Leverage the Full Potential of Your Hipster Architecture!

Rethink Business Processes and User Experience

Bernd Ruecker
mail@bernd-ruecker.de | @berndruecker

What's hipster?

Domain Driven Design (DDD)

Serverless

Event-Driven

Microservices

Cloud-Native

Agile

Reactive

Eventual Consistency

Distributed Systems

JSON & YAML

Streaming

Kubernetes

What's not hipster?

Websphere

Batch

Mainframe & Cobol

Monolithic Systems

Serice oiented architecture

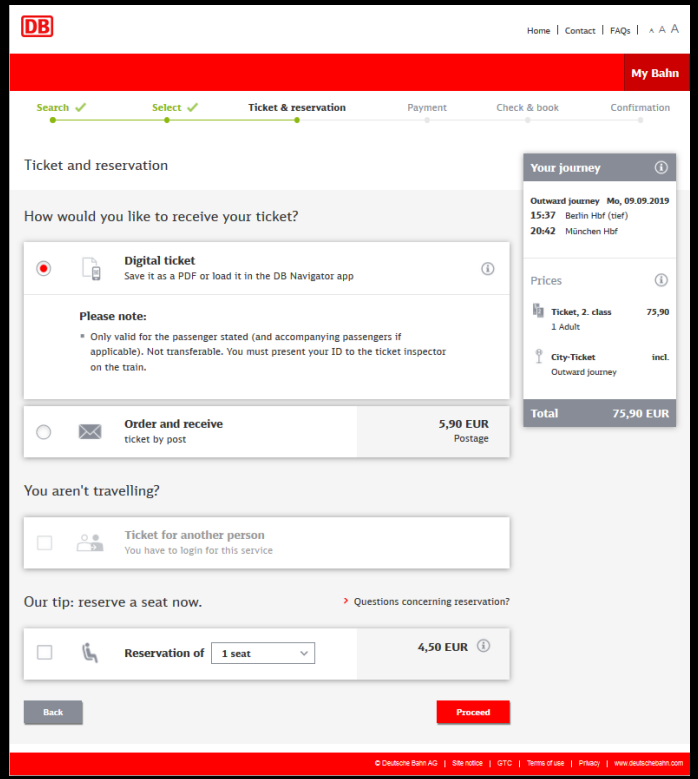
Waterfall

SOAP & XML

Two-Phase Commit

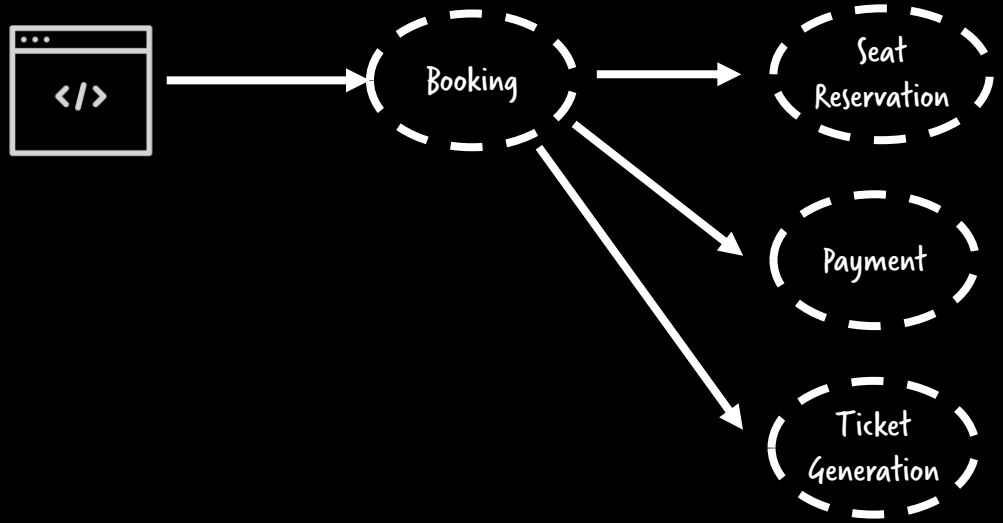
But can you leverage
the full potential?

Example

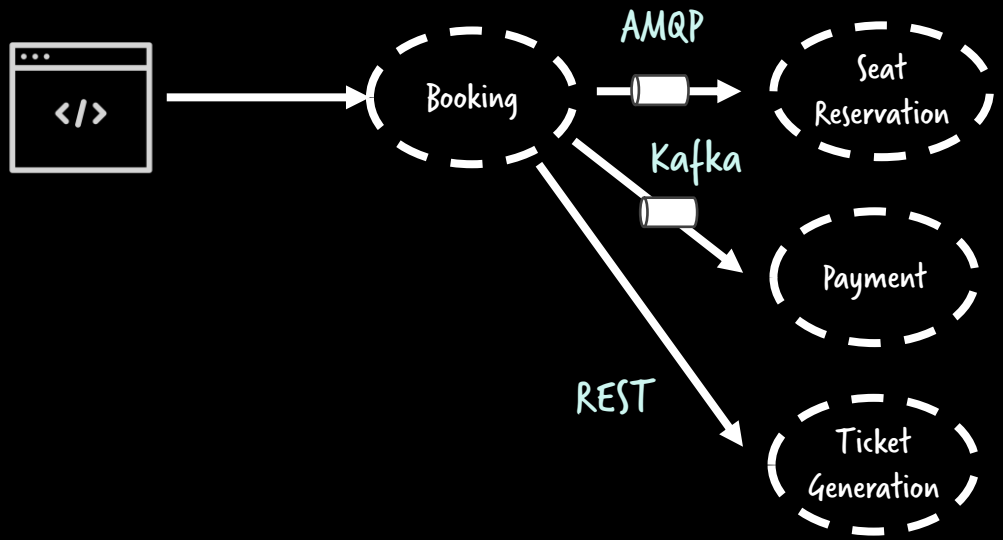

DB
Home | Contact | FAQs | A A A
My Bahn
Search
Select
Ticket & reservation
Payment
Check & book
Confirmation
Ticket and reservation
How would you like to receive your ticket?
Digital ticket
Save it as a PDF or load it in the DB Navigator app
Please note:
Only valid for the passenger stated (and accompanying passengers if applicable). Not transferable. You must present your ID to the ticket inspector on the train.
Order and receive
ticket by post
5,90 EUR
Postage
You aren't travelling?
Ticket for another person
You have to login for this service
Our tip: reserve a seat now.
Questions concerning reservation?
Reservation of
1 seat
4,50 EUR
Back
Proceed
Your journey
Outward journey Mo, 09.09.2019
15:37 Berlin Hbf (tief)
20:42 München Hbf
Prices
Ticket, 2. class
1 Adult
75,90
City-Ticket
Outward journey
incl.
Total
75,90 EUR
© Deutsche Bahn AG | Site notice | GTC | Terms of use | Privacy | www.deutschebahn.com

Die Bahn DB
OnlineTicket
Fahrkarte ICE
Normalpreis (Einfache Fahrt)
Zahlungspositionen und Preis
Hinfahrt:
GBCD 1234 WXYZ 1
Herr Mustermensch
BahnCard 1234
ZAB234
Ihre Reiseverbindung und Reservierung Hinfahrt am 06.11.2005
Köln Hbf ab 13:54 6 ICE 519 siehe oben
Ulm Hbf an 17:06 2
Hinweise:
Seite 1 / 1

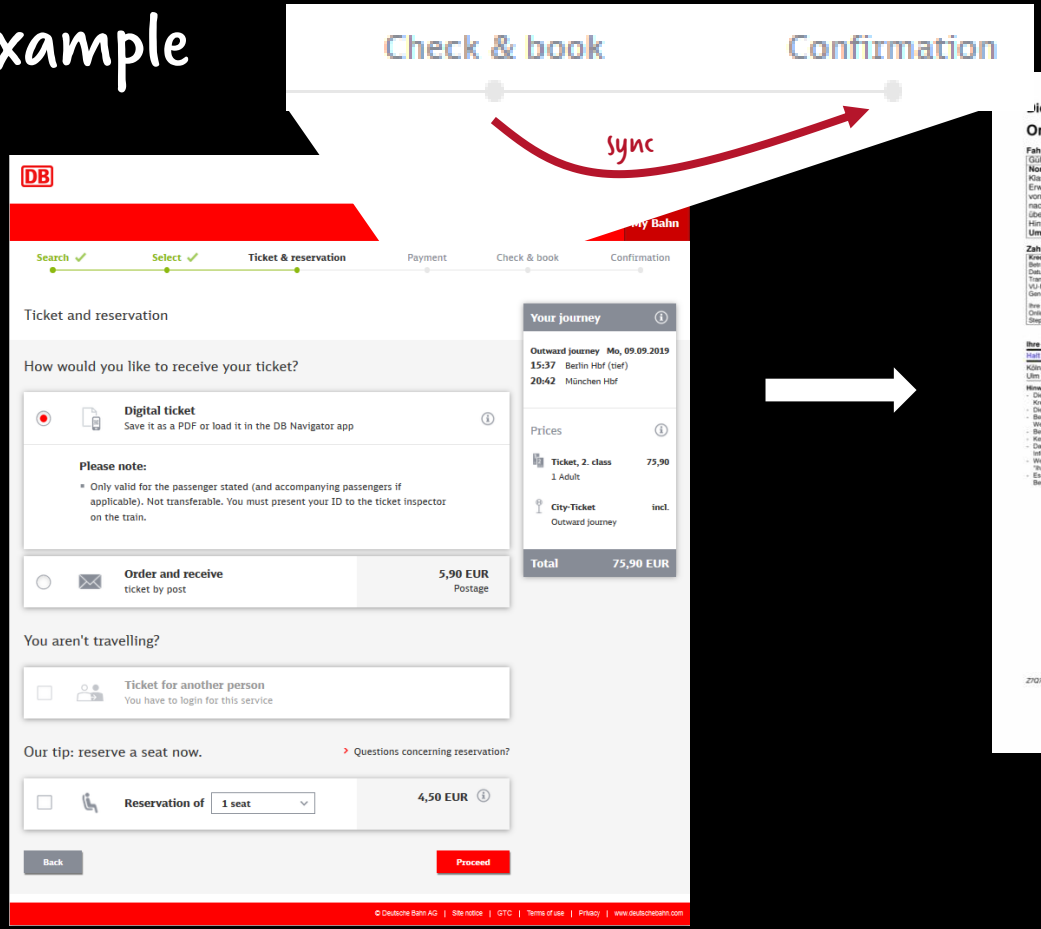
Example



Architecture

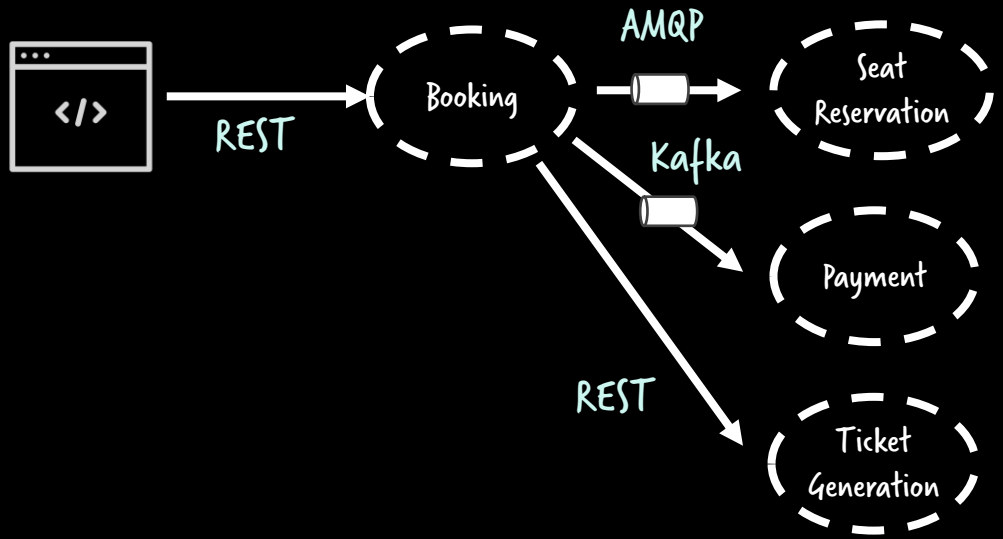


Example

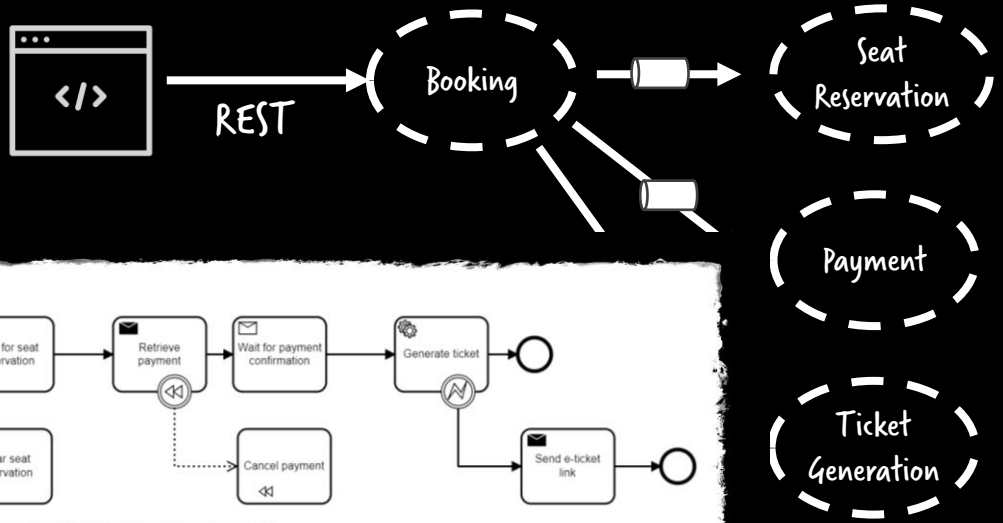

Check & book
Confirmation
sync
DB
Search
Select
Ticket & reservation
Payment
Check & book
Confirmation
Ticket and reservation
How would you like to receive your ticket?
Digital ticket
Save it as a PDF or load it in the DB Navigator app
Please note:
Only valid for the passenger stated (and accompanying passengers if applicable). Not transferable. You must present your ID to the ticket inspector on the train.
Order and receive
ticket by post
5,90 EUR
Postage
You aren't travelling?
Ticket for another person
You have to login for this service
Our tip: reserve a seat now.
Questions concerning reservation?
Reservation of
1 seat
4,50 EUR
Back
Proceed
Your journey
Outward journey Mo, 09.09.2019
15:37 Berlin Hbf (tief)
20:42 München Hbf
Prices
Ticket, 2. class
1 Adult
75,90
City-Ticket
Outward journey
incl.
Total
75,90 EUR

