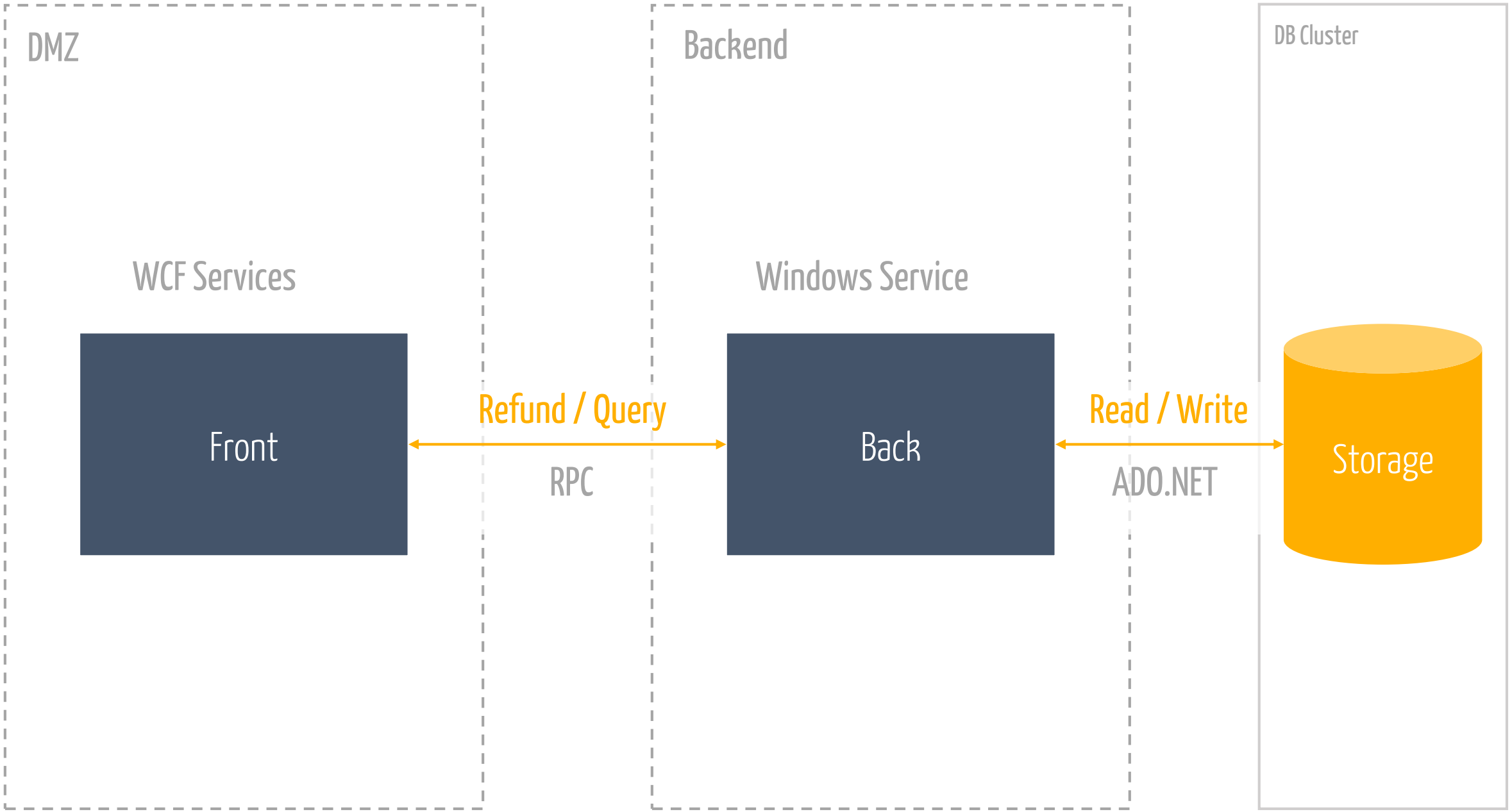
Particular
Software

# Do it yourself. A message pump

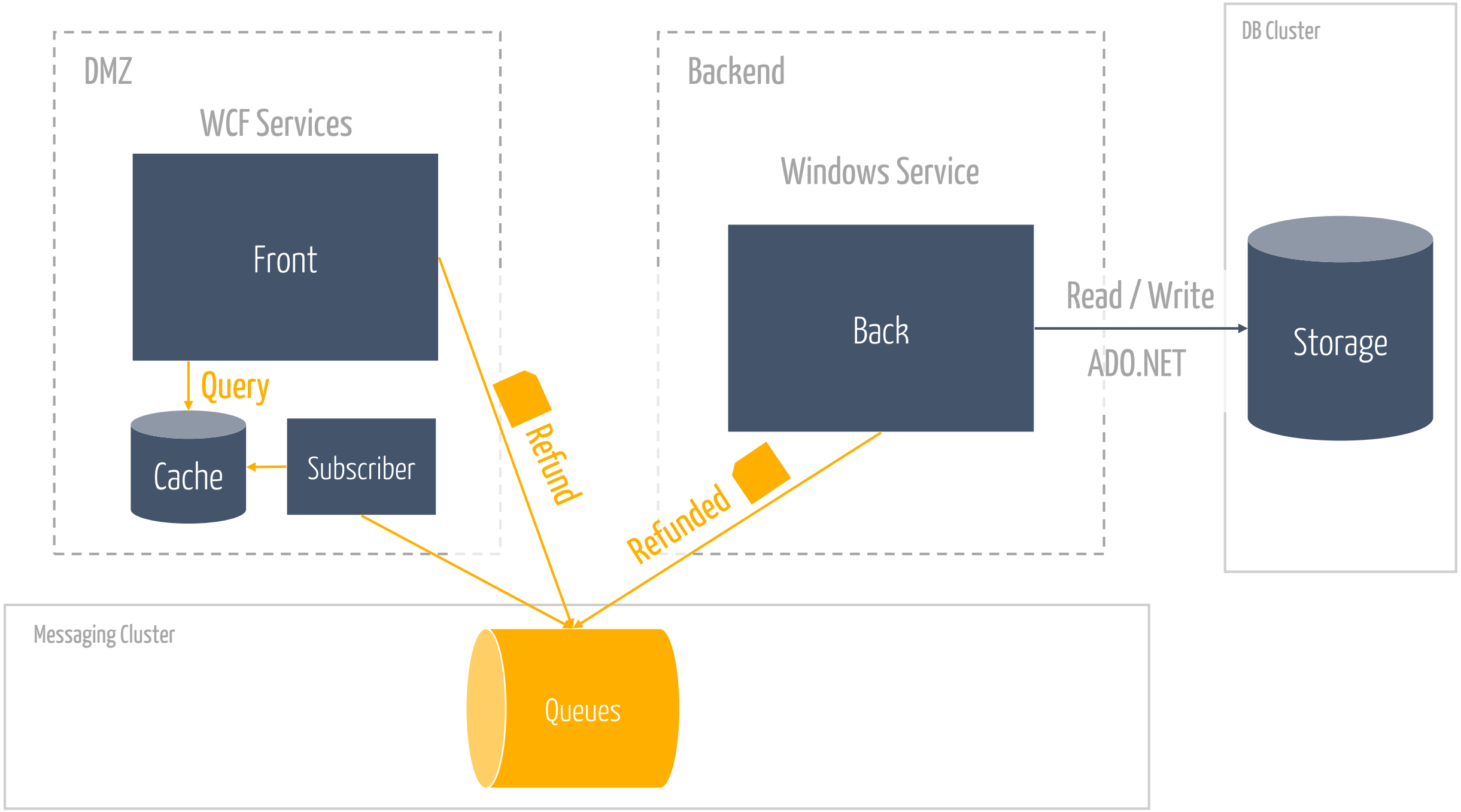
## that kicks ass


DMZ
Backend
DB Cluster
WCF Services
Windows Service
Front
Refund / Query
RPC
Back
Read / Write
ADO.NET
Storage

# The RPC callstack of

praise the lords of

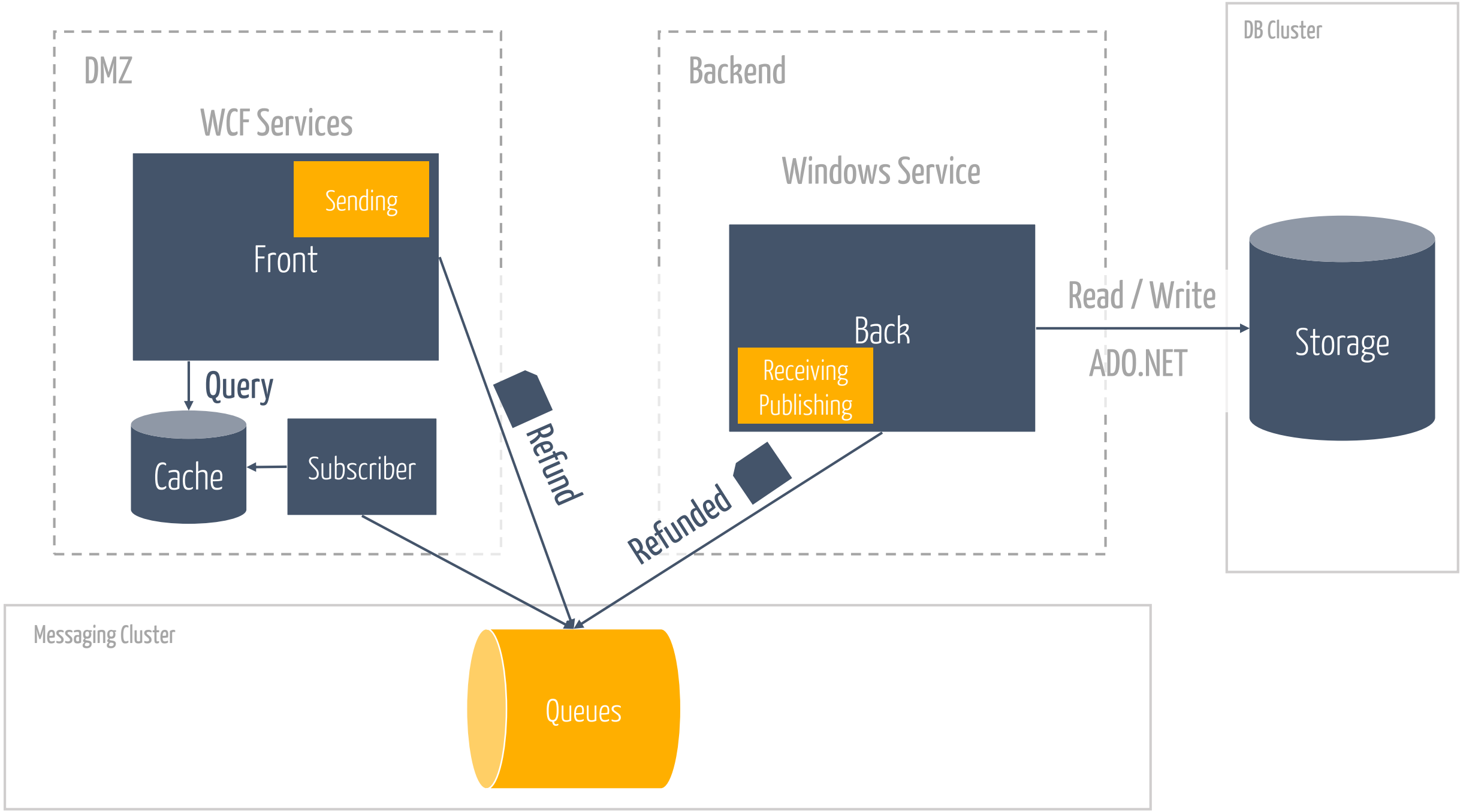
# messaging


DMZ
WCF Services
Front
Query
Cache
Subscriber
Backend
Windows Service
Back
Read / Write
ADO.NET
DB Cluster
Storage
Refund
Refunded
Messaging Cluster
Queues

Build

or

Buy


DMZ
WCF Services
Front
Sending
Query
Cache
Subscriber
Backend
Windows Service
Back
Receiving
Publishing
Read / Write
ADO.NET
DB Cluster
Storage
Refund
Refunded
Messaging Cluster
Queues

# Building the

# pump


sending
var (payload, headers) = Serialize(message);
await queue.Send(payload, headers);
Easy!

TPL handwaving

Cooporative cancellation 101

Async / Await

Ship it!

