danielmarbach/Microservices.ServiceFabric)

# Q & A



Software Engineer  
Enthusiastic Software Engineer  
Microsoft MVP

@danielmarbach  
[particular.net/blog](http://particular.net/blog)  
[planetgeek.ch](http://planetgeek.ch)

# Thanks