

Workflow Engines
Lovelier than you expect
and more diverse than
you think!

@berndruecker

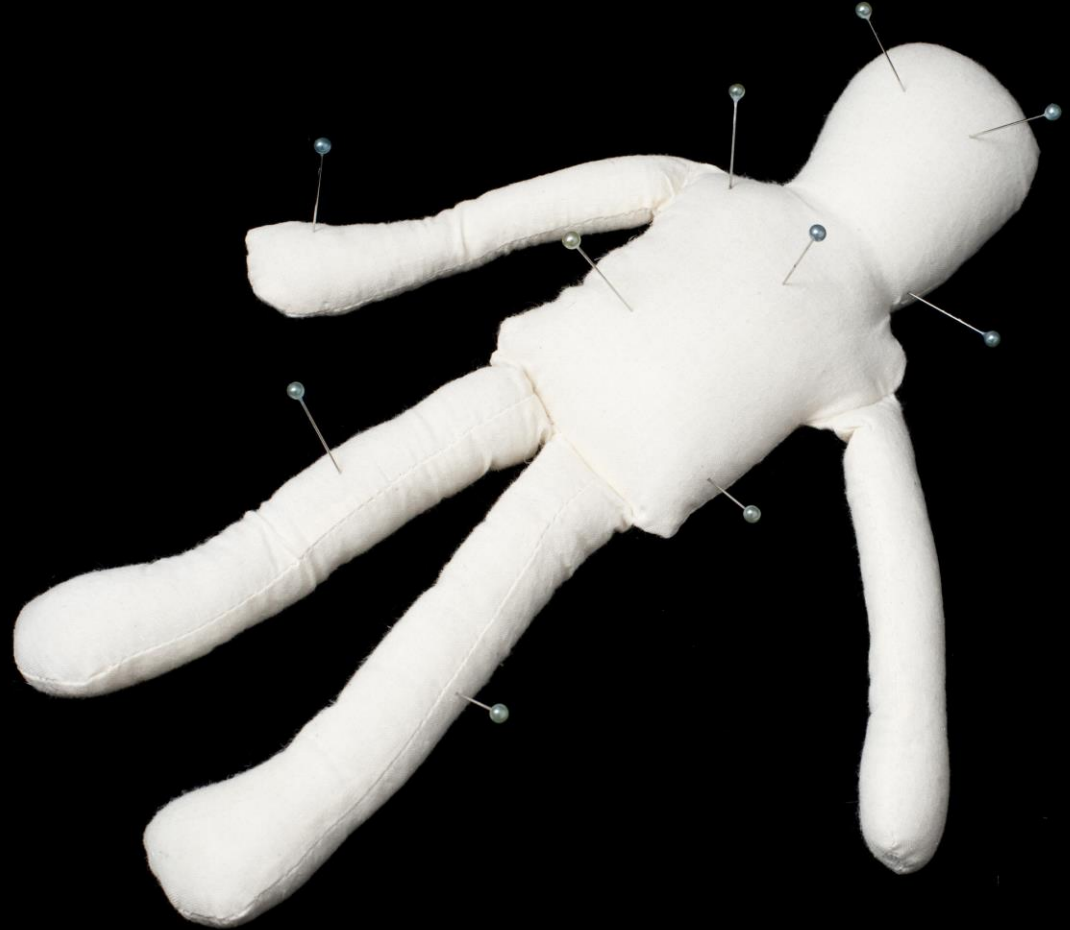


Workflow Engines...

Do you mean BPM?

Wrong Perception of „BPM“

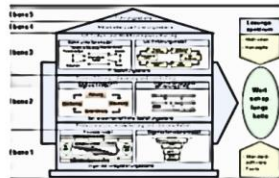
(Business Process Management)



Google for „BPM Frameworks“



BPM Capability Framework | BPM in the Digital Age
digital-bpm.com



Datei: BPM-Framework.png - Wikipedia
de.wikipedia.org



Enterprise BPM framework
ariscommunity.com



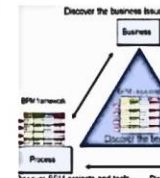
Enterprise BPM Framework
slideshare.net



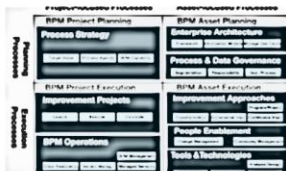
Enterprise BPM framework
ariscommunity.com



Enterprise BPM Framework
slideshare.net



Part 13: Enterprise BPM
blogs.sap.com



The BPM-D Process Framework - The Process...
researchgate.net



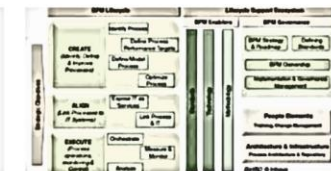
An Exploration into Future Business Process Management...
link.springer.com



Business Process Management
ventum-consulting.com



Enterprise BPM Framework
slideshare.net



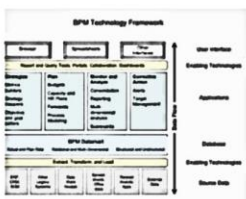
Business Process Management Framework for Ana...
ebayr.net



Part 10: Enterprise BPM framework; The mature...
blogs.sap.com



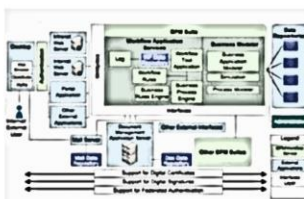
History SAP BPM Framework - [PDF Doc...
documents.pub



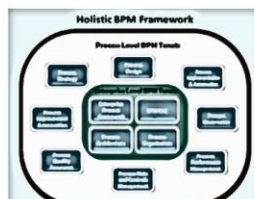
BPM Industry Framework | BPM Partners
bpmpartners.com