# It worked until


Rush hour

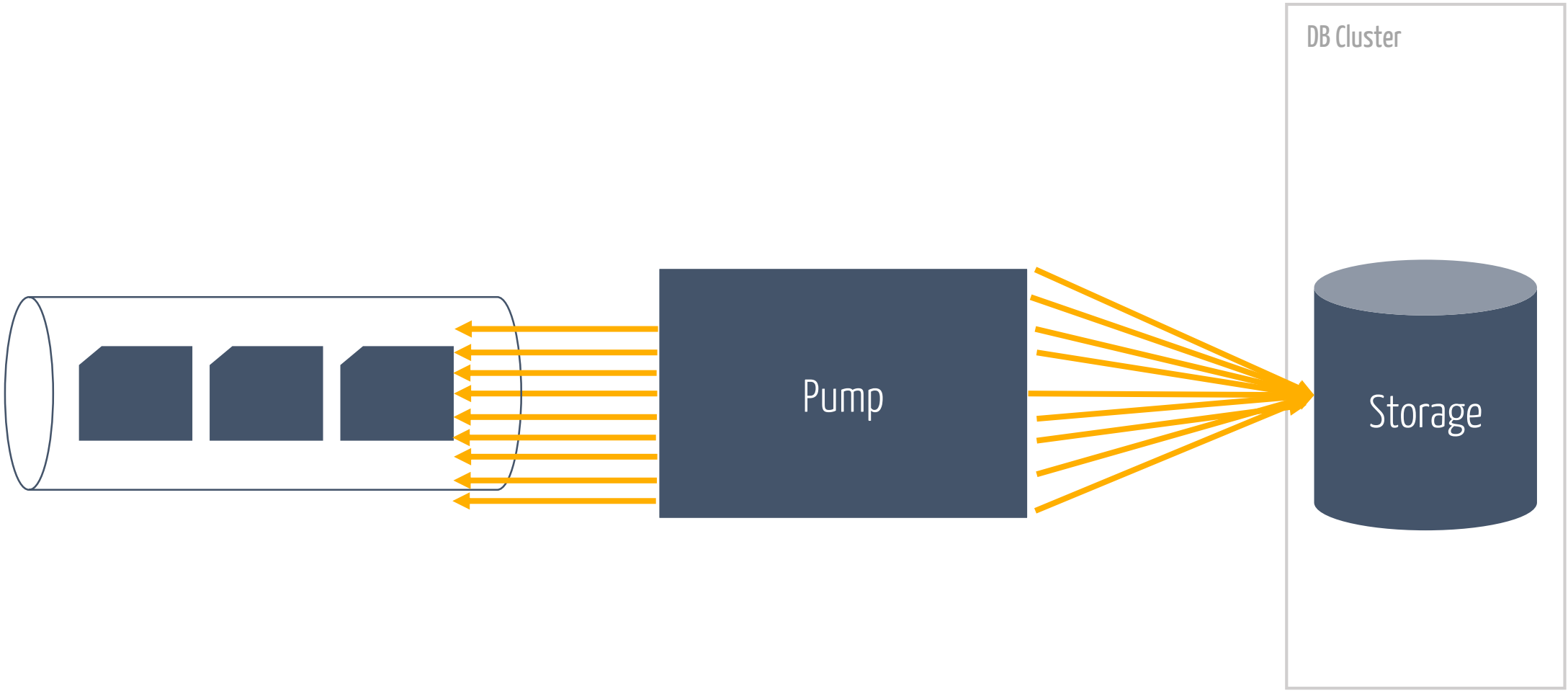
Pump

Handler

Let's throw in some

# concurrency


Rush hour


DB Cluster
Pump
Storage

# Better limit

concurrency

Semaphore controls floodgate

Ship it!