OnlineTicket
Fahrkarte ICE
Normalpreis (Einfache Fahrt)
Hinfahrt:
Zertifikat:
GBCD 1234 WXYZ 1
Zertifikat kurz:
GEF1 0A
Gültig ab:
06.11.2005
Herr Mustermensch
Ausweis:
BahnCard 1234
Auftragsnummer:
ZAB234
Ihre Reiseverbindung und Reservierung Hinfahrt am 06.11.2005
Köln Hbf
Ulm Hbf
ICE 519
siehe oben

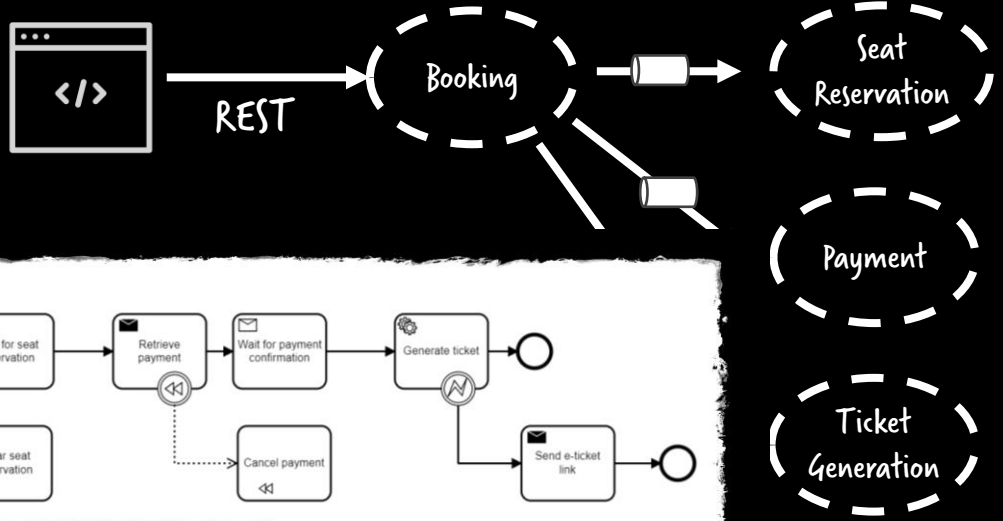
That is hard to implement



Workflow automation can help



Workflow automation can help



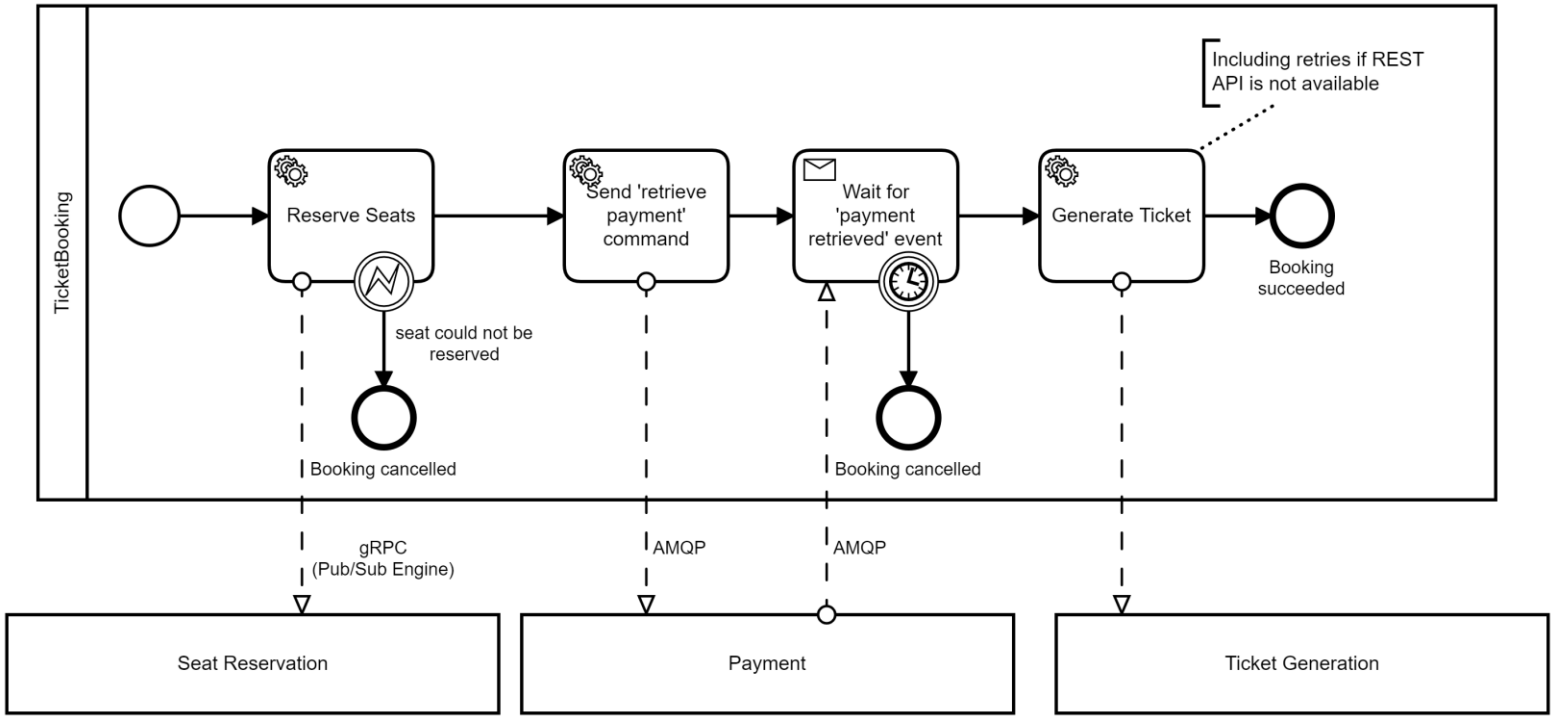
Workflow Automation:

Is stateful

Can wait
Can retry
Can escalate
Can compensate

Live hacking

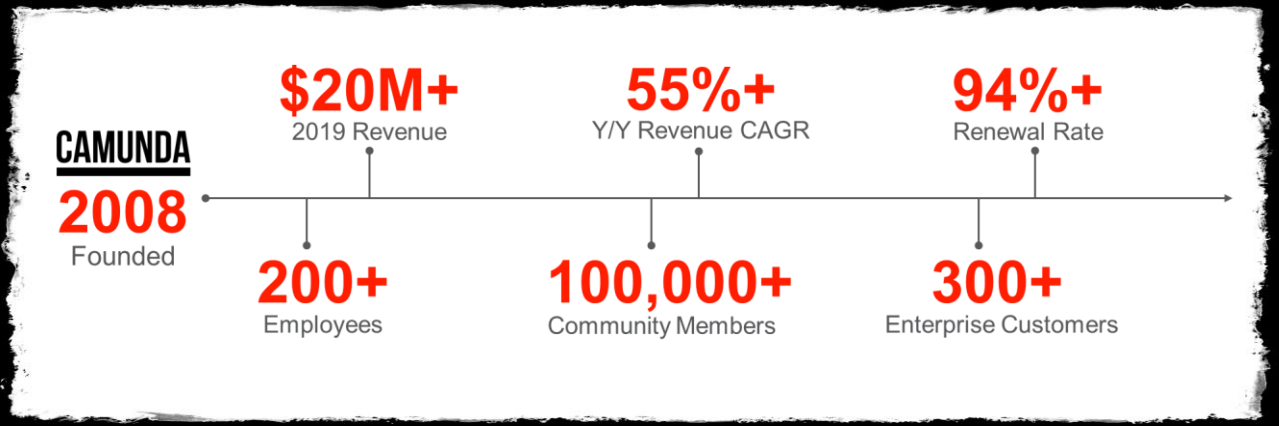
berndruecker / **ticket-booking-camunda-cloud**



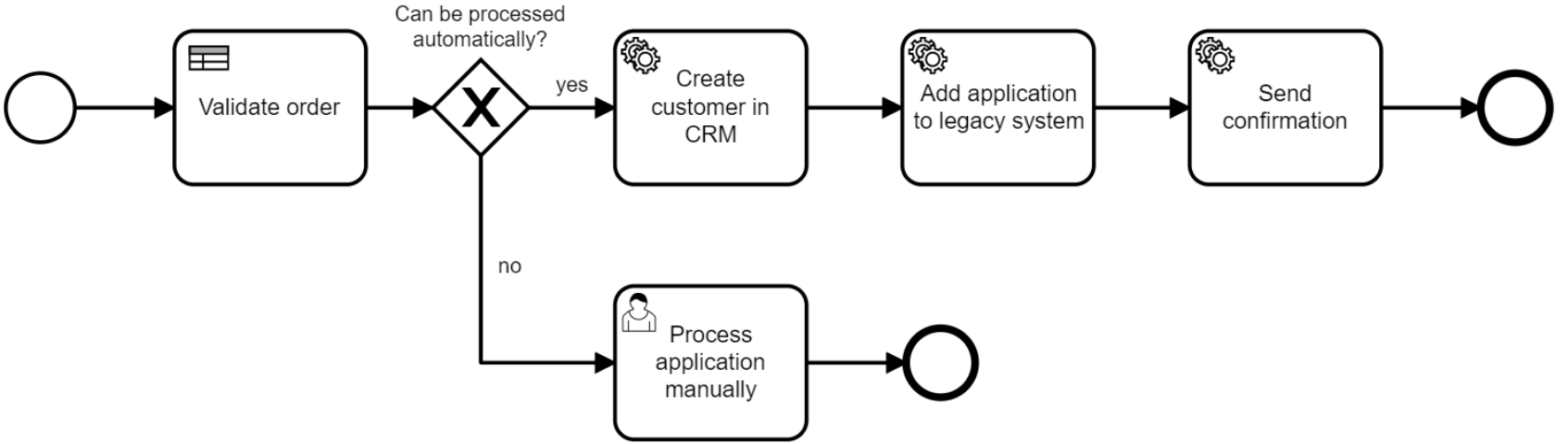
https://github.com/berndruecker/ticket-booking-camunda-cloud

Camunda

- Source-Available & Developer Friendly
- Supports BPMN
- Mature tooling, widely adopted
- On-prem or cloud
- http://camunda.com/