Class Notes: Considering...
bptrends.com



Business process management - Wikipedia
en.wikipedia.org



BPM, BPM Training, BPM Training in Indi...
silverfirconsulting.com

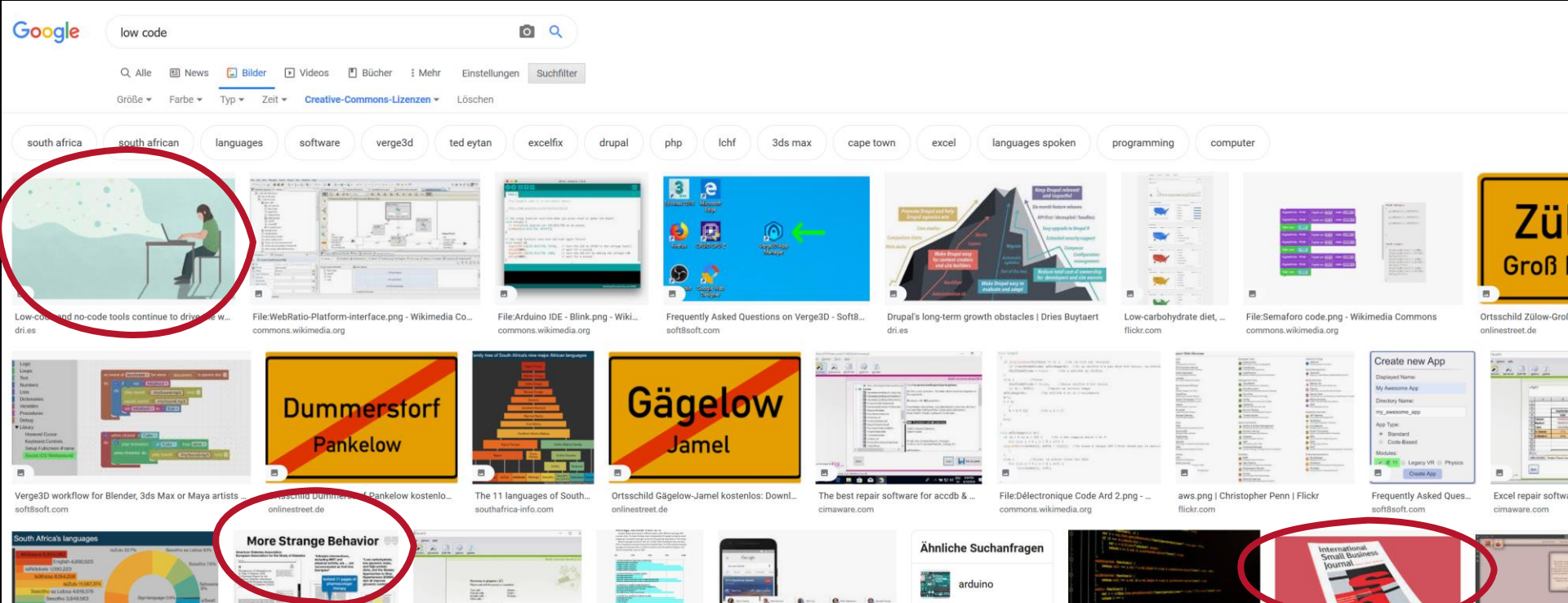


The Business Performance Management (BPM) Framework...
artim.consulting