# It worked

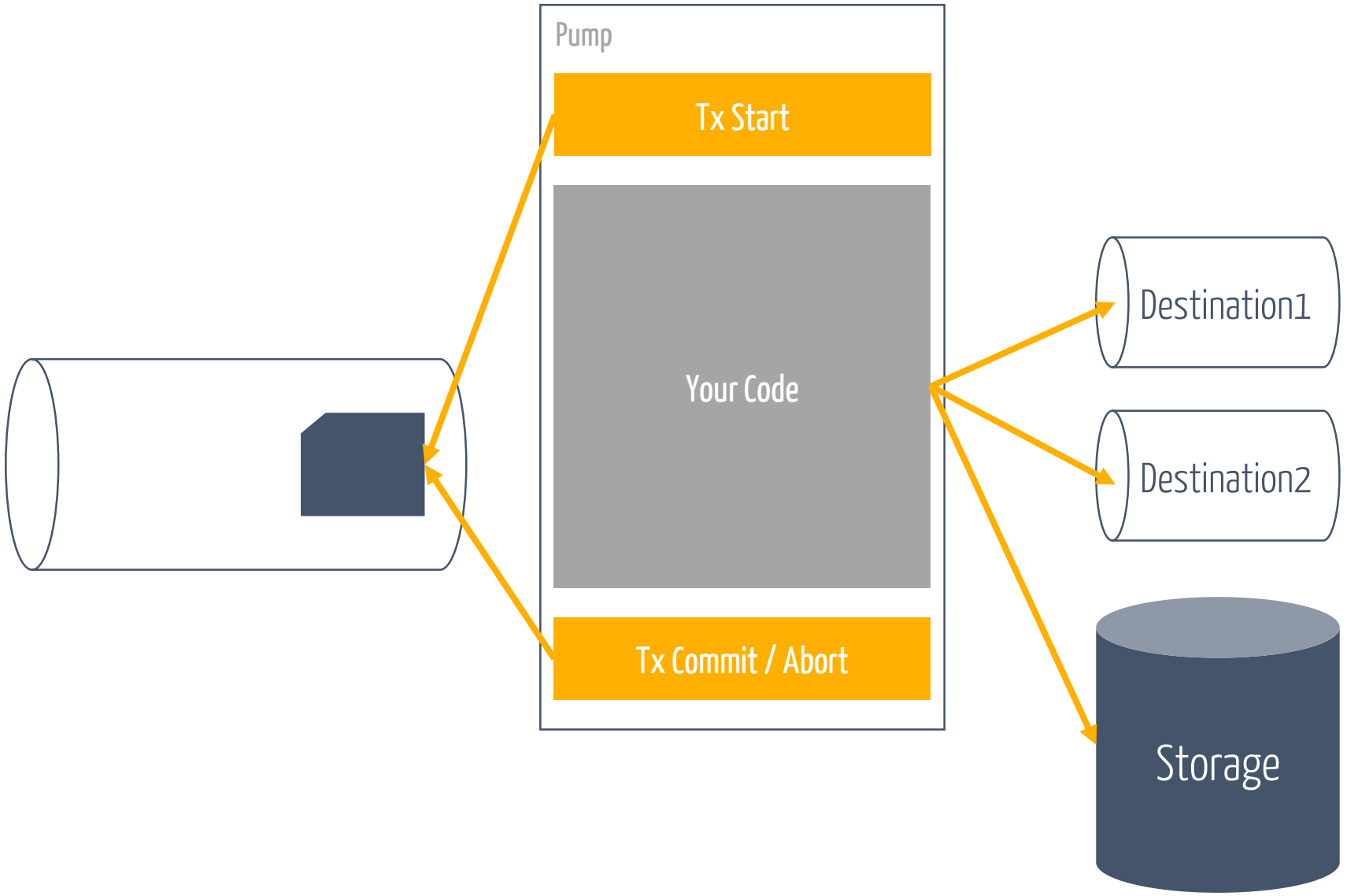
# As time passes

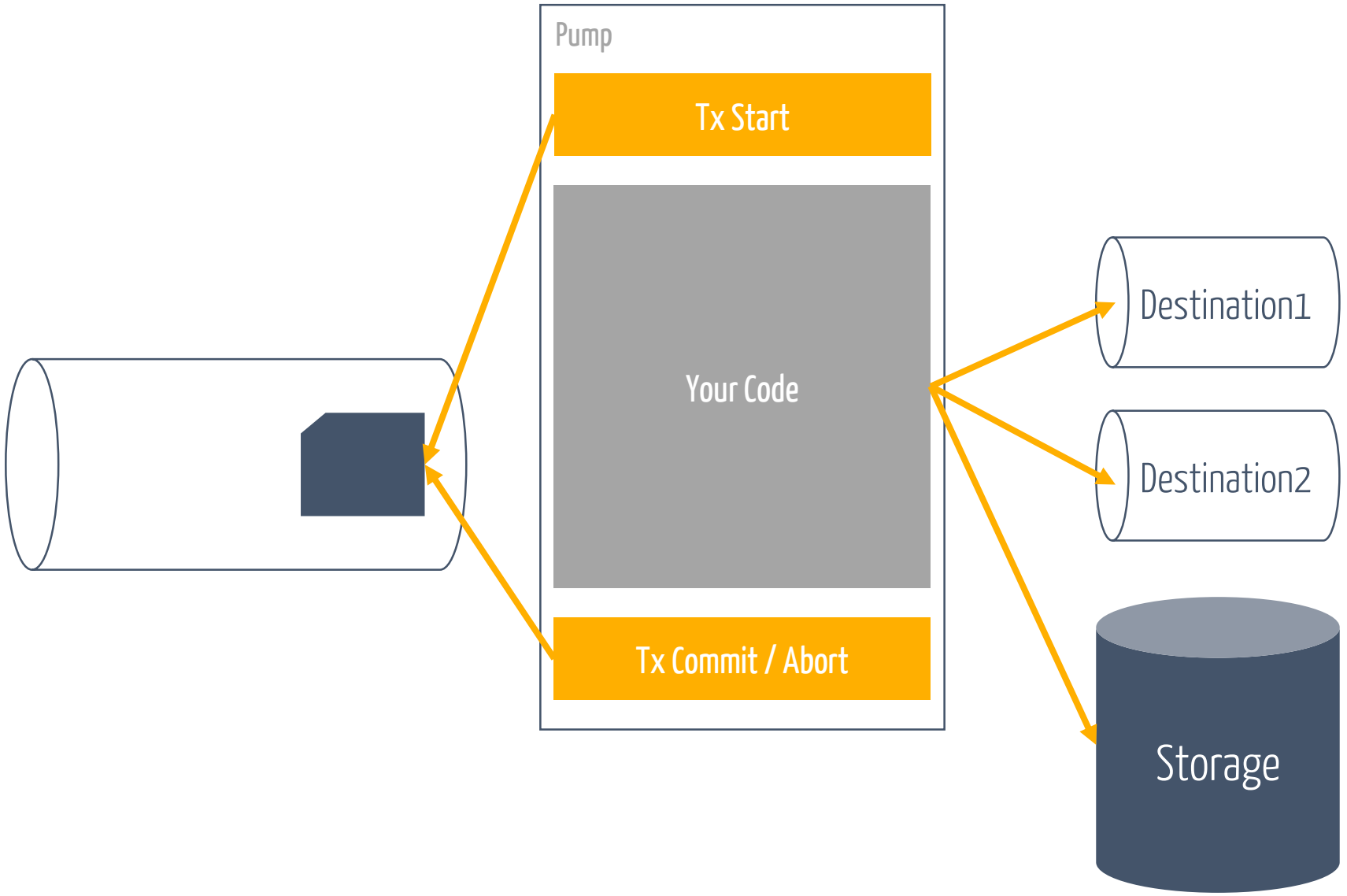
```
1 reference
static async Task FetchAndHandleAndReleaseWithMiddleware(SemaphoreSlim semaphore)
{
    using (var transaction = CreateTransaction())
    {
        var (payload, headers) = await ReadFromQueue(transaction);
        var message = Deserialize(payload, headers);

        using (var childServiceProvider = CreateChildServiceProvider())
        {
            try
            {
                var middlewareFuncs = new Func<HandlerContext, Func<HandlerContext, Task>, Task>[] { Middleware1, Middleware2 };
                var middleware = FlextensibleMiddleware(childServiceProvider, middlewareFuncs);

                await middleware(message).ConfigureAwait(false);

                transaction.Complete();
            }
            catch (Exception)
            {
                // Just log?
            }
            finally
            {
                semaphore.Release();
            }
        }
    }
}
```