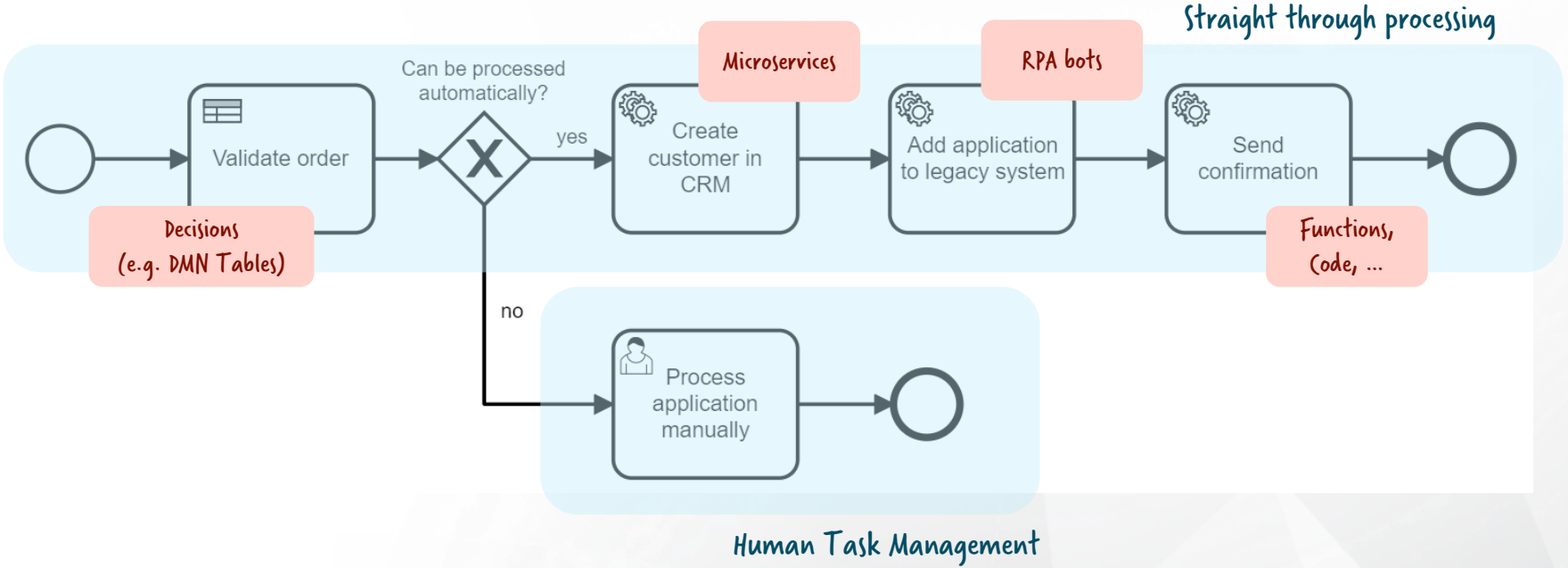


Workflow engines orchestrate



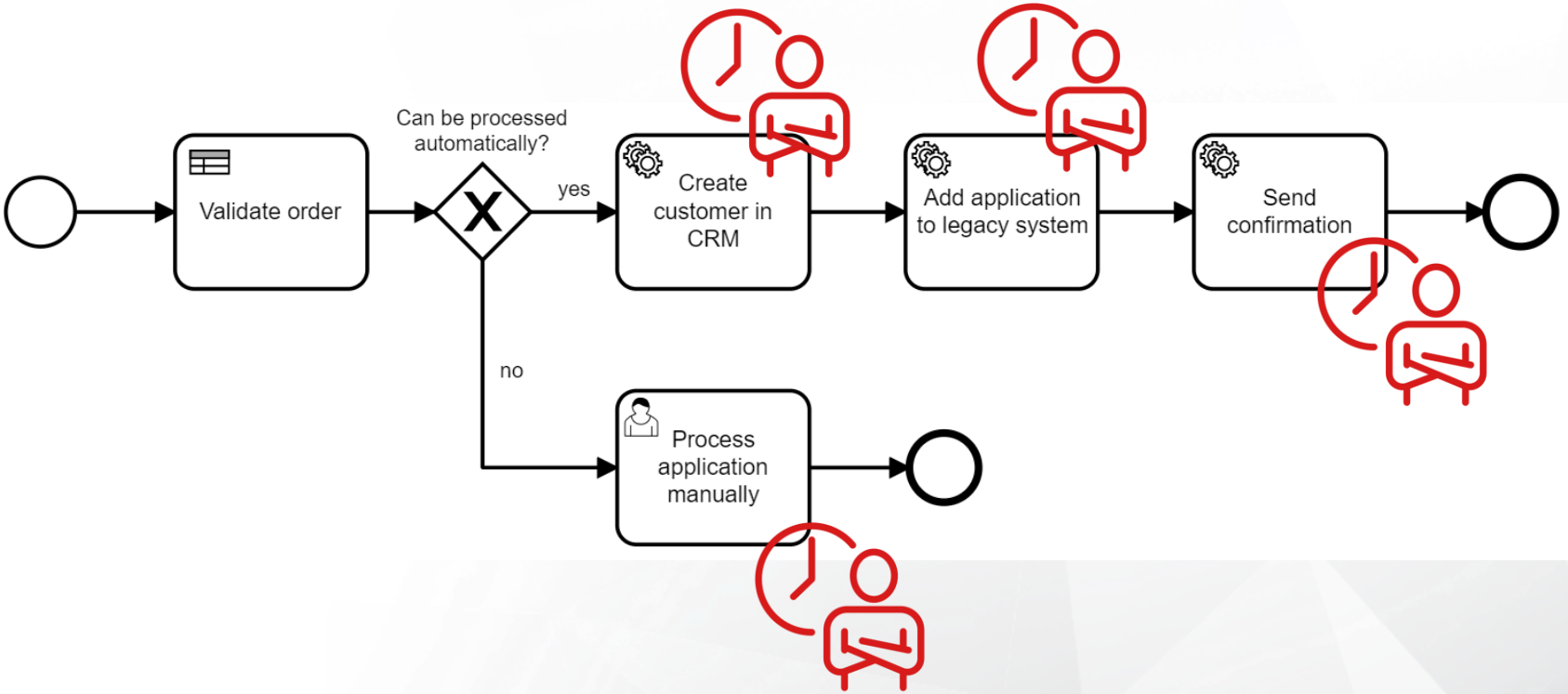
CAMUNDA

Workflow engines orchestrate anything



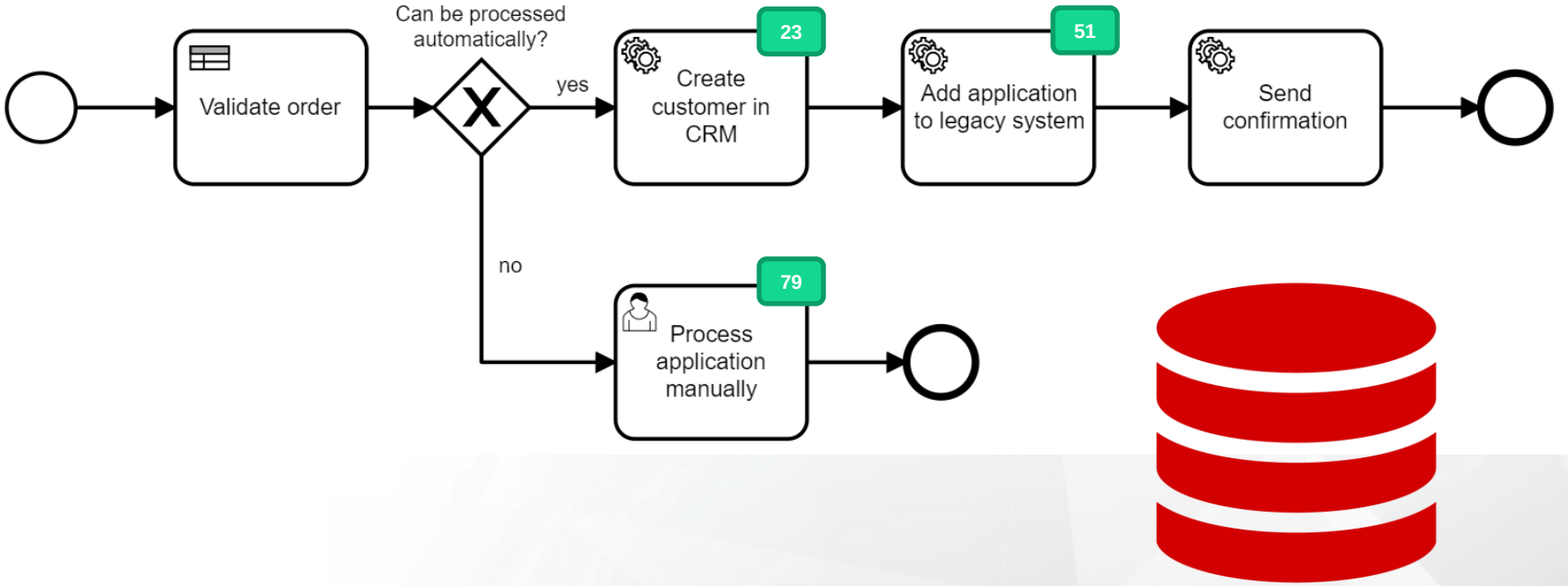
CAMUNDA

The challenge are long running tasks = waiting



CAMUNDA

A workflow engine persists state



CAMUNDA

Many use cases (real-life examples)

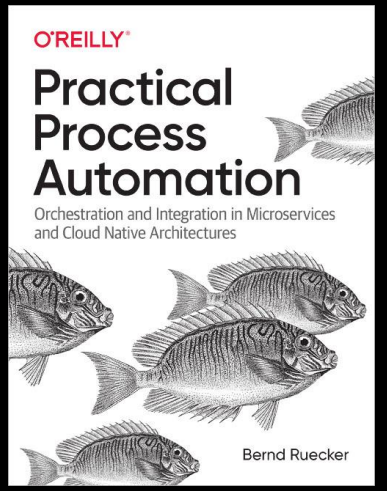
Industry	Pilot	Lighthouse	Broadscale	Sample Clients
Cross-Industry	Approvals Employee Onboarding Credit Check	Microservices Orchestration Centralized Workflow Platform High Throughput	E2E Process Automation Legacy BPM Replacement Cloud Native Applications IT Service Orchestration	Red Bull, 24 Fitness, Ministry of Justice
Banking & Finance	Asset Management	Customer Onboarding Loan Origination & Decisioning ATM Provisioning	Enterprise Platform Development Trading Risk Management / Fraud Detection	Santander, DAB BNP Paribas, NatWest, BlueStep Bank
Insurance	Audit	Customer Onboarding Claim Service & Settlement Policy Underwriting & Contracts	Integrated KYC Core System Automation Risk Management / Fraud Detection	Generali, AXA, Transamerica, ING, Allianz
Telecommunication	Online Systems Integration	New Product Delivery Cell Tower Provisioning Order Management	Contracting, Upgrading, Termination OSS & BSS Open Network Automation Platform (ONAP)	AT&T, T-Mobile, orange, amdocs, O2
Media & Entertainment	Website Content Delivery System Process Fallout	Subscription Management Licensing Content Distribution	Digital Supply Chain New Product Development Fraud Management	Warner Music, Universal, Universal Music Group, The Telegraph, Viacom
Manufacturing & High Tech	Application prototype	Order Execution Payments Servicing Research & Development	Embedded Workflow Automation Customer Service Supply Chain	Lufthansa Technik, Fujitsu, Autodesk, Intuit, CAMUNDA

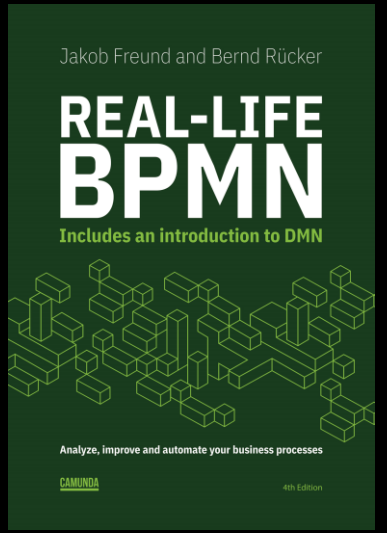
Warning:
Contains Opinion

Bernd Ruecker

Co-founder and
Chief Technologist of
Camunda

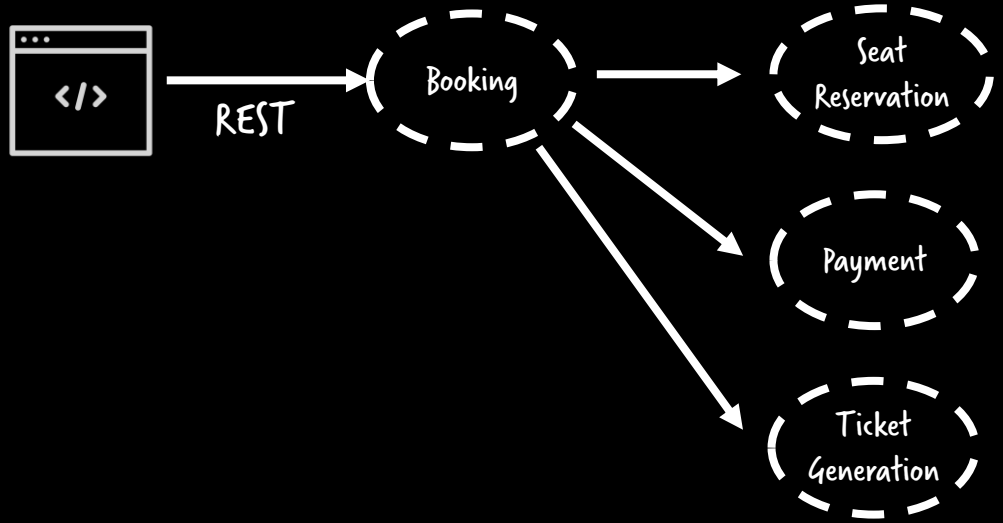
mail@berndruecker.io
@berndruecker
http://berndruecker.io/



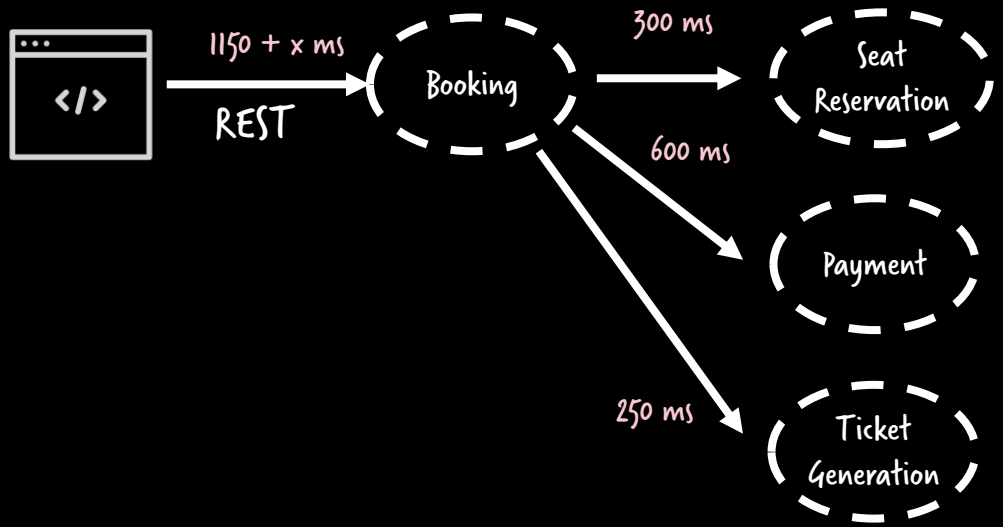


But...