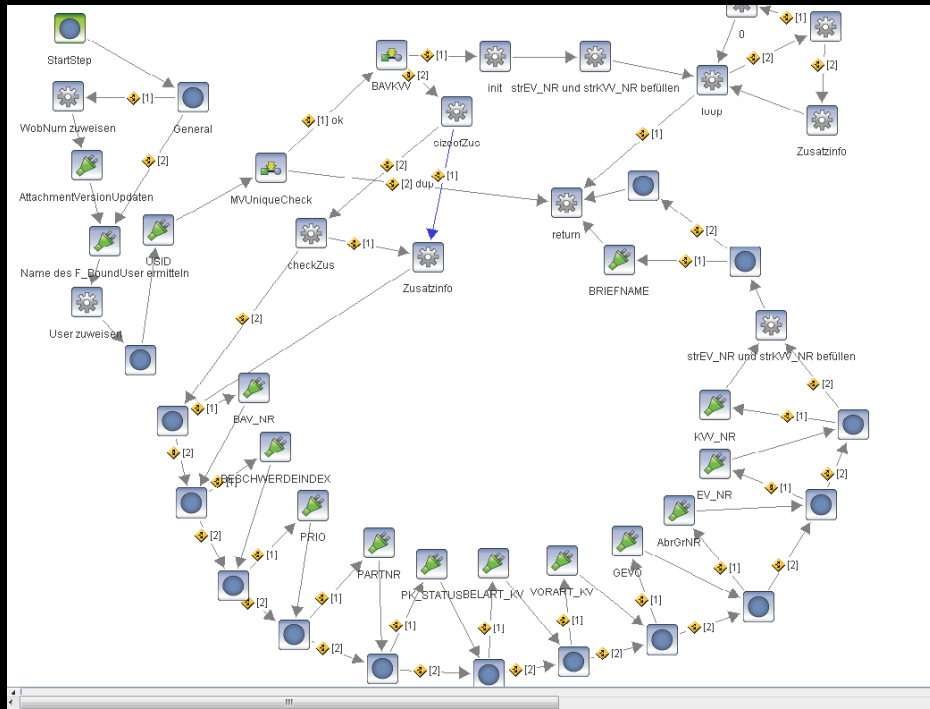


VBE & VO Integral Business Process...
researchgate.net

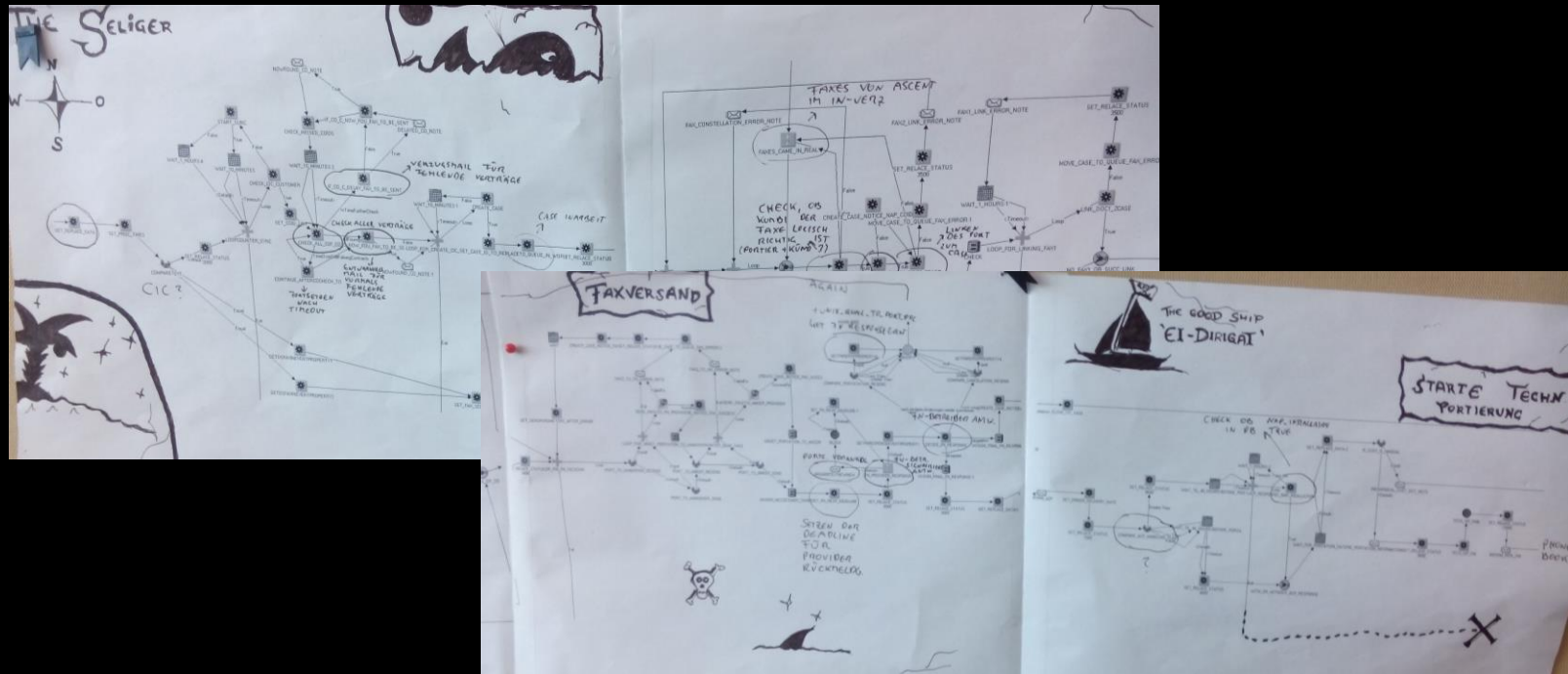
Google for „low code“



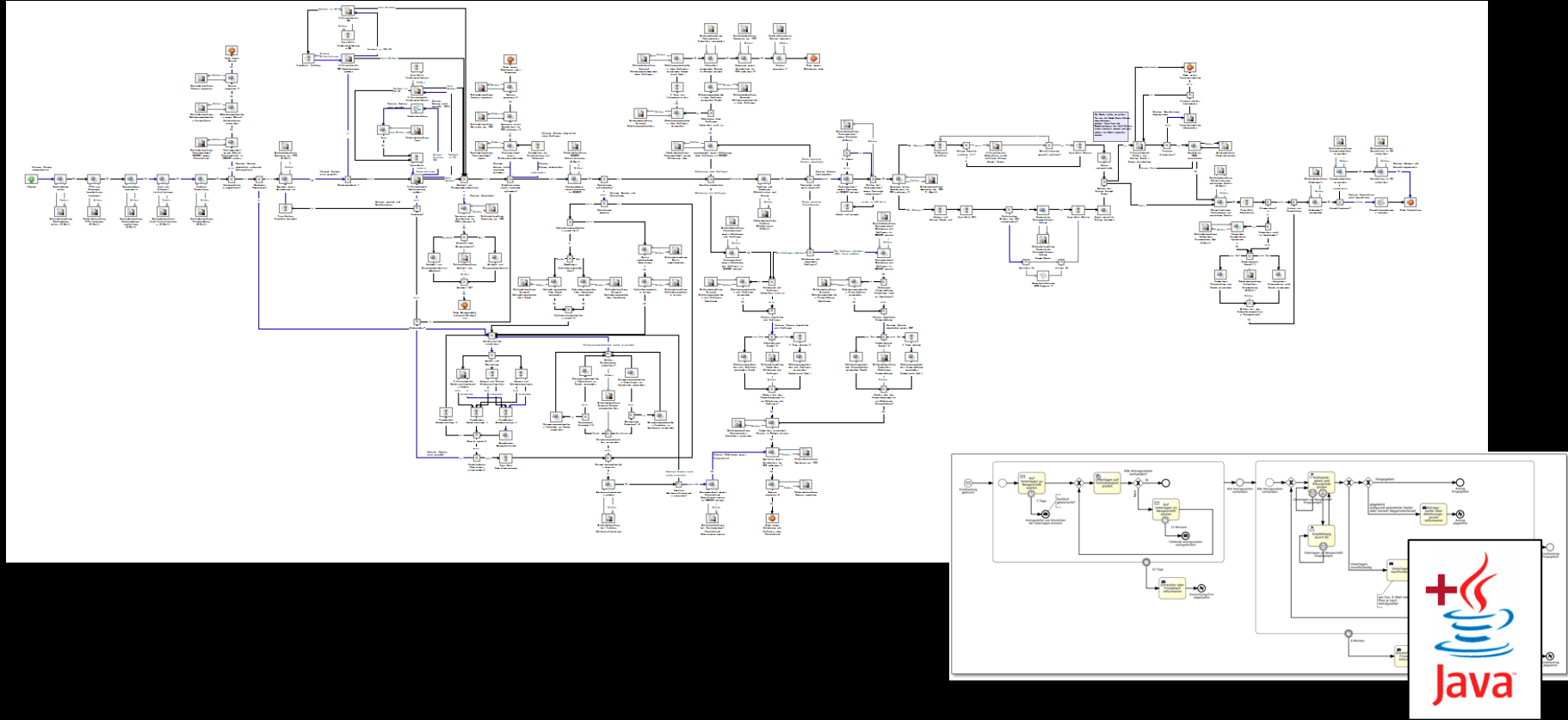
Models From the Wild...



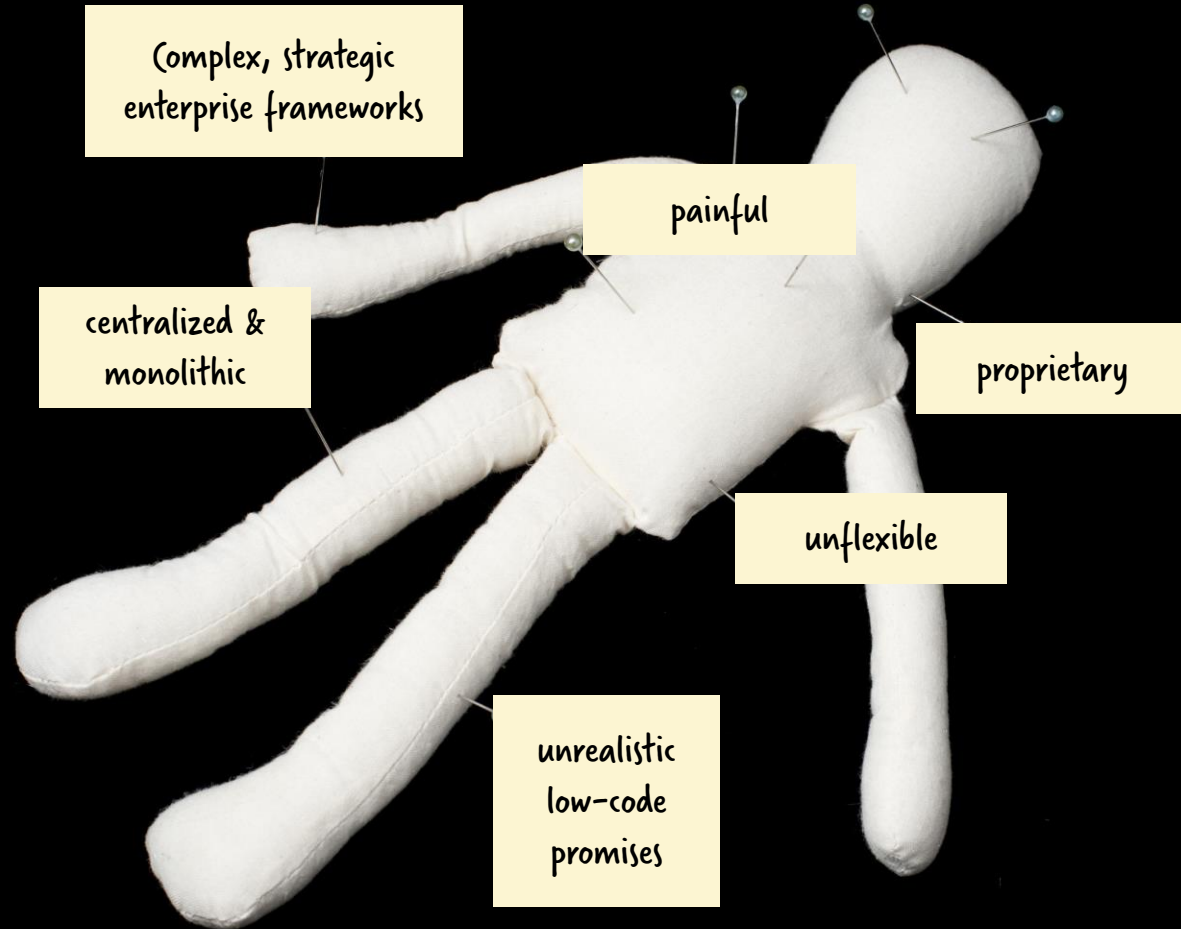
Models From the Wild...