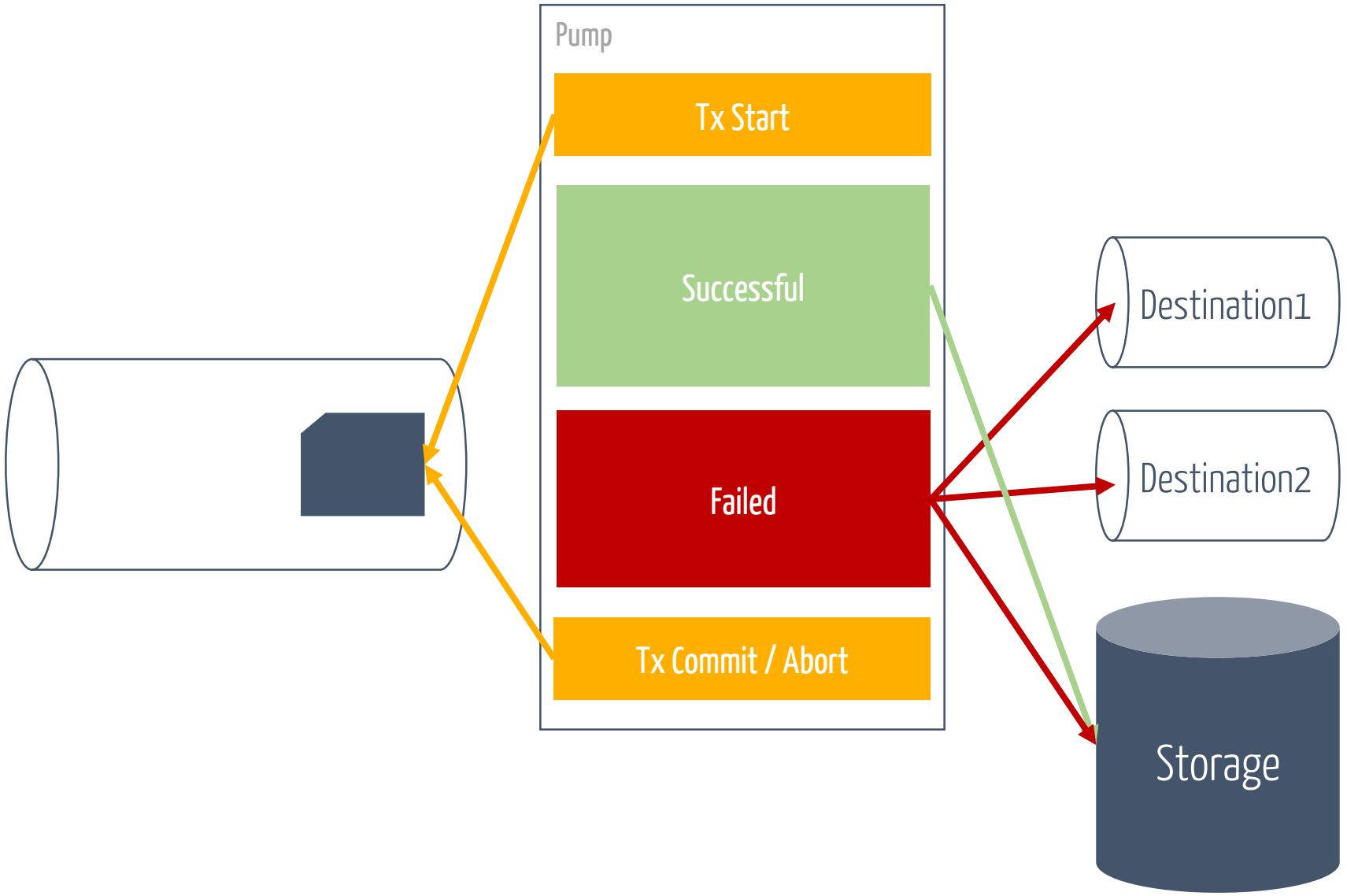
# flextensible

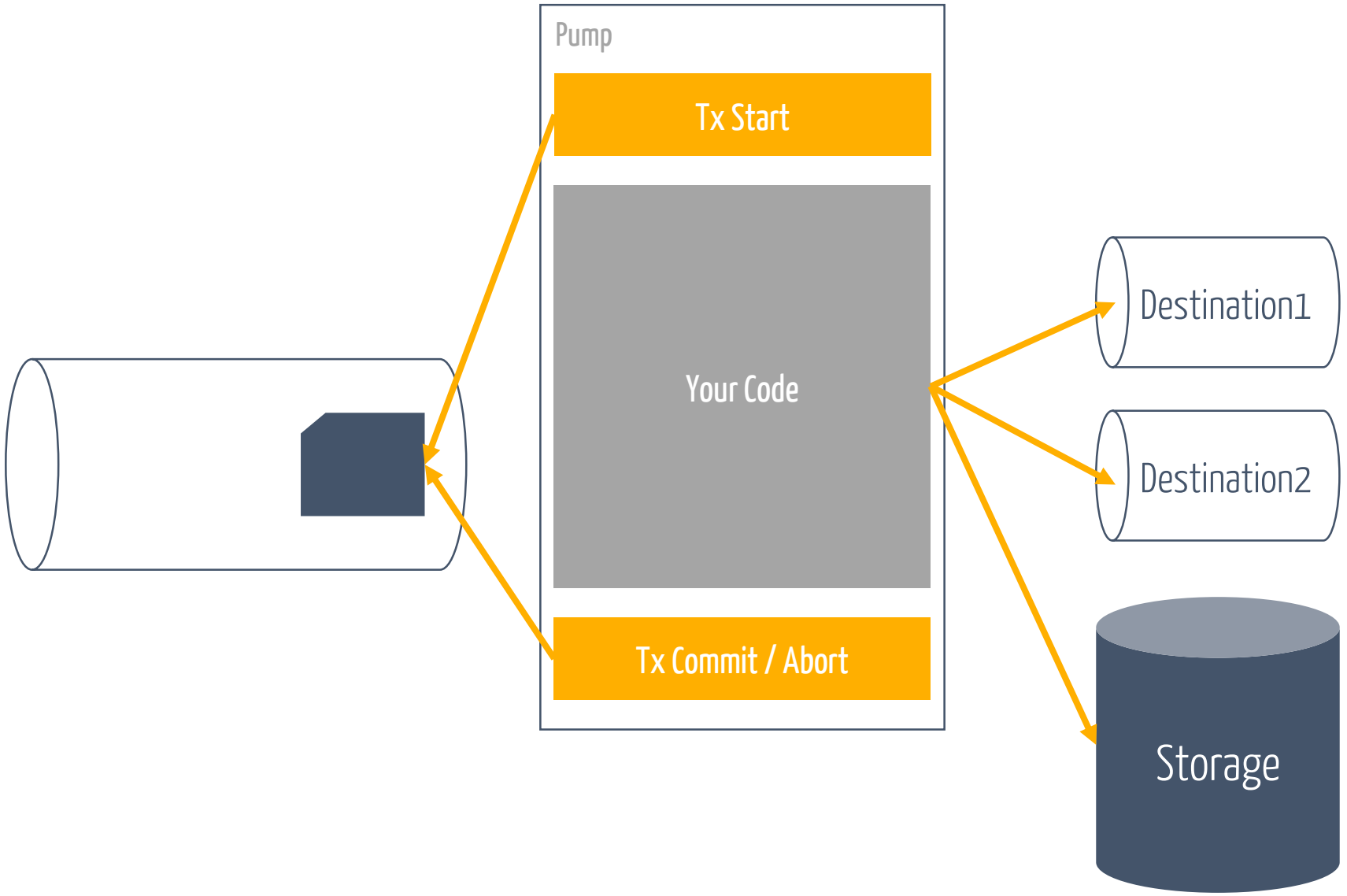
# Life beyond

# transactions


Pump
Tx Start
Your Code
Tx Commit / Abort
Destination1
Destination2
Storage