Weaknesses



Weaknesses: Latency creep



Startseite > Produkte > Web > Web Fundamentals

Why Performance Matters

By Jeremy Wagner

Jeremy is a contributor to Web**Fundamentals**

In our shared pursuit to push the web to do more, we're running into a common
performance. Sites have more features than ever before. So much so, that man
to achieve a high level of performance across a variety of network conditions a

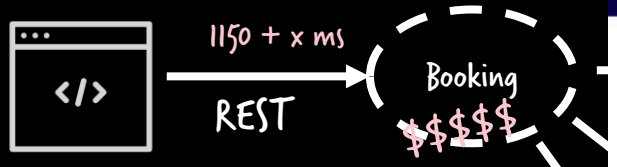
Performance issues vary. At best, they create small delays that are only briefly a
users. At worst, they make your site completely inaccessible, unresponsive to u

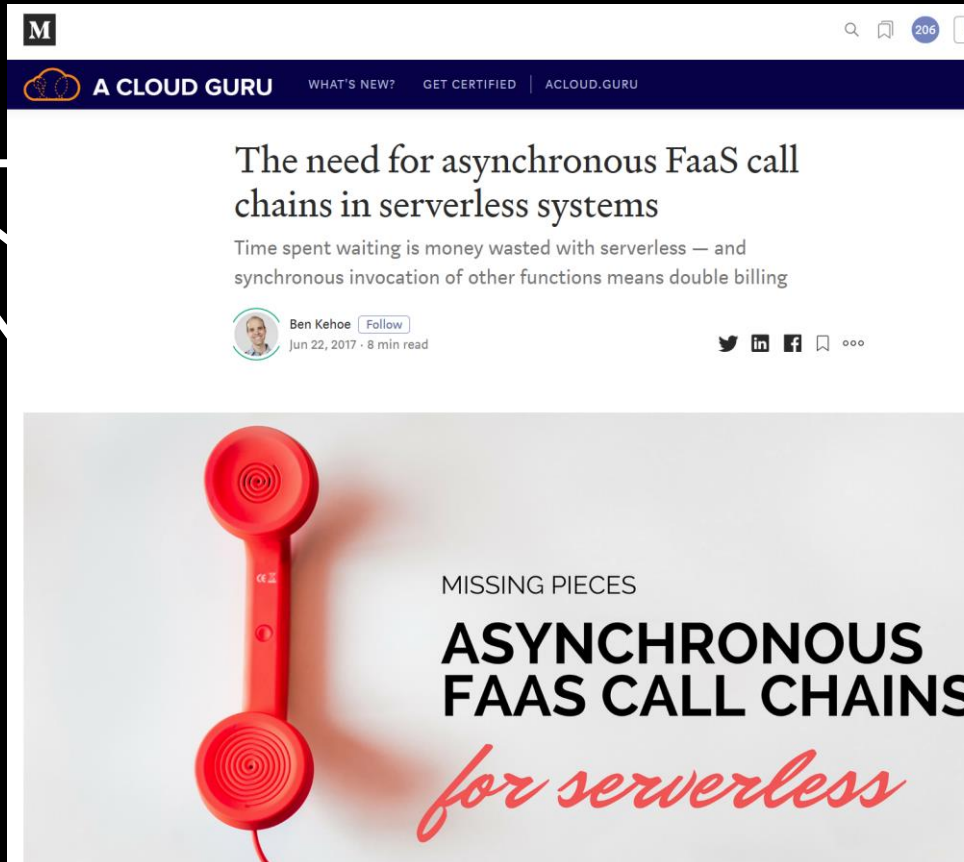
Performance is about retaining users

- Pinterest increased traffic and sign-ups by 15% when they reduced perceived wait times by 40%.
- COOK increased conversions by 7%, decreased bounce rates by 7%, and increased pages per session by 10% when they reduced average page load time by 850 milliseconds.
- The BBC found they lost an additional 10% of users for every additional second their site took to load.
- DoubleClick found 53% of mobile site visits were abandoned if a page took longer than 3 seconds to load.

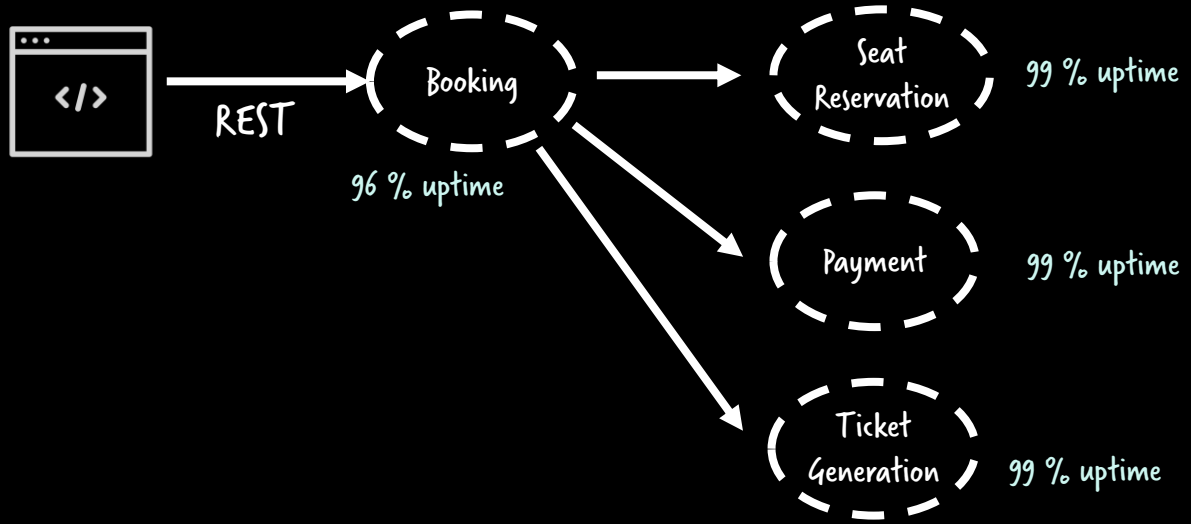
https://developers.google.com/web/fundamentals/performance/why-performance-mattersvhttps://developers.google.com/web/fundamentals/performance/why-performance-matters

Want to go serverless?



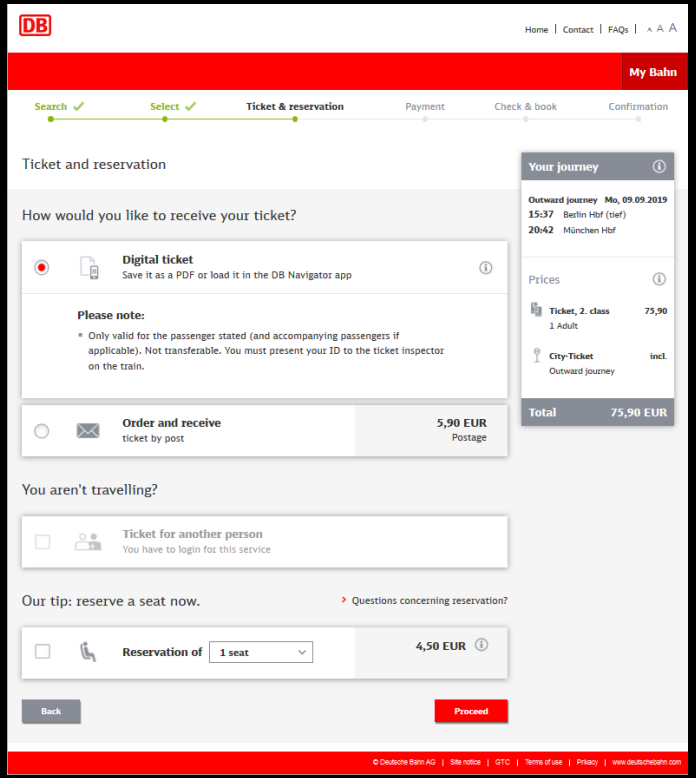


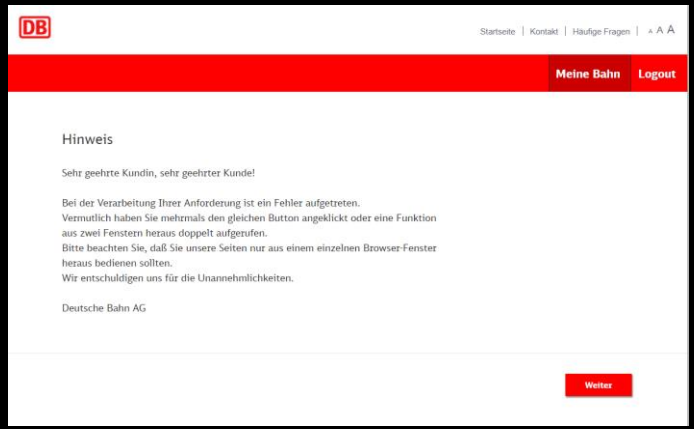
Weaknesses: Availabiliy erosion

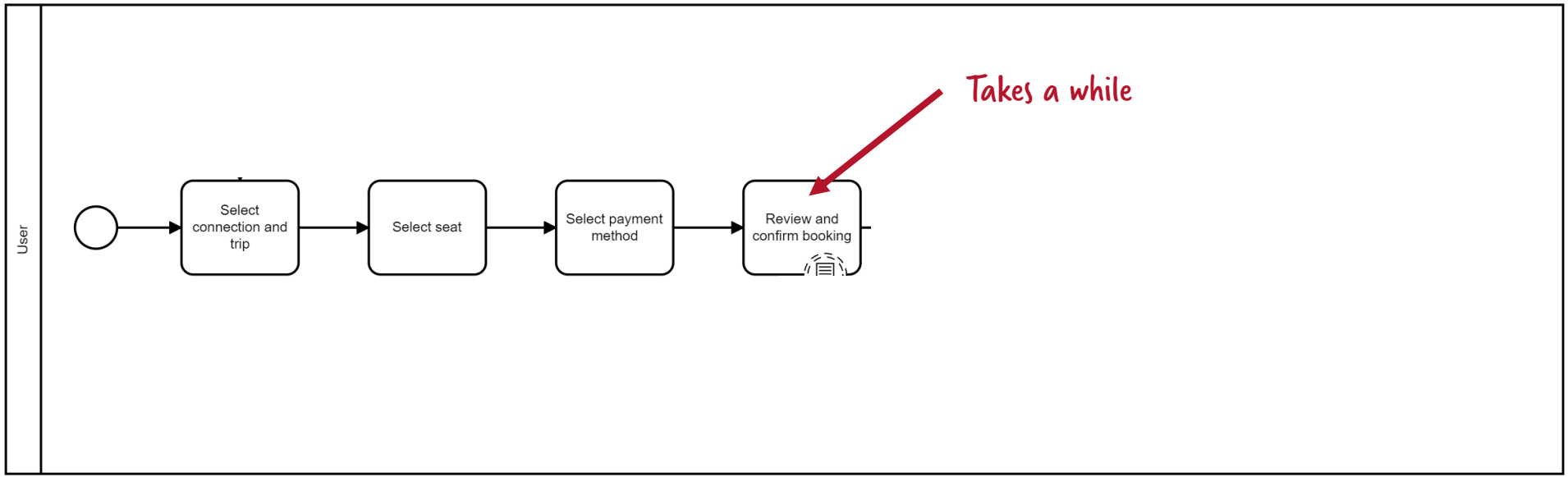


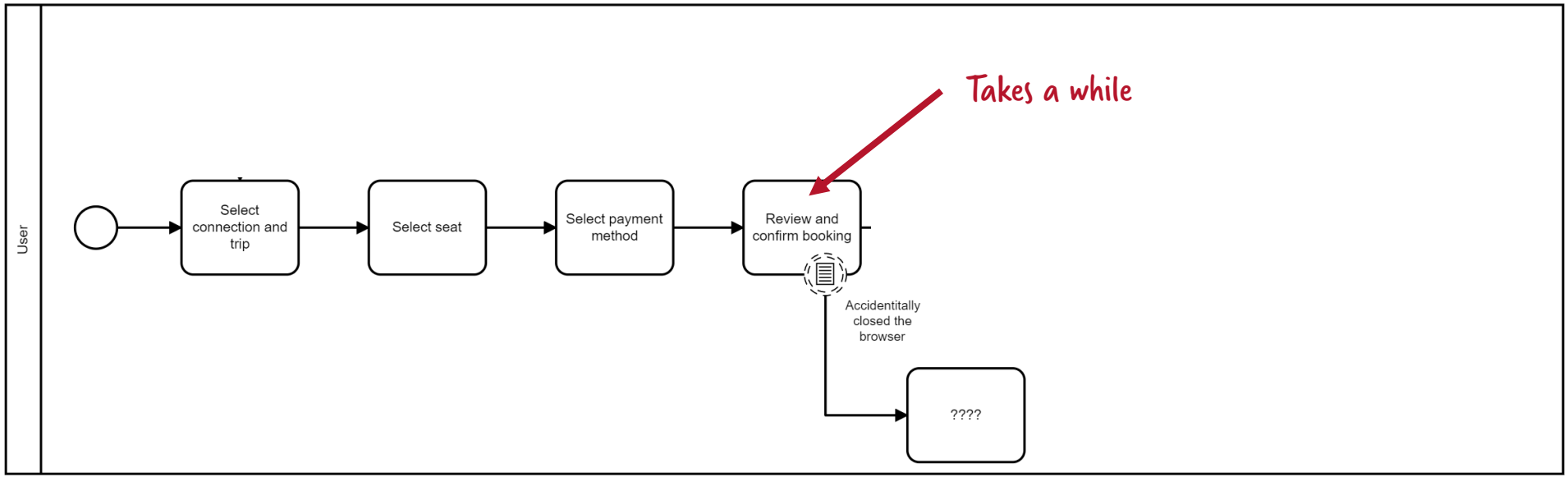
And...