Models From the Wild...



Wrong Perception of BPM



**Warning:
Contains Opinion**

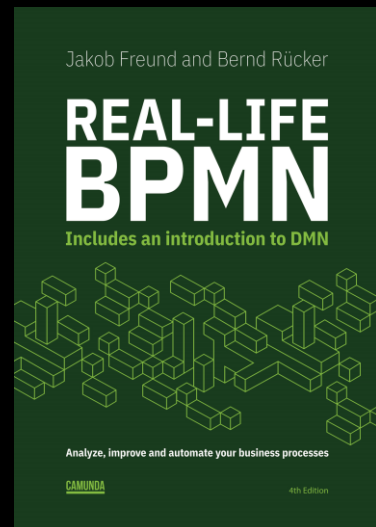
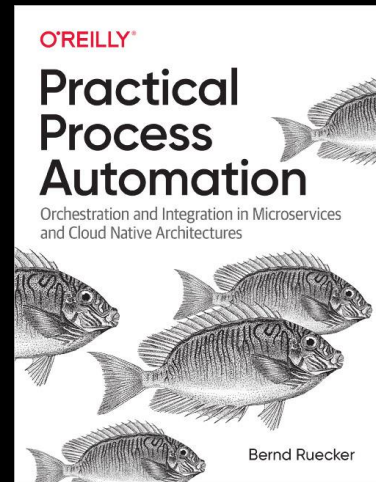


Bernd Ruecker
Co-founder and
Chief Technologist of
Camunda

mail@berndruecker.io

@berndruecker

<http://berndruecker.io/>





”

Software is
eating the
world.

*Marc Andreessen,
Entrepreneur &
Investor
2011 in „The Wall
Street Journal“*

Photo by techcrunch, available under [Creative Commons BY 2.0 license](#).

Change is the only constant

→ Agility

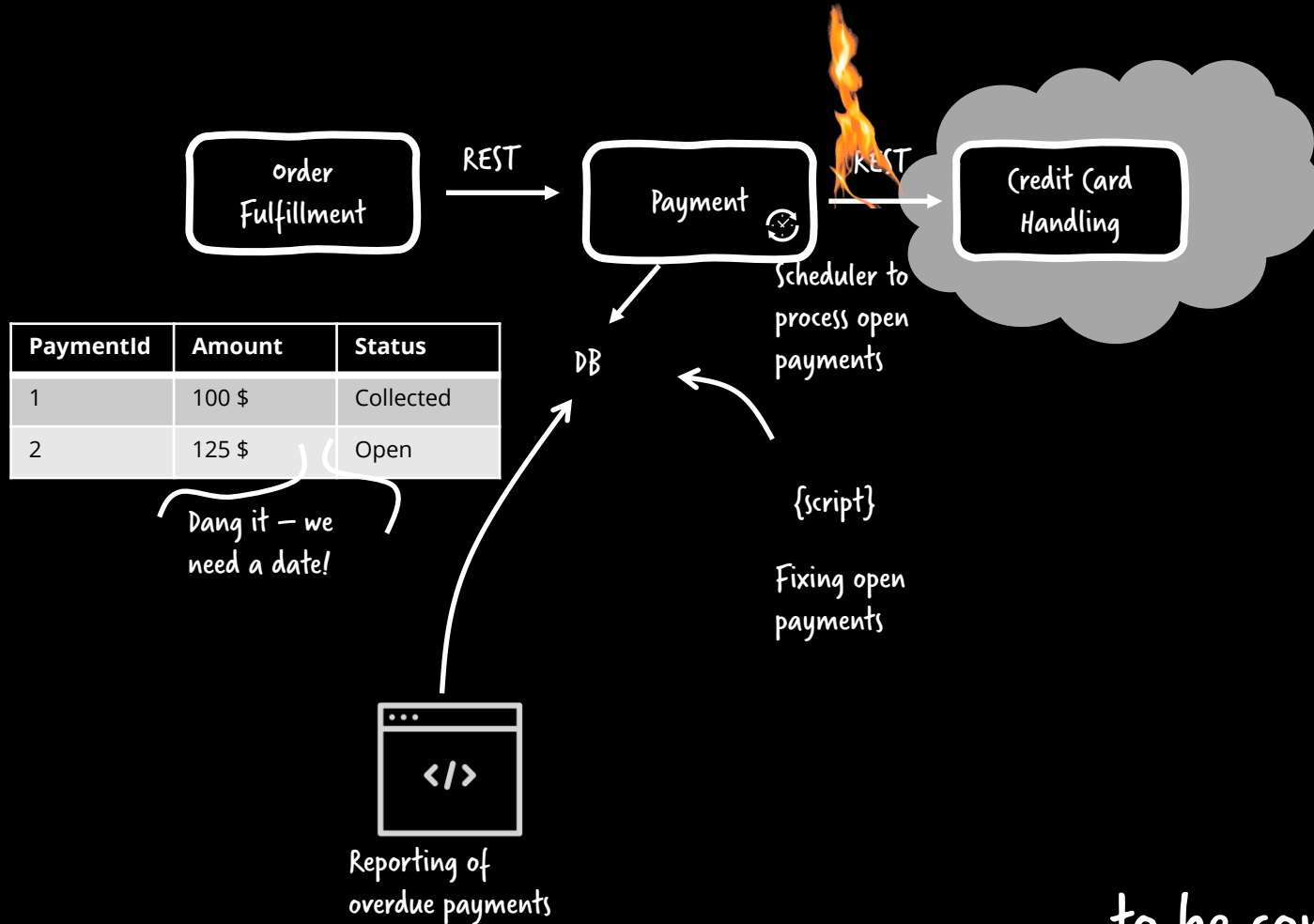
”

We don't know what we will need tomorrow.
But we do know that we will need something.
We have to be able to move quickly!