Pump
Tx Start
Your Code
Tx Commit / Abort
Destination1
Destination2
Storage

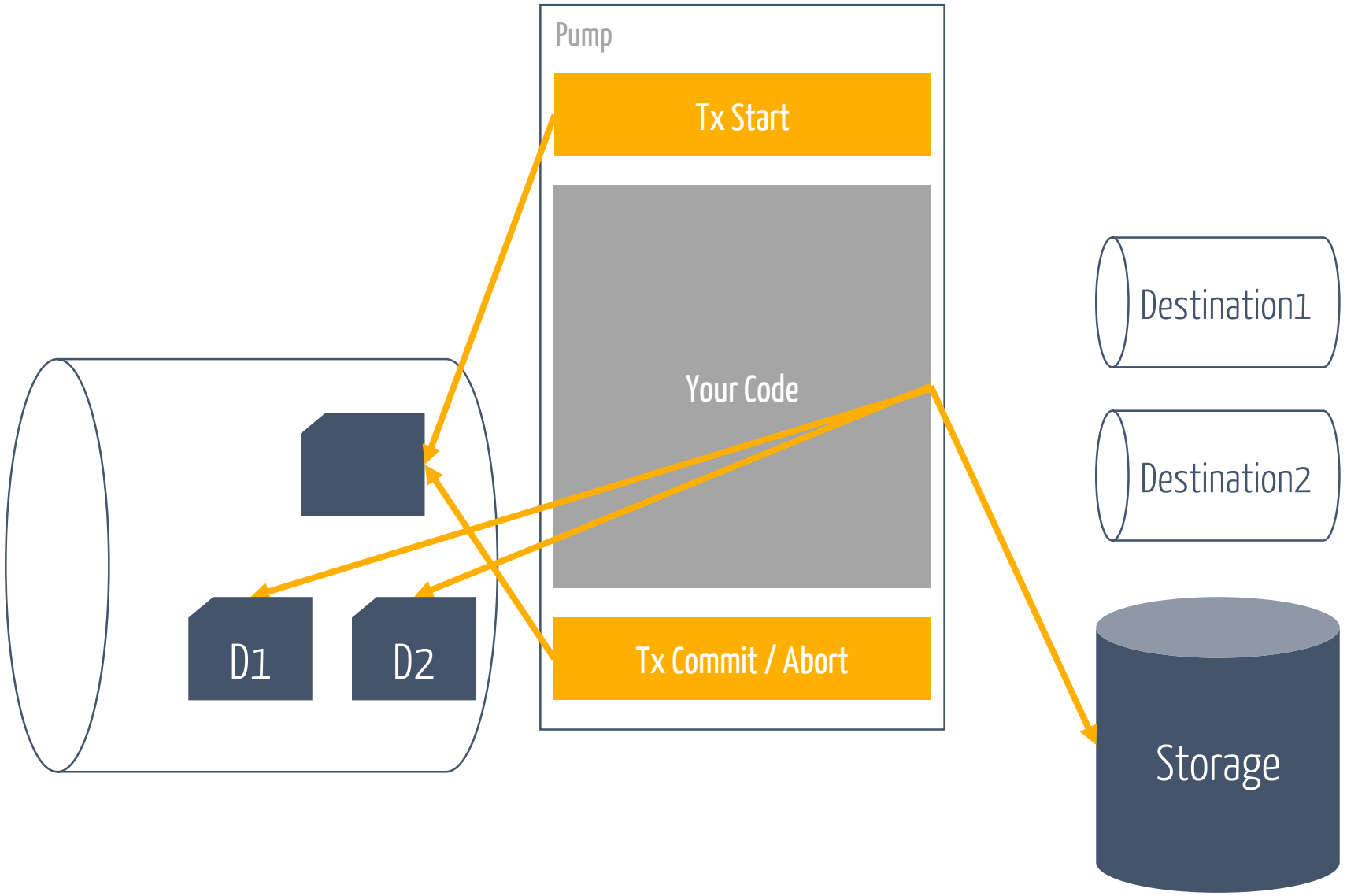

Pump
Tx Start
Successful
Failed
Tx Commit / Abort
Destination1
Destination2
Storage