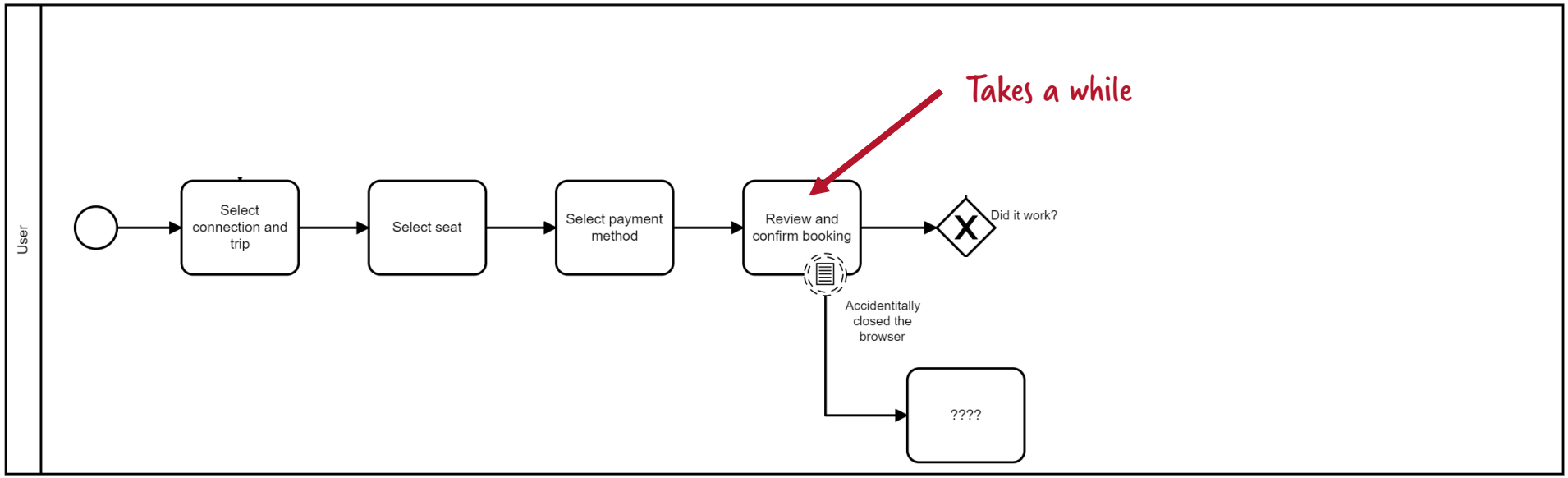
@berndruecker

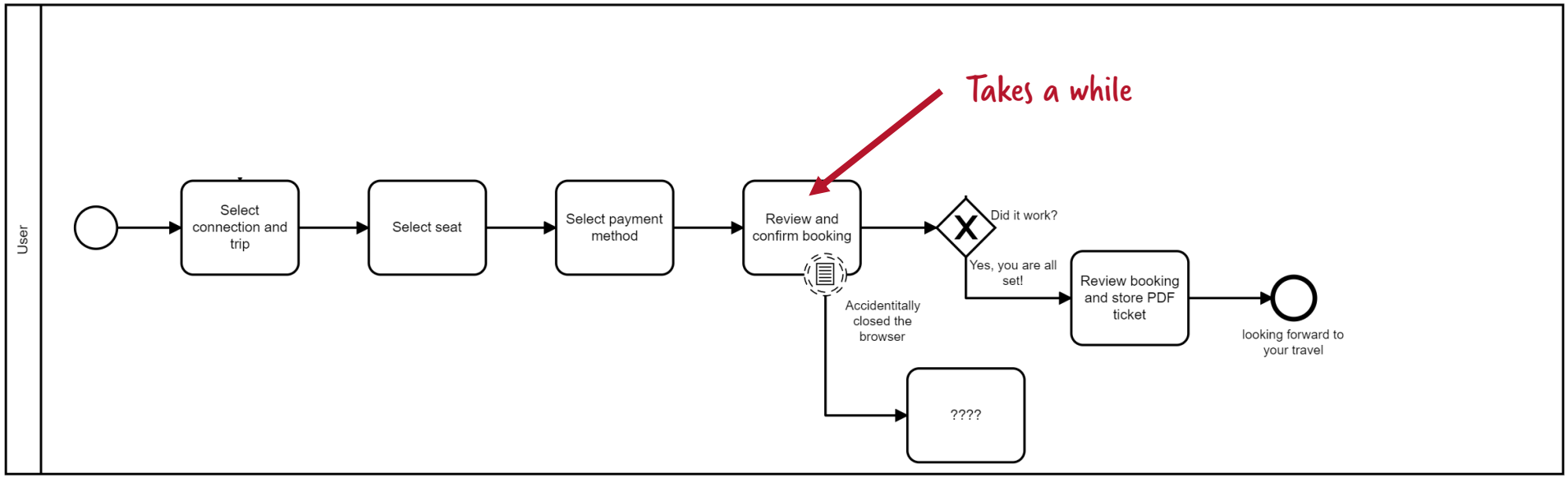


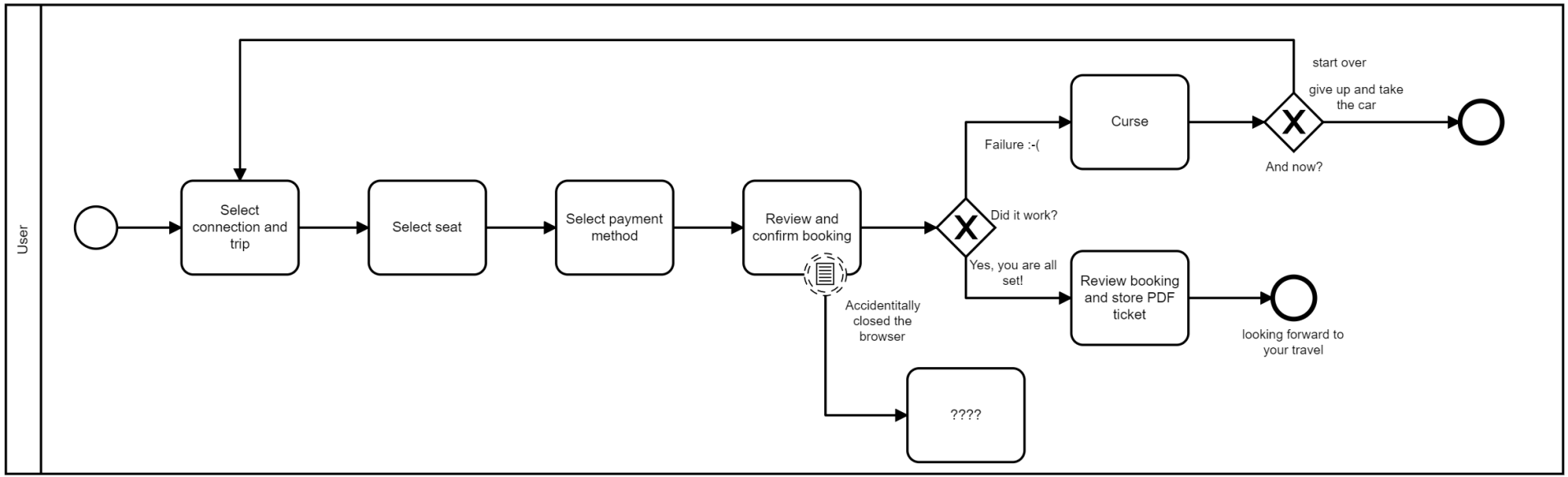


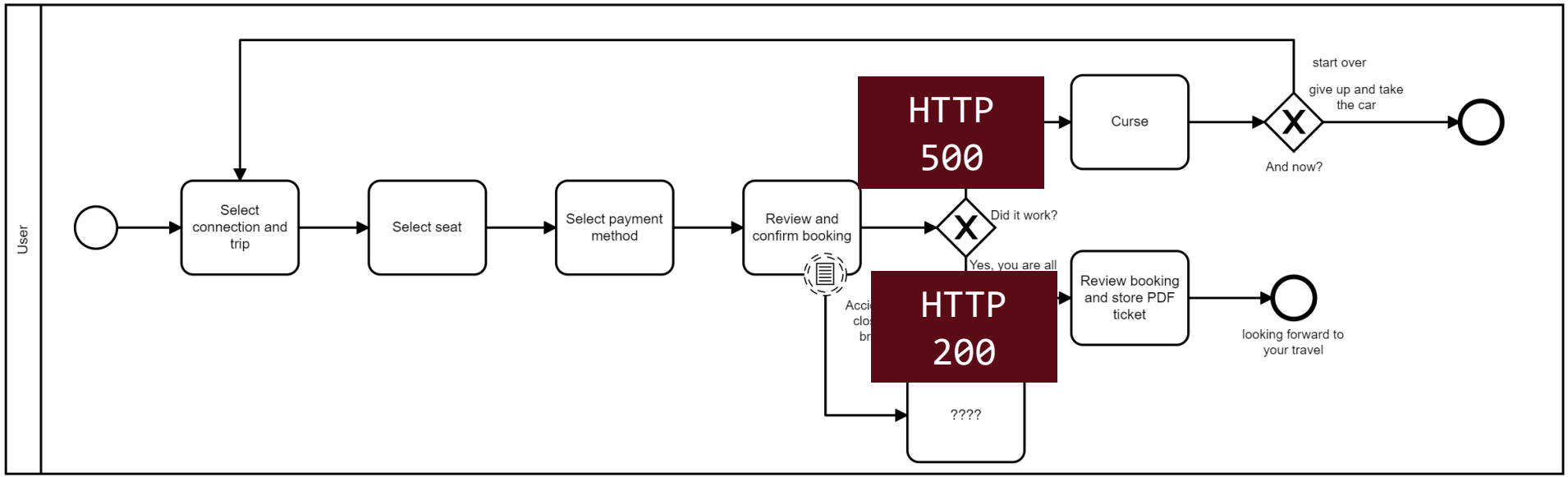

User
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Takes a while


User
Takes a while
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Accidentitally closed the browser
????


User
Takes a while
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Did it work?
Accidentitally closed the browser
????


User
Takes a while
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Did it work?
Yes, you are all set!
Review booking and store PDF ticket
looking forward to your travel
Accidentitally closed the browser
????

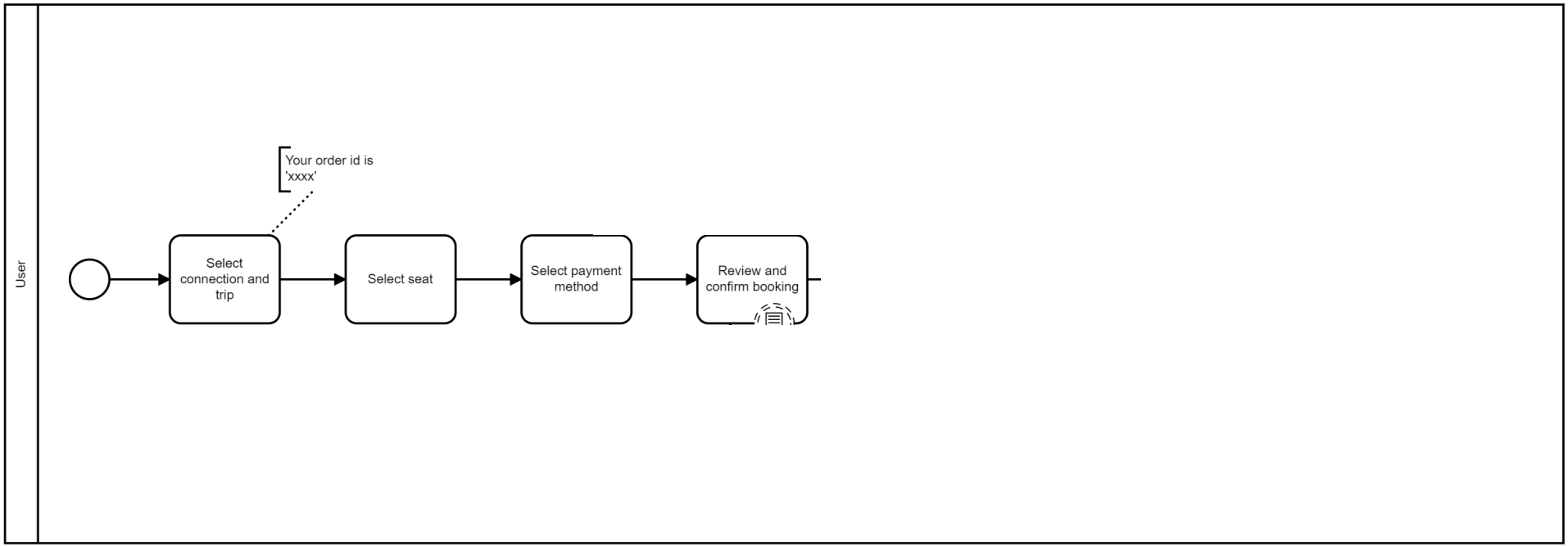

User
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Did it work?
Failure :-(
Curse
And now?
start over
give up and take the car
Yes, you are all set!
Review booking and store PDF ticket
looking forward to your travel
Accidentitally closed the browser
????

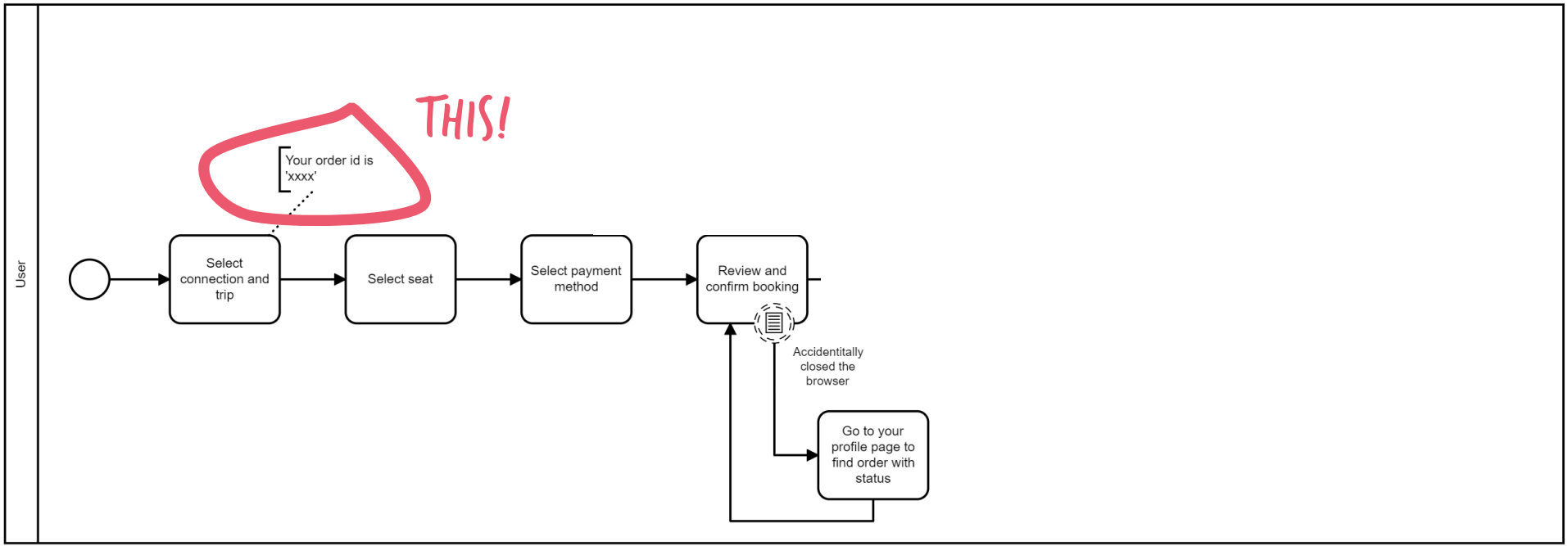

User
Select connection and trip
Select seat
Select payment method
Review and confirm booking
HTTP 500
Curse
start over
give up and take the car
And now?
Did it work?
Yes, you are all
HTTP 200
Review booking and store PDF ticket
looking forward to your travel
????