(10 of a German insurance company in 2019)

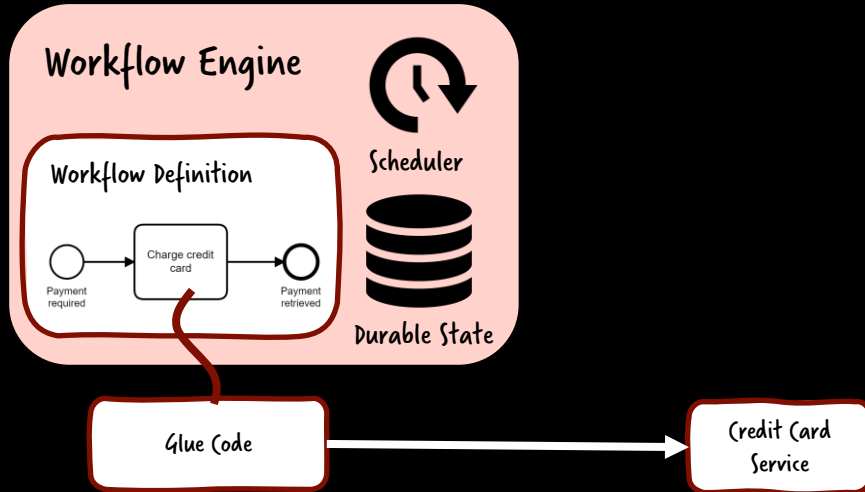
And you?





...to be continued...

Using a workflow engine instead



Workflow Engine:

Is stateful

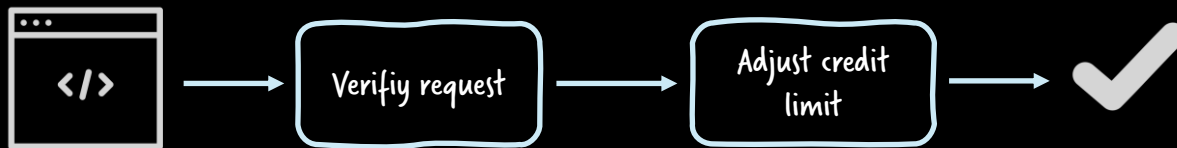
Can wait

Can retry

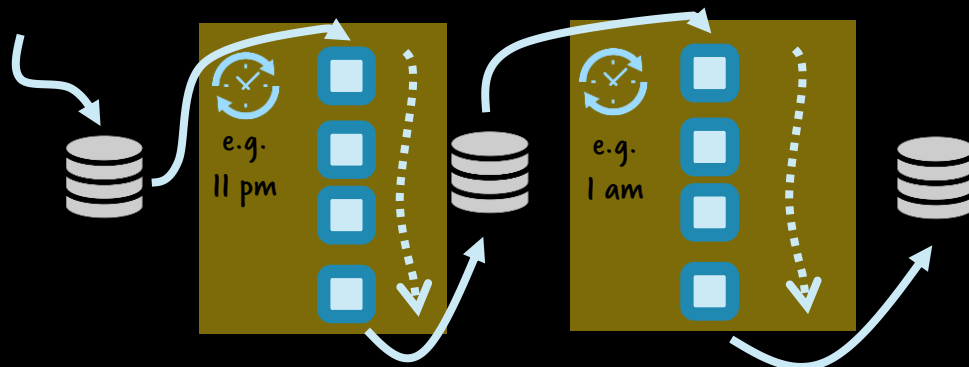
Can escalate

Can compensate

Provides visibility



Batch



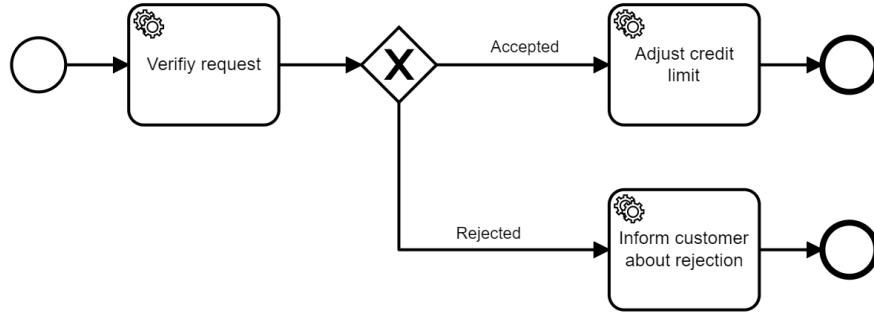
Batches are orthogonal
to the real workflow

Business
Process



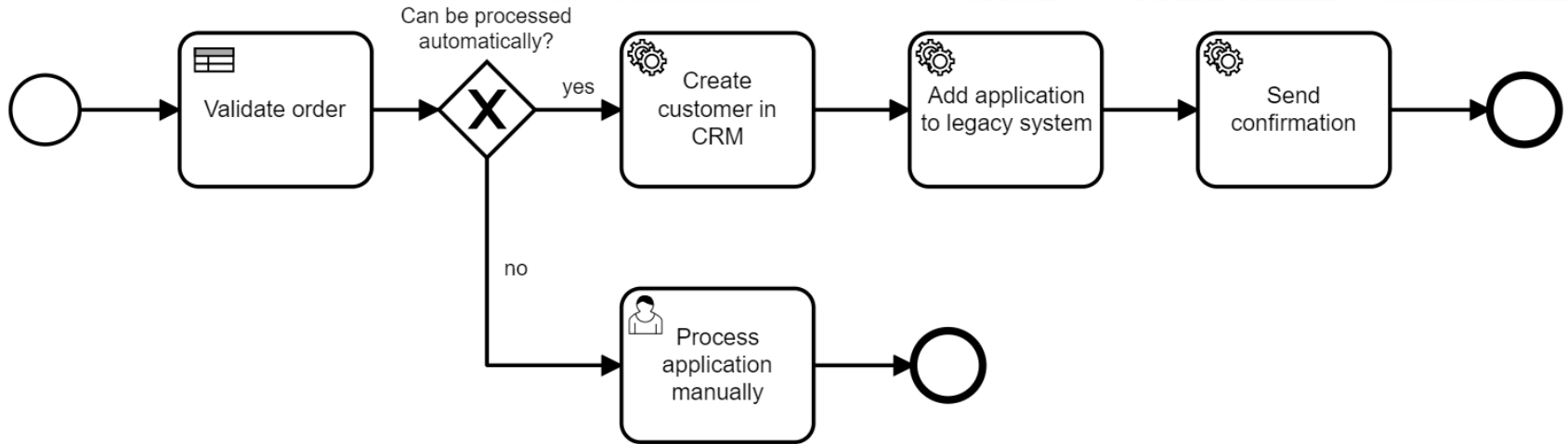
Items flow along the
workflow as they come in