Pump
Tx Start
Your Code
Tx Commit / Abort
Destination1
Destination2
Storage

# Cloudy with a chance of


Pump


Handler

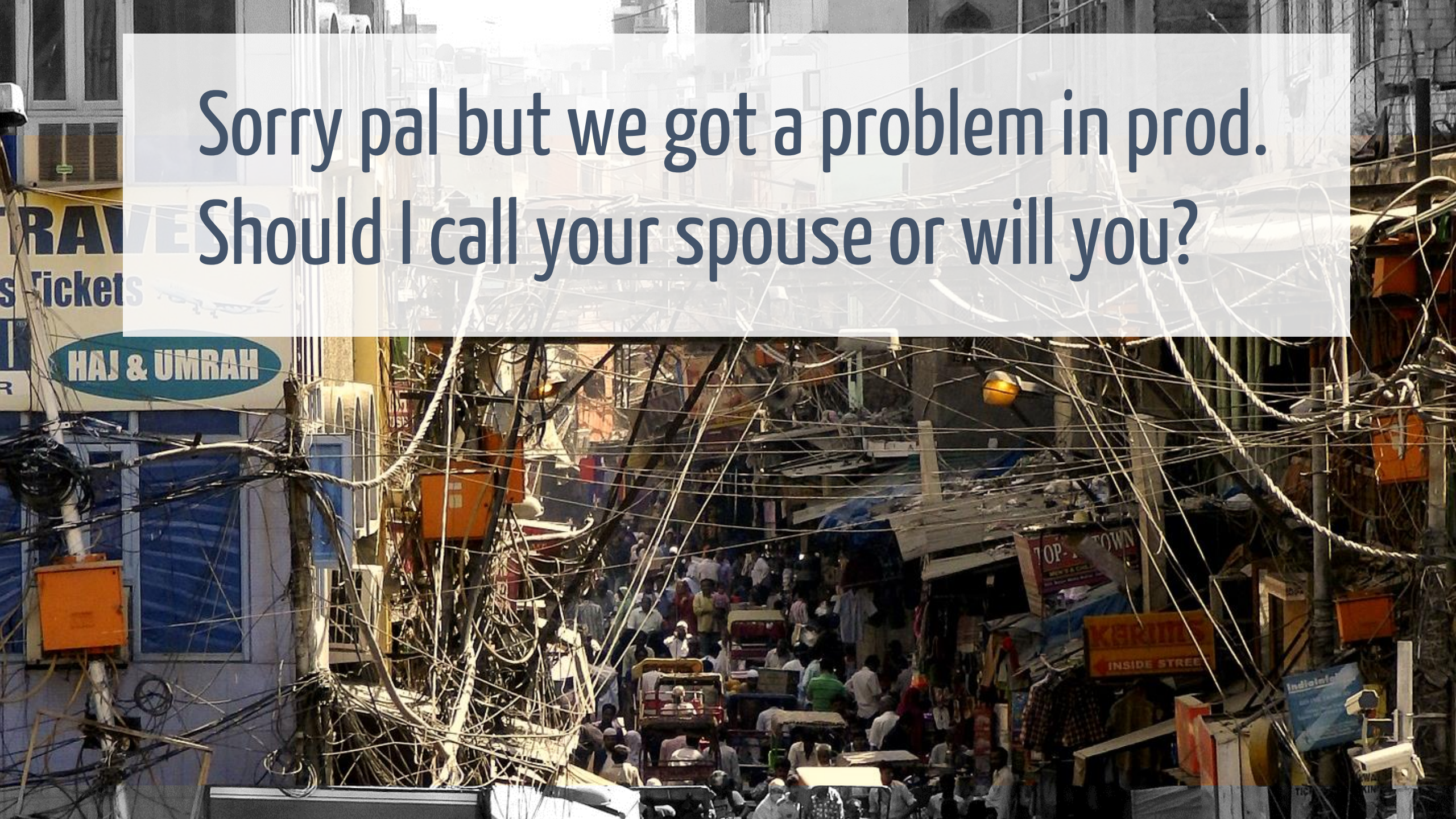

Pump
Tx Start
Your Code
Tx Commit / Abort
D1
D2
Destination1
Destination2
Storage

# Penny Pinching

Now we have the

# basic bits

# Living on the edge of sanity

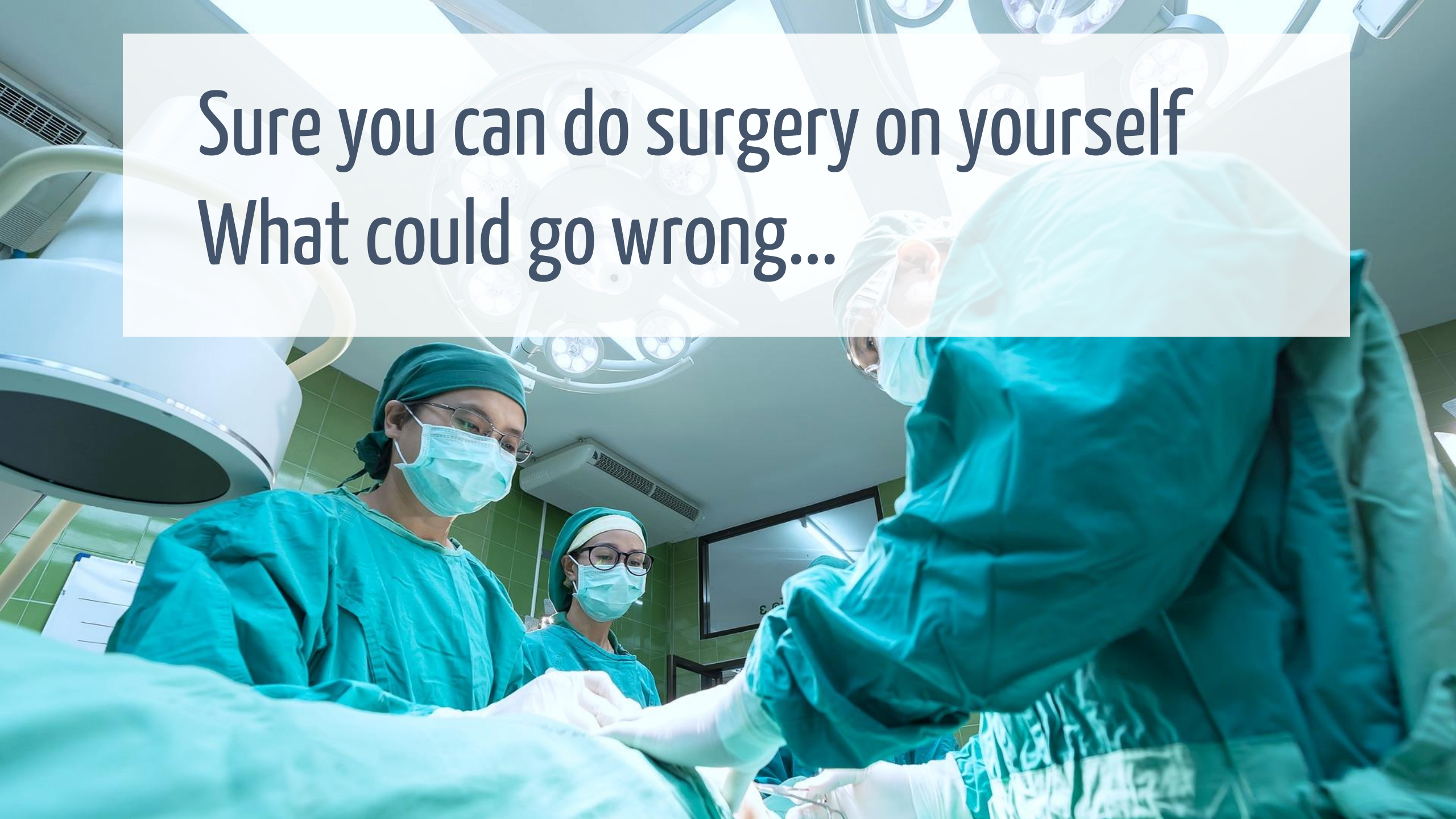



# Sorry pal but we got a problem in prod. Should I call your spouse or will you?

I want

# insights

# Sure you can do surgery on yourself
# What could go wrong...



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# Thanks

go.particular.net/
nsbstart



# NServiceBus Quick Start

In this tutorial, we'll see why software systems built on asynchronous messaging using NServiceBus are superior to traditional synchronous HTTP-based web services. We'll also show how NServiceBus guarantees reliability and extensibility that can't be achieved with REST.