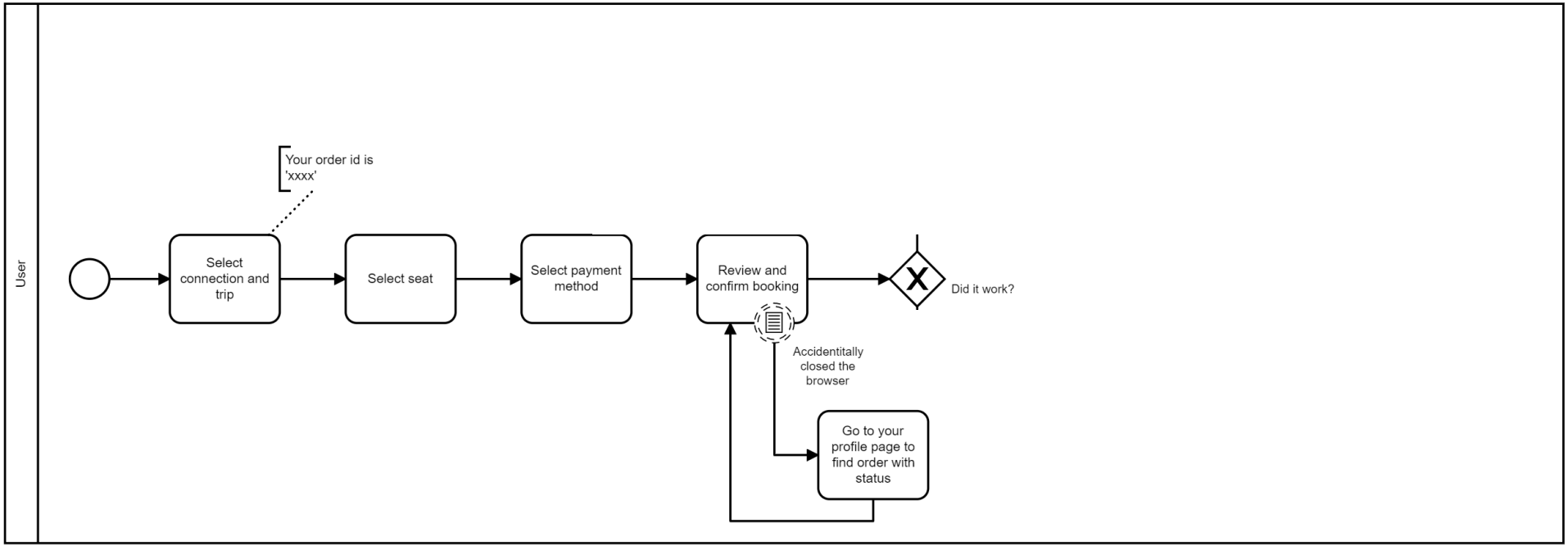
Can your company leverage your hipster architecture?

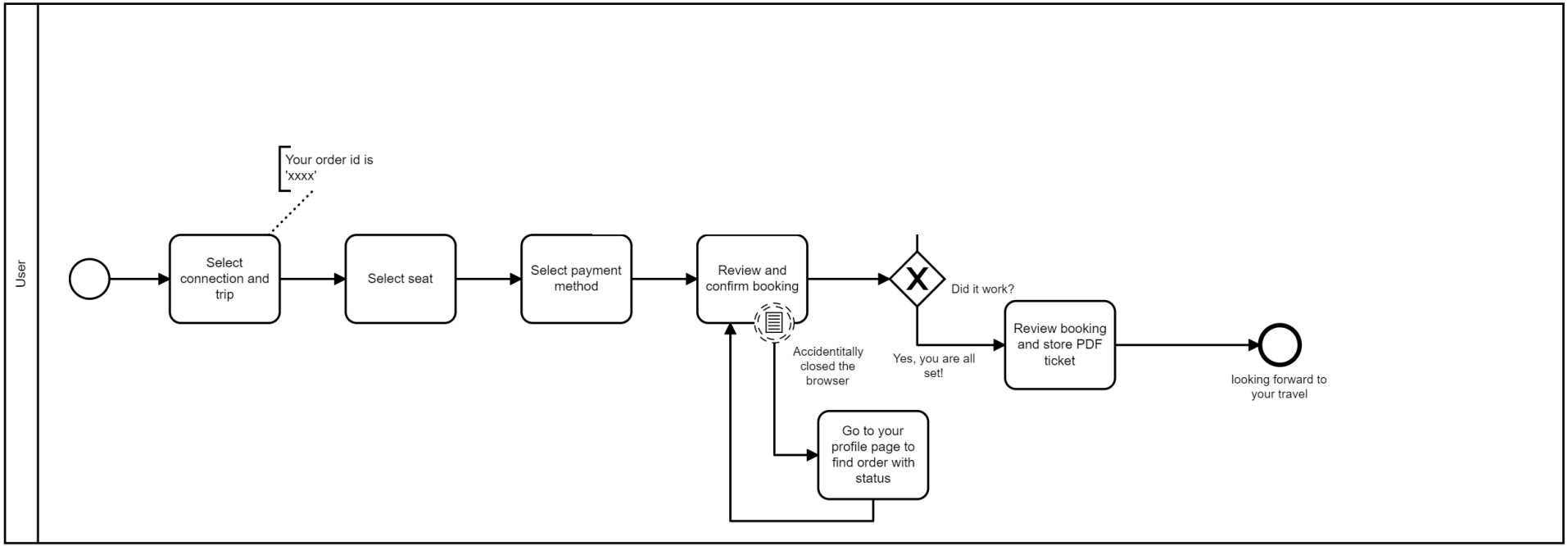
You need to change **business processes** and **customer experience**!

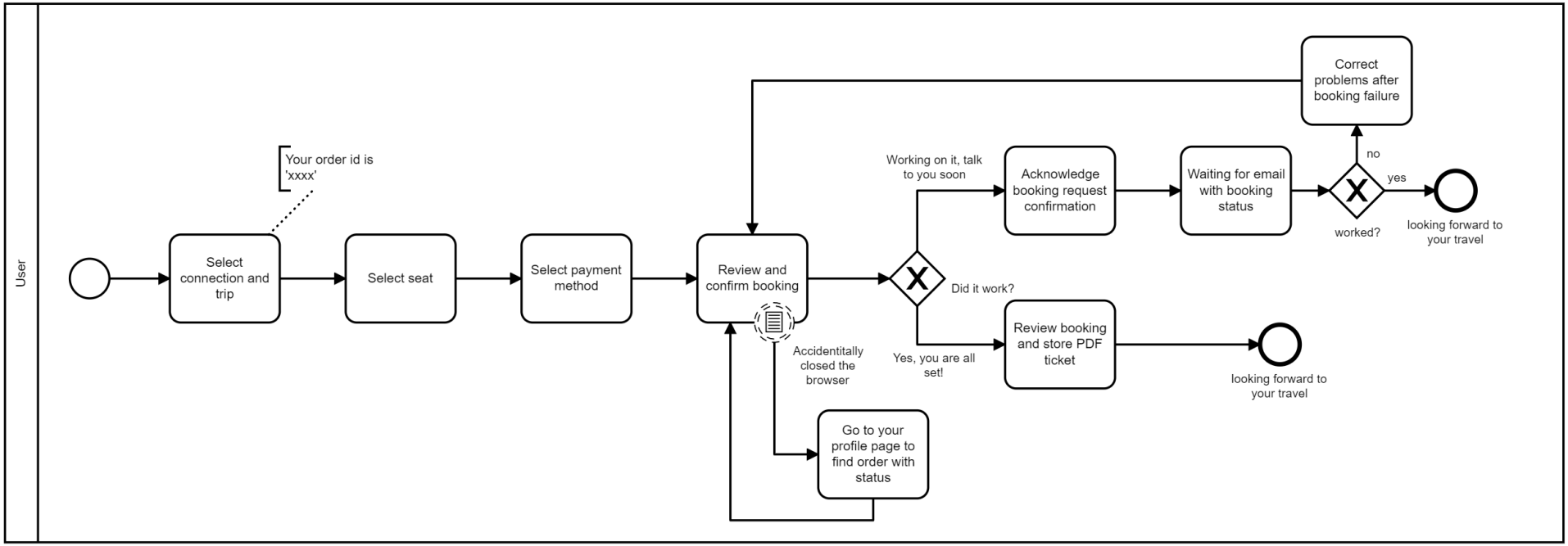
Shutterstock

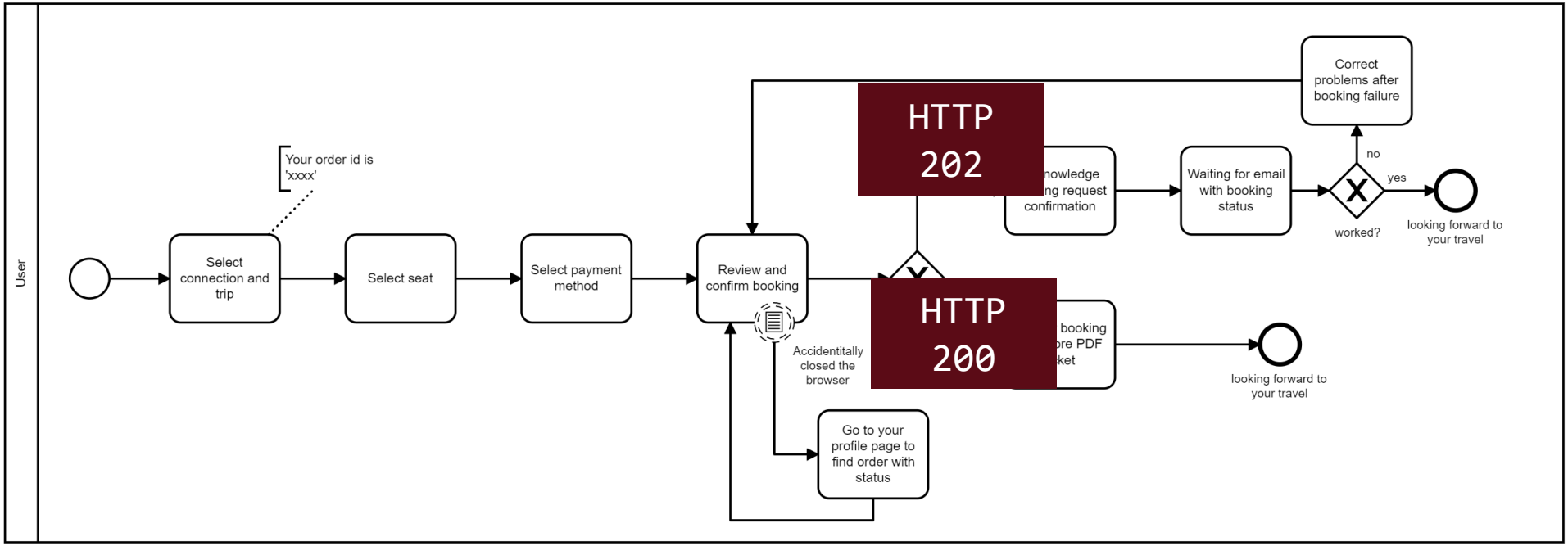

User
Your order id is 'xxxx'
Select connection and trip
Select seat
Select payment method
Review and confirm booking

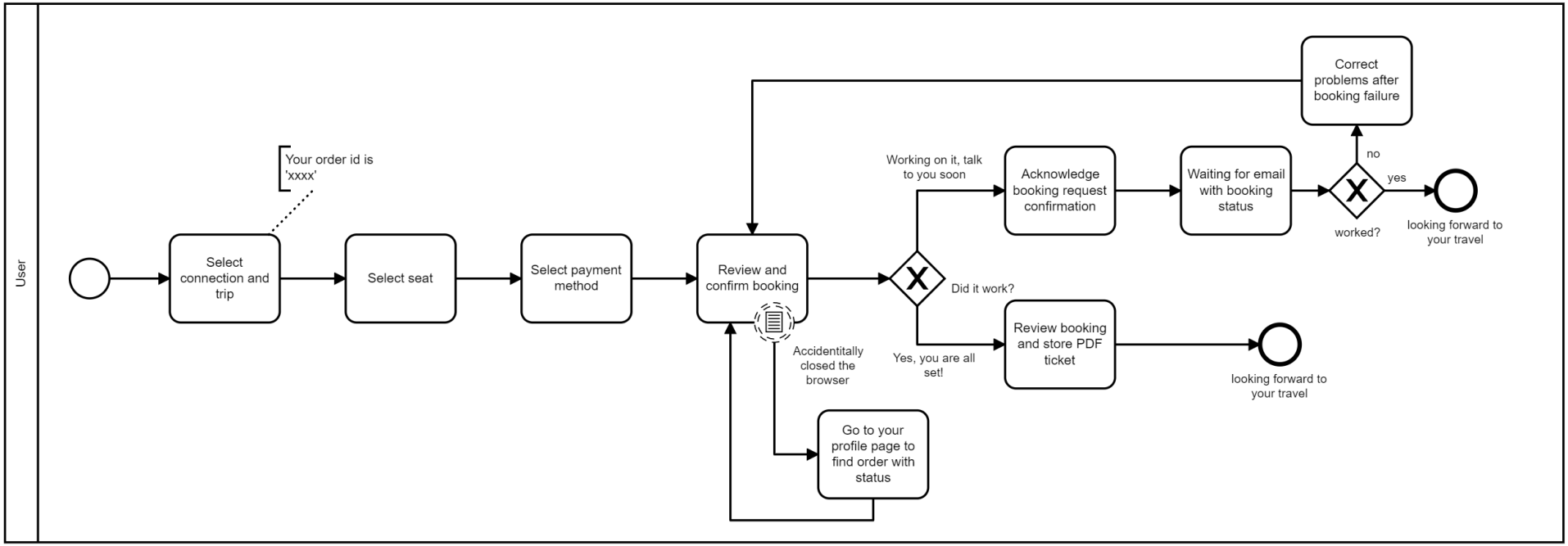

User
THIS!
Your order id is 'xxxx'
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Accidentitally closed the browser
Go to your profile page to find order with status