Using a workflow engine instead



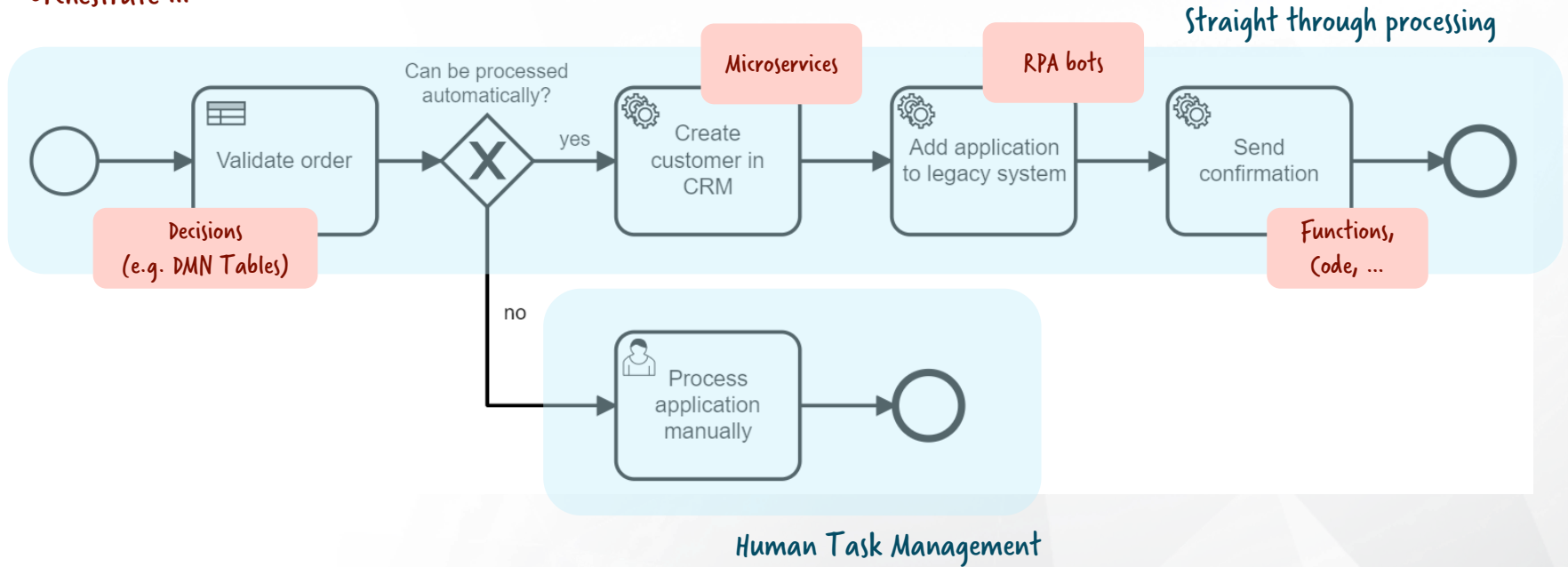
Implements the real workflow
online | faster cycle times