This tutorial skips over some concepts and implementation details in order to get up and running quickly. If you'd prefer to go more in-depth, check out our Introduction to NServiceBus tutorial. It will teach you the NServiceBus API and important concepts you need to learn to build successful message-based software systems.

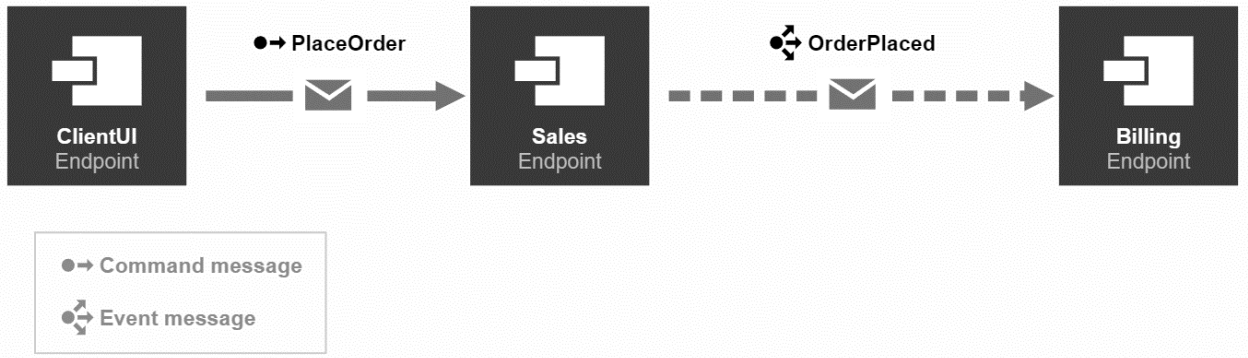
To get started, download the solution, extract the archive, and then open the **RetailDemo.sln** file with Visual Studio 2017.

Download the solution now

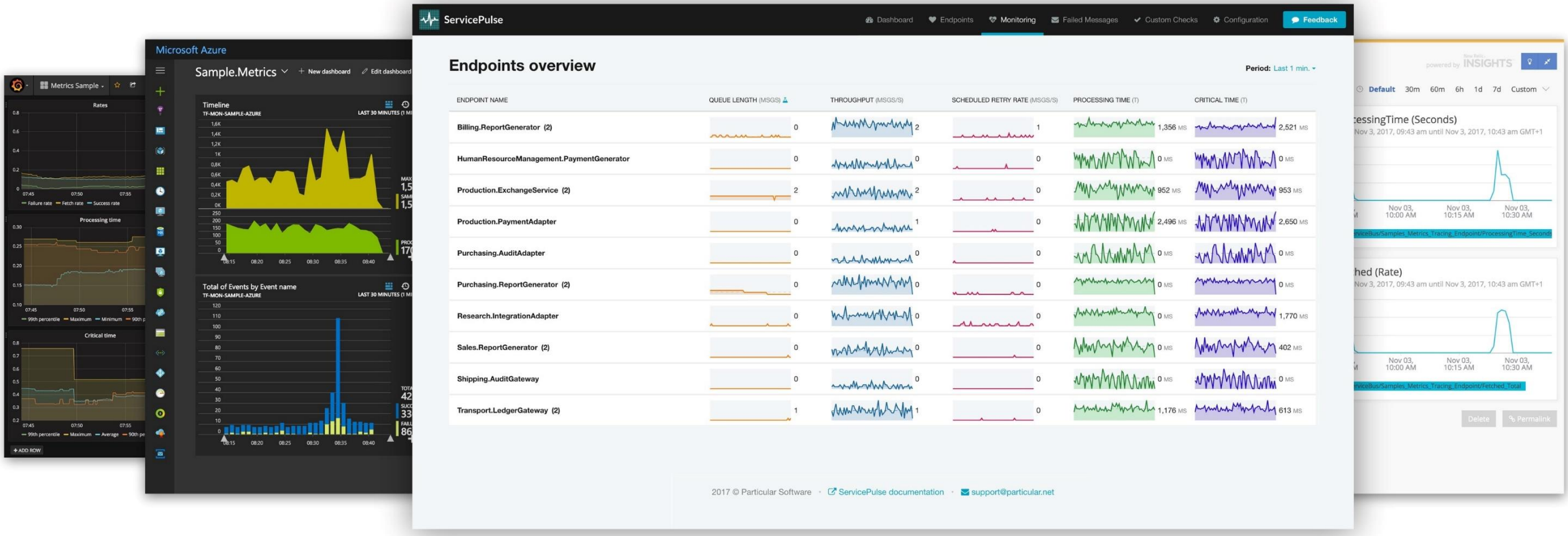
## Project structure

The solution contains four projects. The **ClientUI**, **Sales**, and **Billing** projects are endpoints that communicate with each other using NServiceBus messages. The **ClientUI** endpoint mimics a web application and is an entry point in our system. The **Sales** and **Billing** endpoints contain business logic related to processing and fulfilling orders. Each endpoint references the **Messages** assembly, which contains the definitions of messages as POCO class files.

As shown in the diagram, the **ClientUI** endpoint sends a **PlaceOrder** command to the **Sales** endpoint. As a result, the **Sales** endpoint will publish an **OrderPlaced** event using the publish/subscribe pattern, which will be received by the **Billing** endpoint.




The solution mimics a real-life retail system, where the command to place an order is sent as a result of a customer interaction, and the actual processing occurs in the background. Publishing an event allows us to isolate the code to bill the credit card from the code to place the order, reducing coupling and making the system easier to maintain over the long term. Later in this tutorial, we'll see how to add a second subscriber in the **Shipping** endpoint which would begin the process of shipping the order.




# go.particular.net/demo

# Slides, Links...

github.com/danielmarbach/MessagePump

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# Q&A


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# Thanks