User
Your order id is 'xxxx'
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Did it work?
Accidentitally closed the browser
Go to your profile page to find order with status


User
Your order id is 'xxxx'
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Did it work?
Yes, you are all set!
Review booking and store PDF ticket
looking forward to your travel
Accidentitally closed the browser
Go to your profile page to find order with status

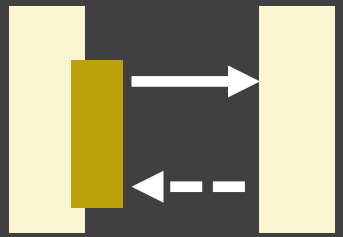

User
Your order id is 'xxxx'
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Accidentitally closed the browser
Go to your profile page to find order with status
Did it work?
Working on it, talk to you soon
Acknowledge booking request confirmation
Waiting for email with booking status
worked?
no
yes
Correct problems after booking failure
looking forward to your travel
Yes, you are all set!
Review booking and store PDF ticket
looking forward to your travel


User
Your order id is 'xxxx'
Select connection and trip
Select seat
Select payment method
Review and confirm booking
HTTP 202
HTTP 200
Accidentitally closed the browser
Go to your profile page to find order with status
nowledge ng request confirmation
Waiting for email with booking status
Correct problems after booking failure
no
yes
worked?
looking forward to your travel
booking re PDF ket
looking forward to your travel

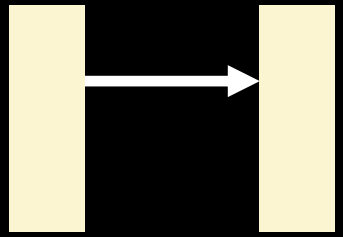

User
Your order id is 'xxxx'
Select connection and trip
Select seat
Select payment method
Review and confirm booking
Accidentitally closed the browser
Go to your profile page to find order with status
Did it work?
Working on it, talk to you soon
Acknowledge booking request confirmation
Waiting for email with booking status
worked?
no
yes
Correct problems after booking failure
looking forward to your travel
Yes, you are all set!
Review booking and store PDF ticket
looking forward to your travel

Patterns

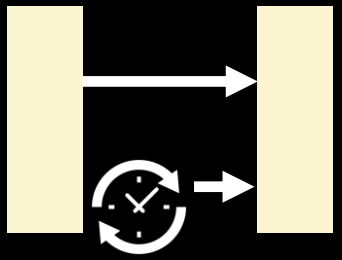
Blocking Call



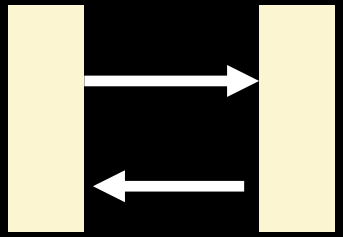
Fire & Forget



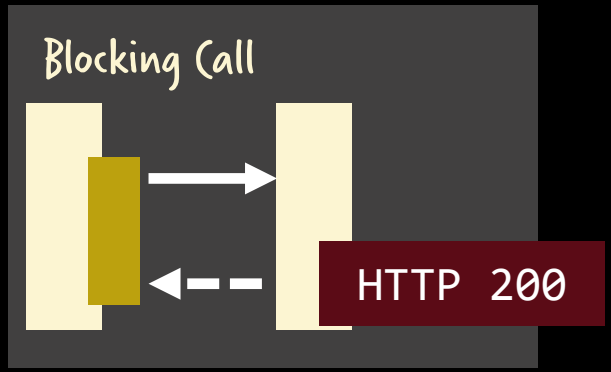
Polling

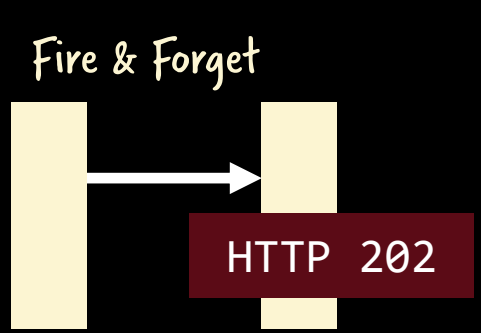


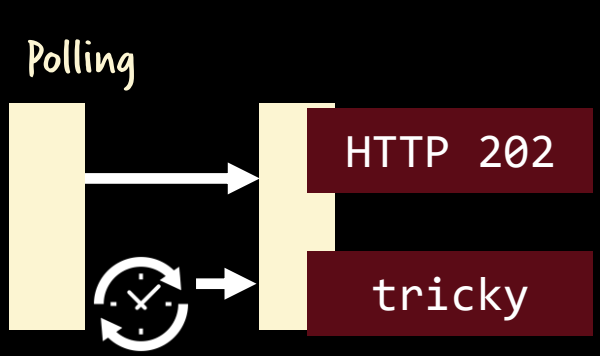
Callback

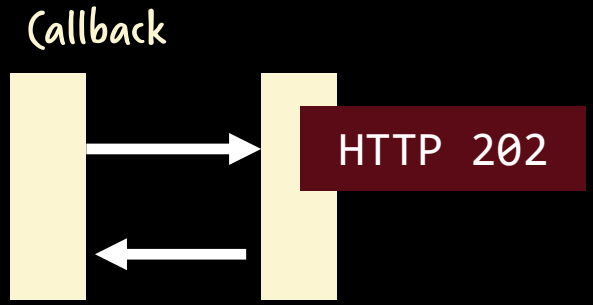


Patterns

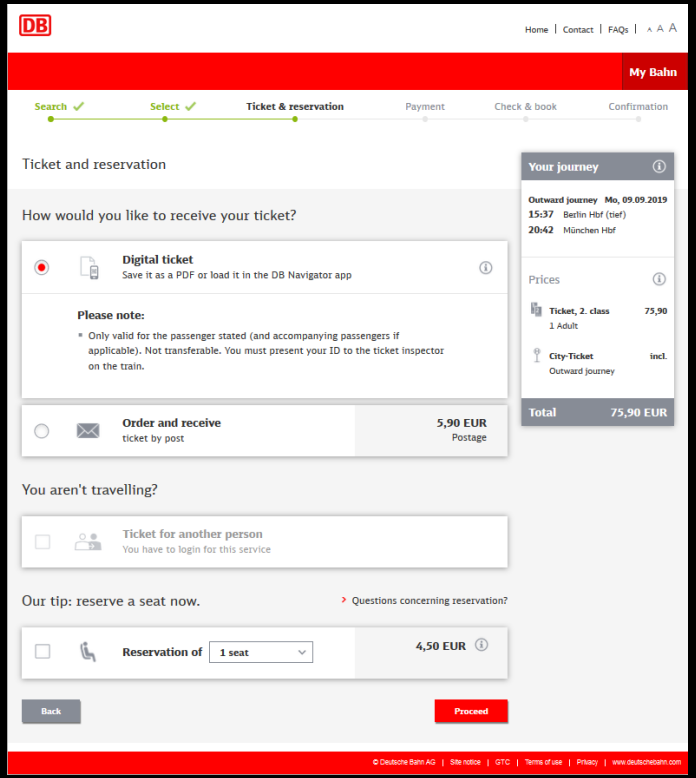

Blocking Call
HTTP 200


Fire & Forget
HTTP 202


Polling
HTTP 202
tricky


Callback
HTTP 202

Redesign your business process accordingly!



happy case

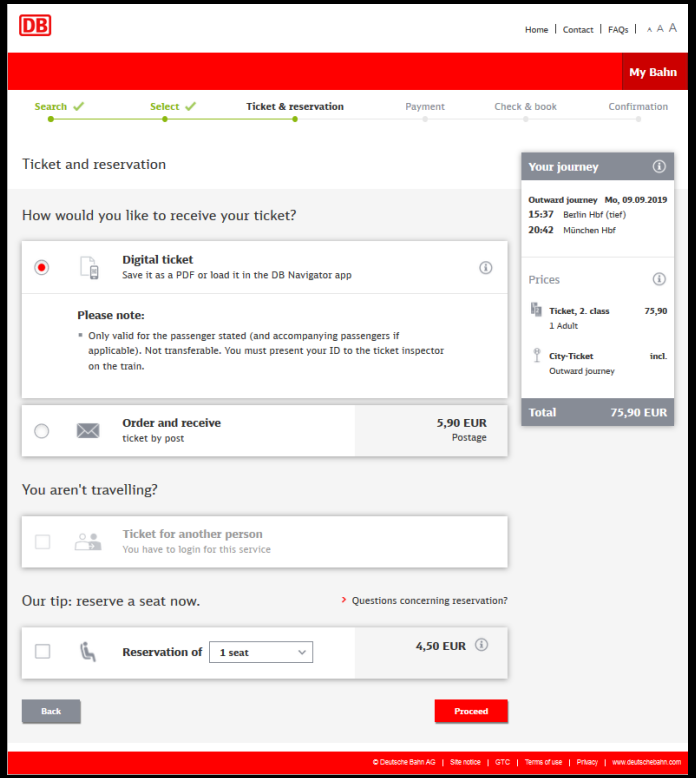
Sync in happy case

failure case

Or some interface to poll for status

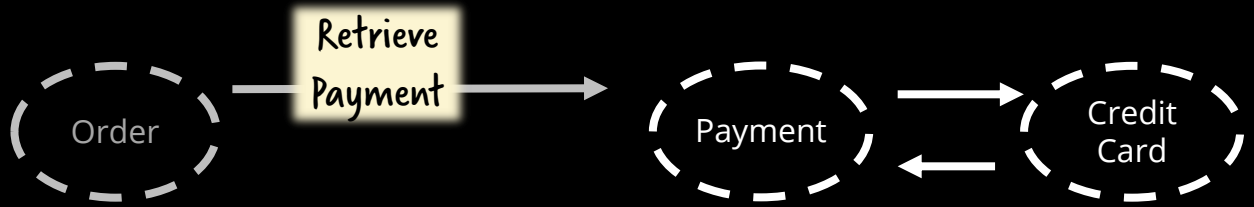
Async response

Redesign your business process accordingly!

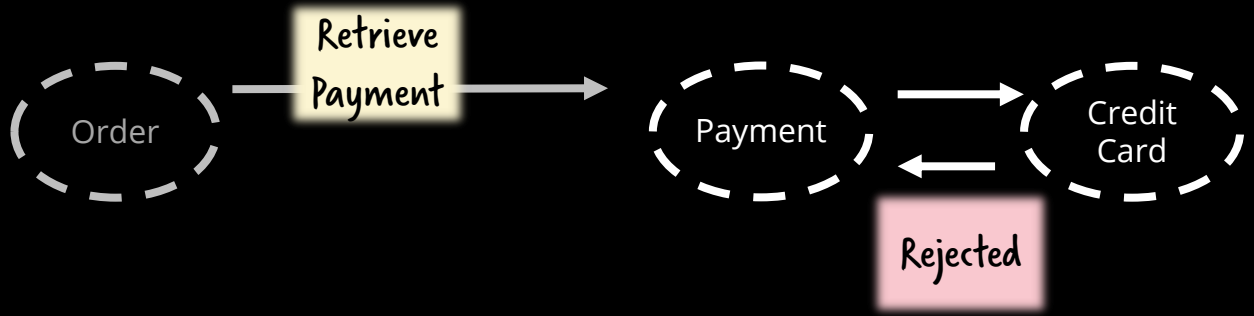


Asynchronous communication enables long running services which allow to assign responsibility correctly

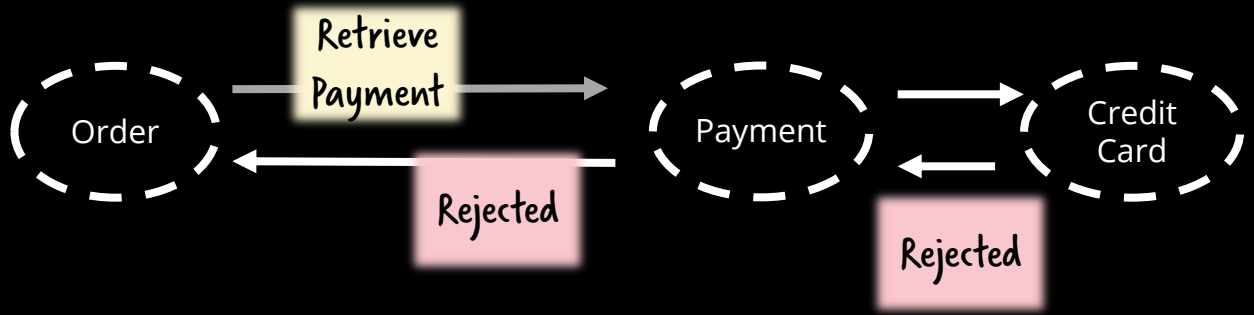
Example



Example



Example



If the credit card was rejected, the customer can provide new details

-----Ursprüngliche Nachricht-----
Von: GitHub [mailto:support@github.com]
Gesendet: Samstag, 8. April 2017 12:44
Betreff: [GitHub] We had a problem billing your account

Greetings

This email is to inform you that we've received the following error trying to bill your credit card:

Declined

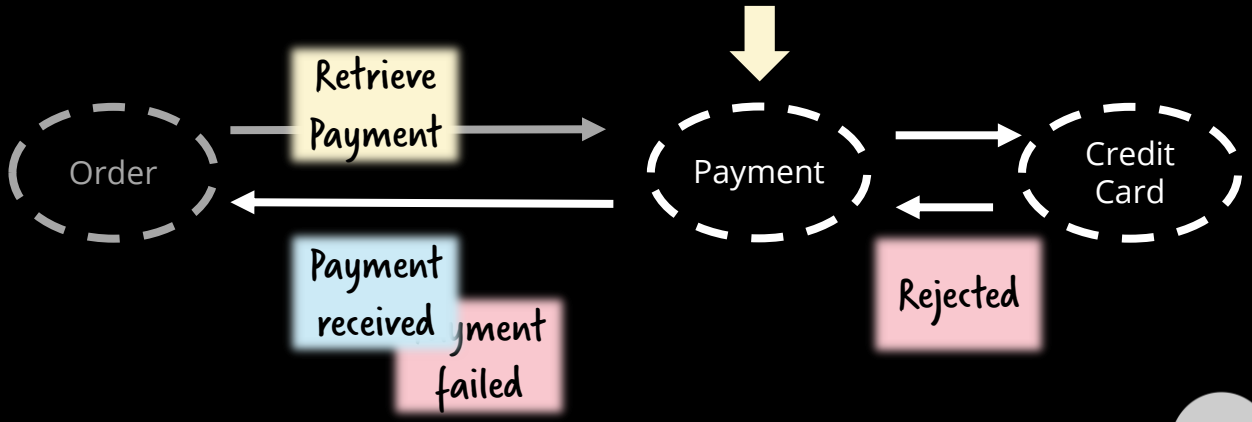
We'll try billing your credit card again over the next two weeks. Please resolve this issue to ensure uninterrupted service.