Workflow engines orchestrate

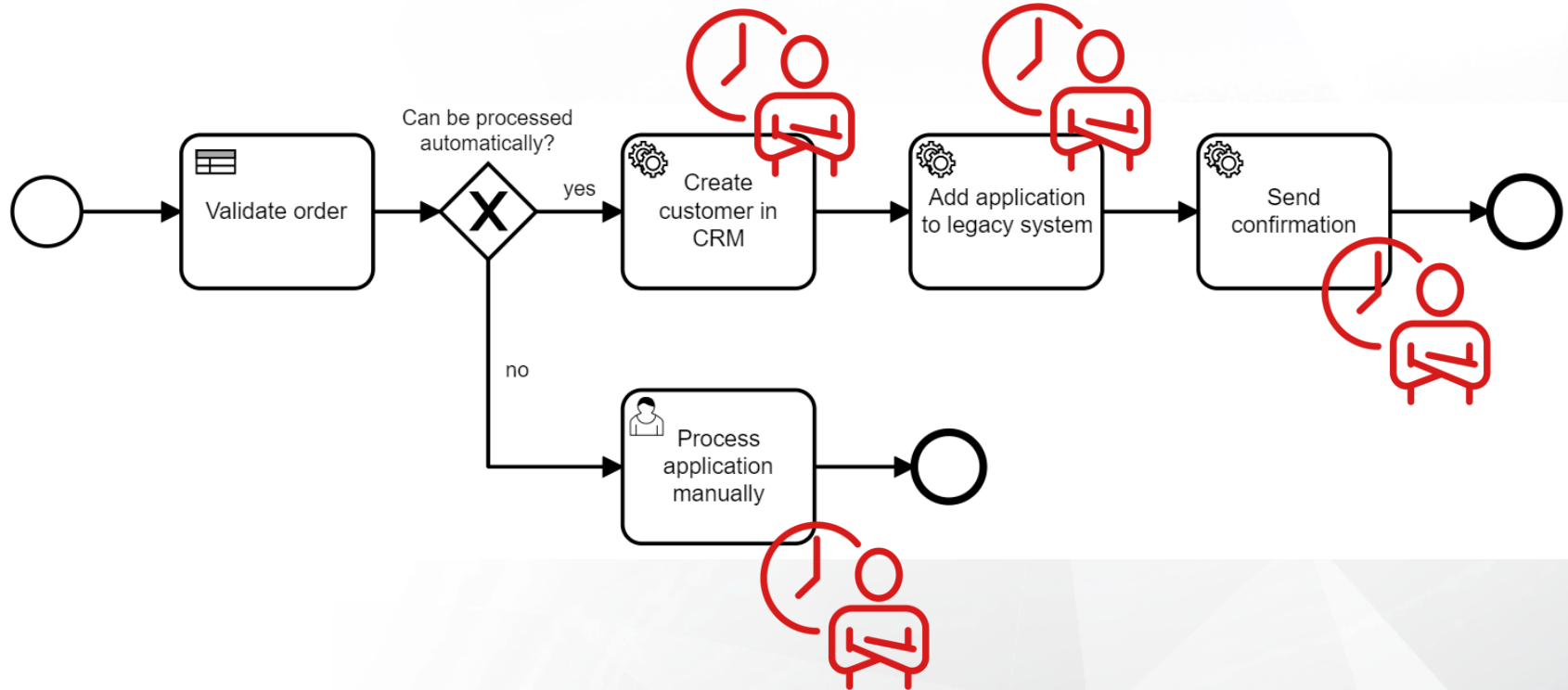


Workflow engines orchestrate anything

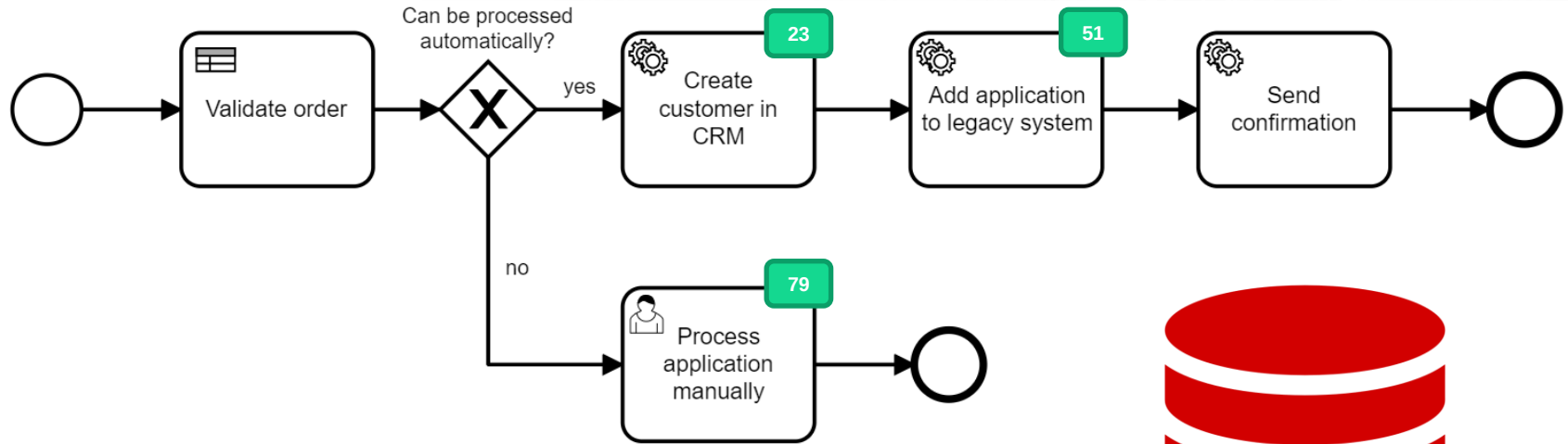
orchestrate ...



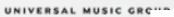
The challenge are long running tasks = waiting



A workflow engine persists state

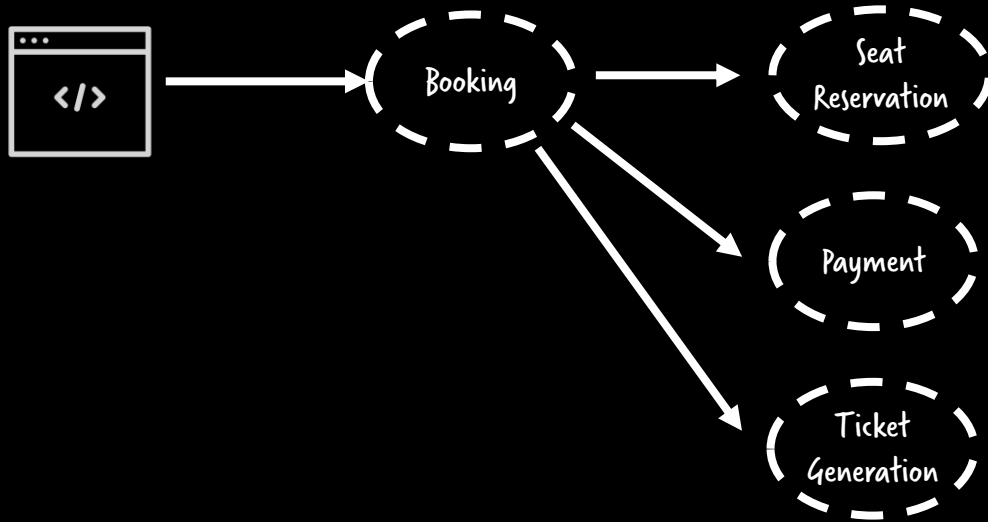


Many use cases (real-life examples)

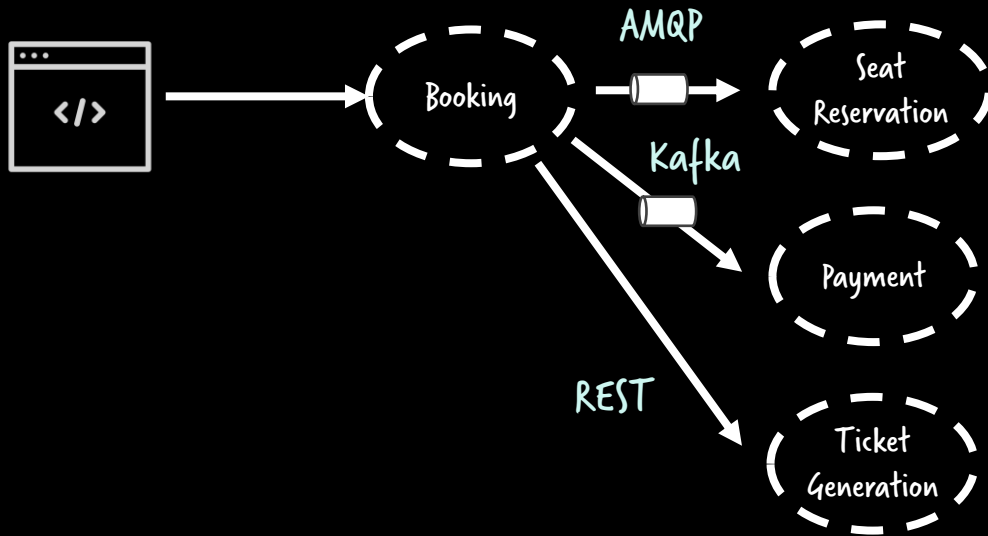
Industry	Pilot	Lighthouse	Broadscale	Sample Clients
Cross-Industry	Approvals Employee Onboarding Credit Check	Microservices Orchestration Centralized Workflow Platform High Throughput	E2E Process Automation Legacy BPM Replacement Cloud Native Applications IT Service Orchestration	  
Banking & Finance	Asset Management	Customer Onboarding Loan Origination & Decisioning ATM Provisioning	Enterprise Platform Development Trading Risk Management / Fraud Detection	   
Insurance	Audit	Customer Onboarding Claim Service & Settlement Policy Underwriting & Contracts	Integrated KYC Core System Automation Risk Management / Fraud Detection	    
Telecommunication	Online Systems Integration	New Product Delivery Cell Tower Provisioning Order Management	Contracting, Upgrading, Termination OSS & BSS Open Network Automation Platform (ONAP)	      
Media & Entertainment	Website Content Delivery System Process Fallout	Subscription Management Licensing Content Distribution	Digital Supply Chain New Product Development Fraud Management	   
Manufacturing & High Tech	Application prototype	Order Execution Payments Servicing Research & Development	Embedded Workflow Automation Customer Service Supply Chain	    