If you need to update your payment information, please head to https://github.com/organizations/flowing/settings/billing.
help you out.

If you feel there's been a mistake or have any questions, please contact support@github.com.

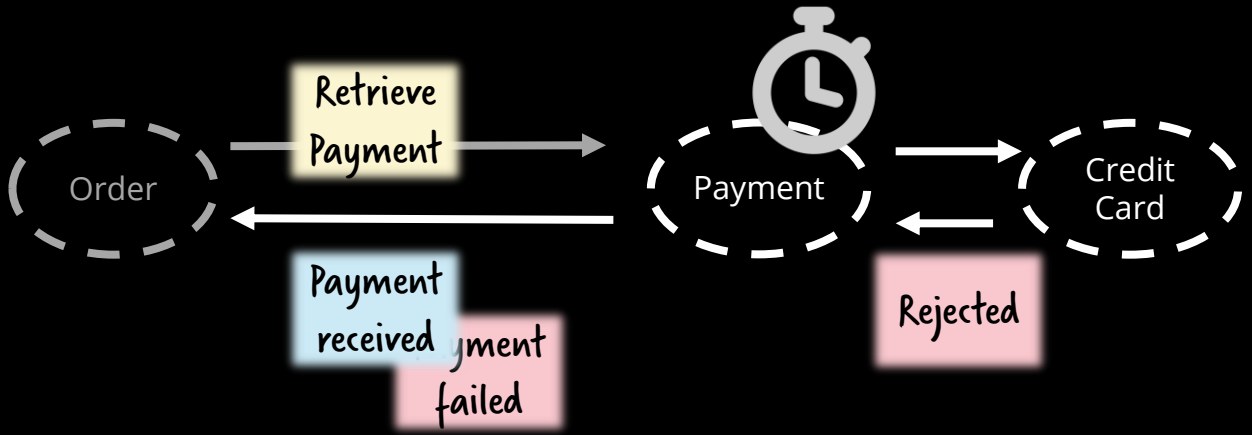
Thanks,
The GitHub Team

Who is responsible?

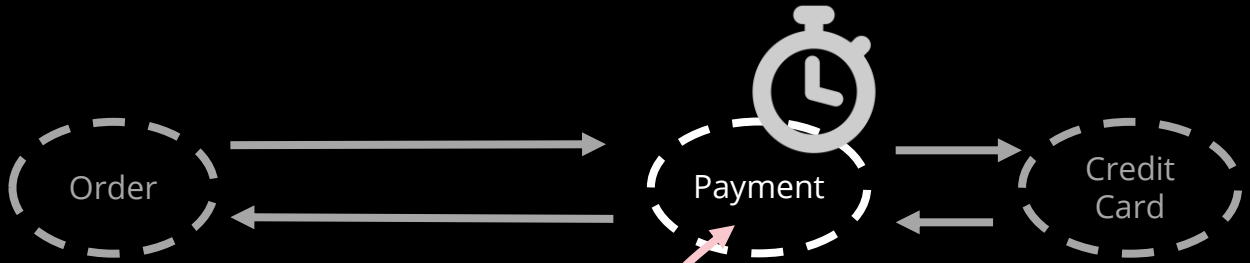


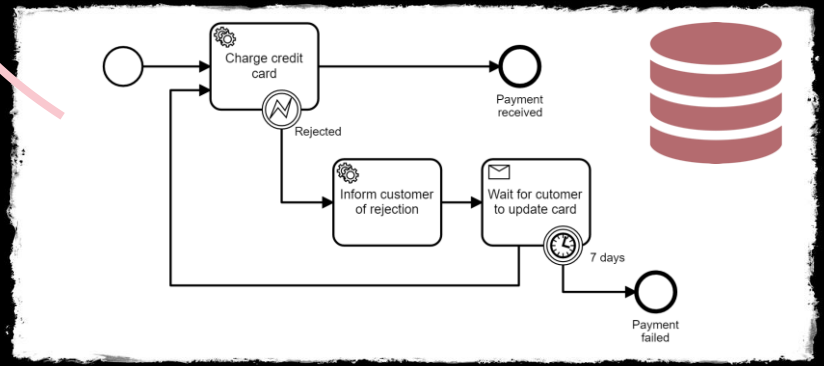
If the credit card was rejected, the customer can provide new details

Long running services



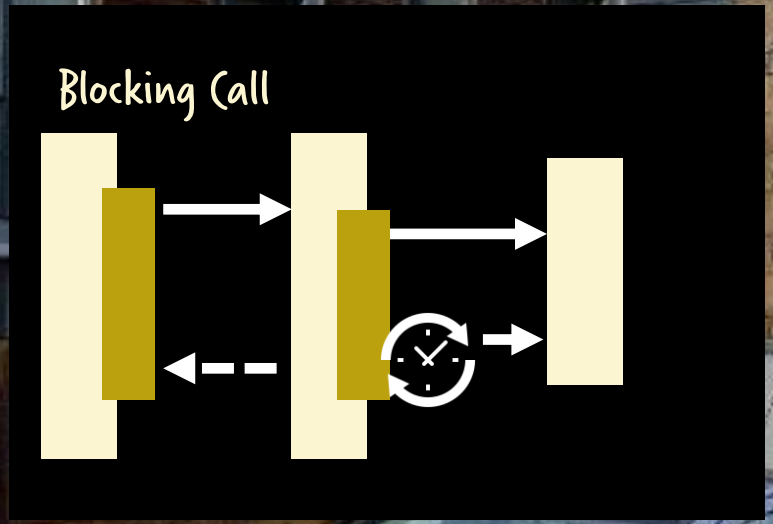
Long running services



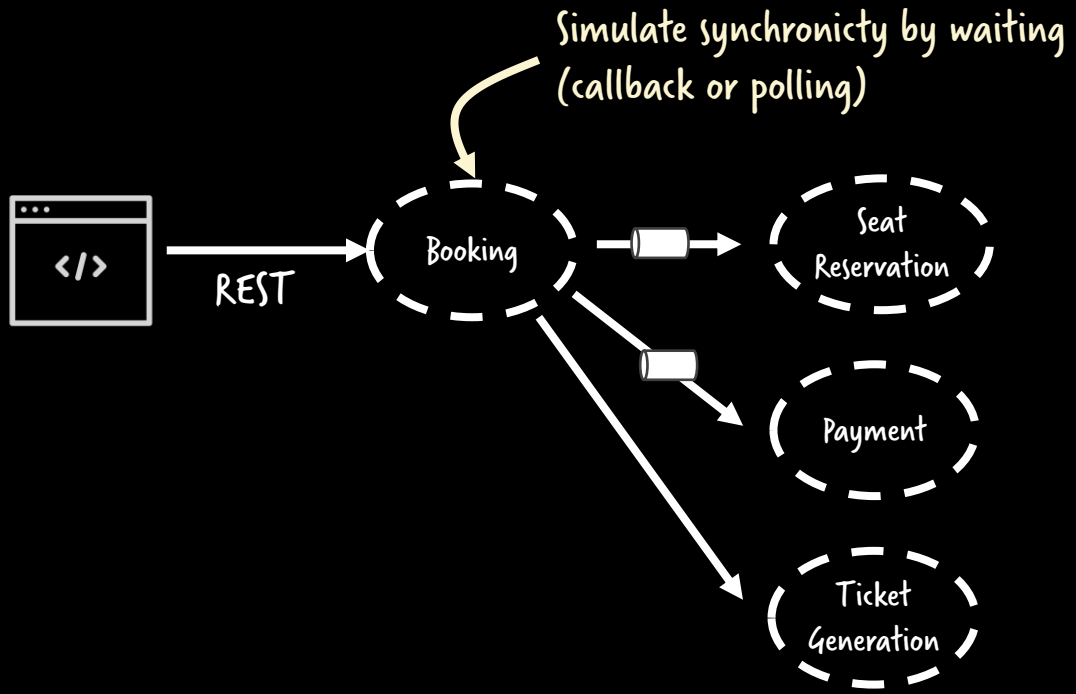


Long running services allow
to assign responsibility correctly

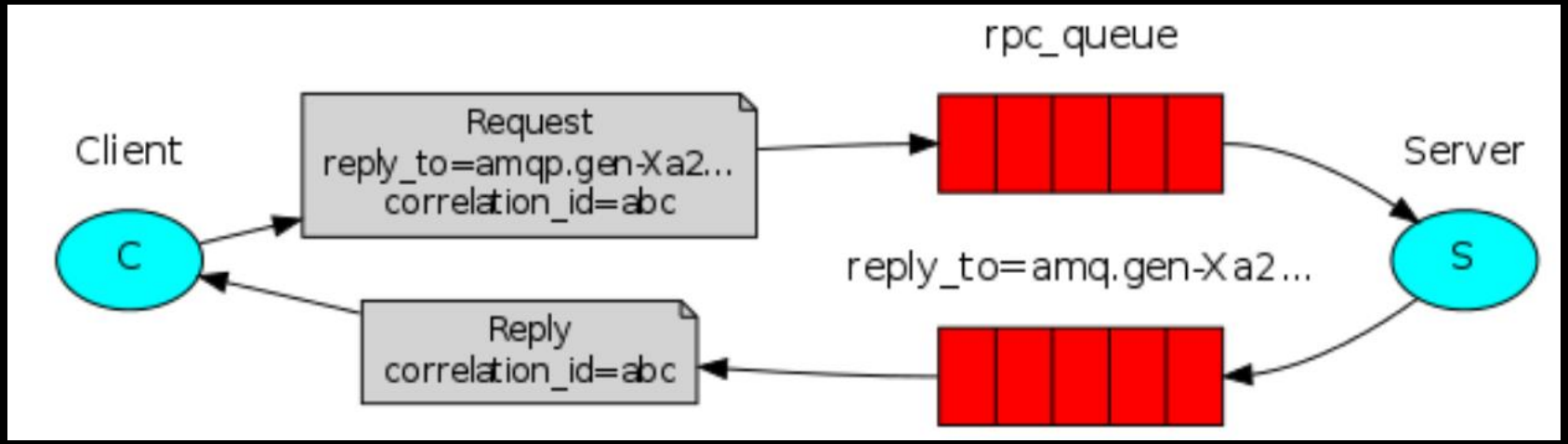
Synchronous Facade



Example


Simulate synchronicty by waiting
(callback or polling)
</>
REST
Booking
Seat
Reservation
Payment
Ticket
Generation

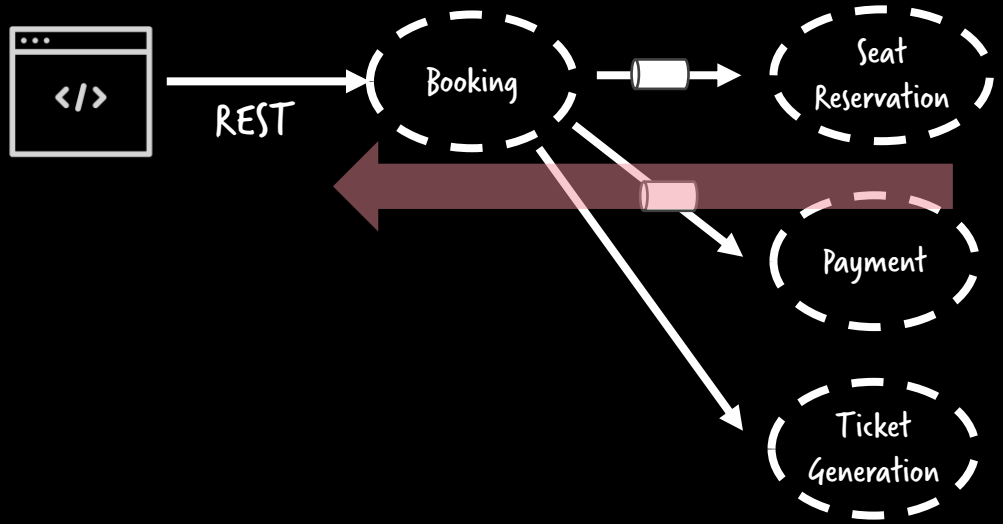
Compare to e.g. AMQP



https://www.rabbitmq.com/tutorials/tutorial-six-java.html

Code

Push the facade towards the edge as far as possble



Summary

- To increase responsiveness and take responsibility in services seriously, you need some degree of asynchronicity and allow long running services
- A workflow engine helps
- If you need synchronous behavior, create a facade, but plan for failure and push the facade to the edge

Thank you!

Contact: mail@berndruecker.io
@berndruecker

Slides: https://berndruecker.io

Blog: https://medium.com/berndruecker

Code: https://github.com/berndruecker

InfoWorld FROM IDG

https://www.infoworld.com/article/3254777/application-development/3-common-pitfalls-of-microservices-integrationand-how-to-avoid-them.html

InfoQ ueue

https://www.infoq.com/articles/events-workflow-automation

THENEWSTACK

https://thenewstack.io/5-workflow-automation-use-cases-you-might-not-have-considered/