Z7Q7E7 Seite 1 / 1

Example



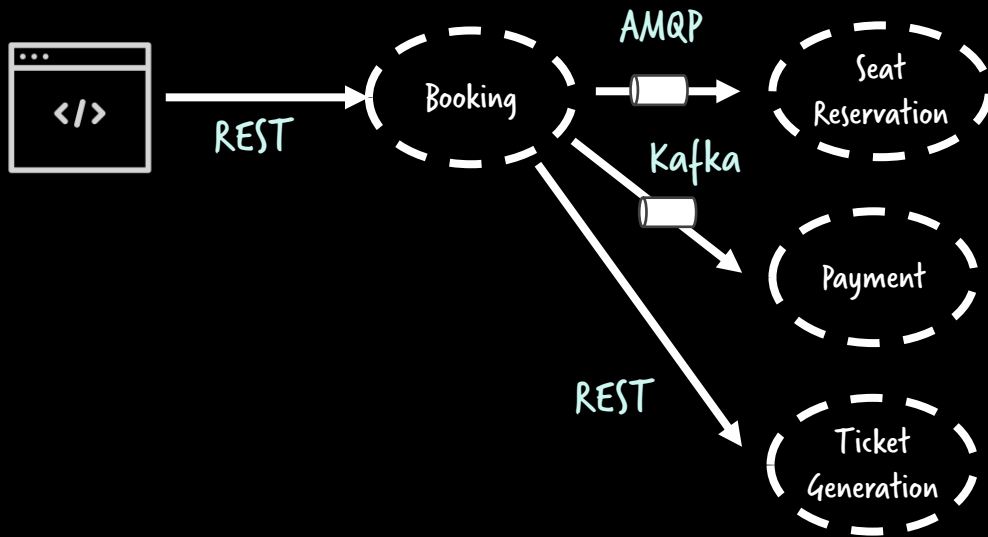
Architecture



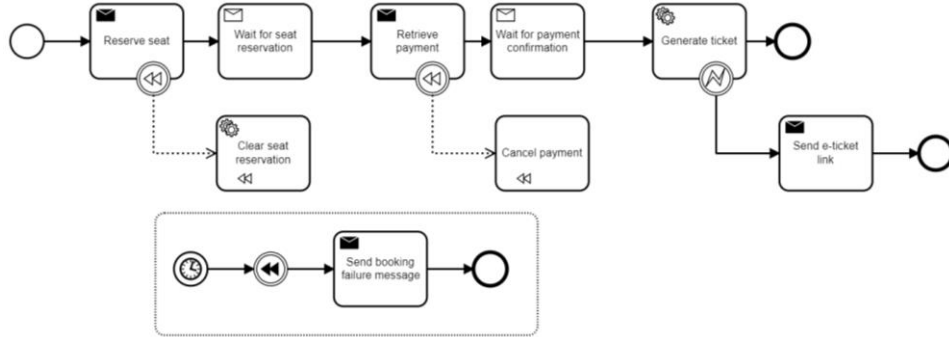
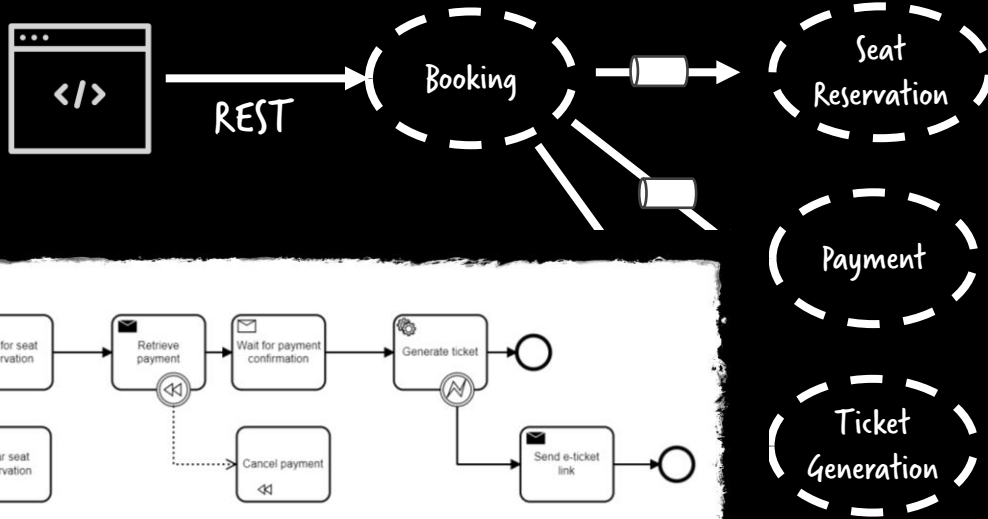
Example

Check & book
Confirmation

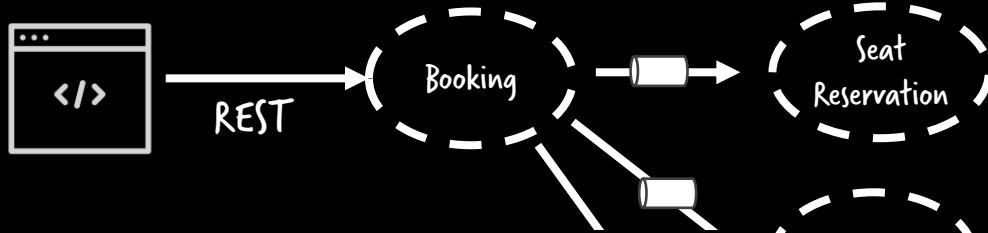
That is hard to implement



Process automation can help



Process automation can help



Workflow Engine:

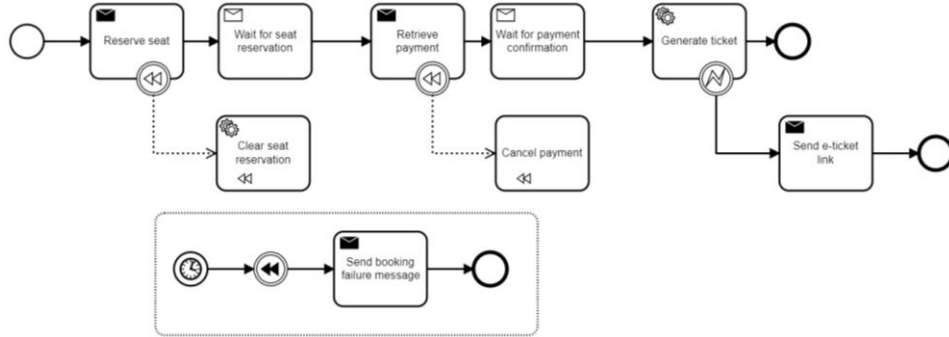
Is stateful

Can wait

Can retry

Can escalate

Can compensate

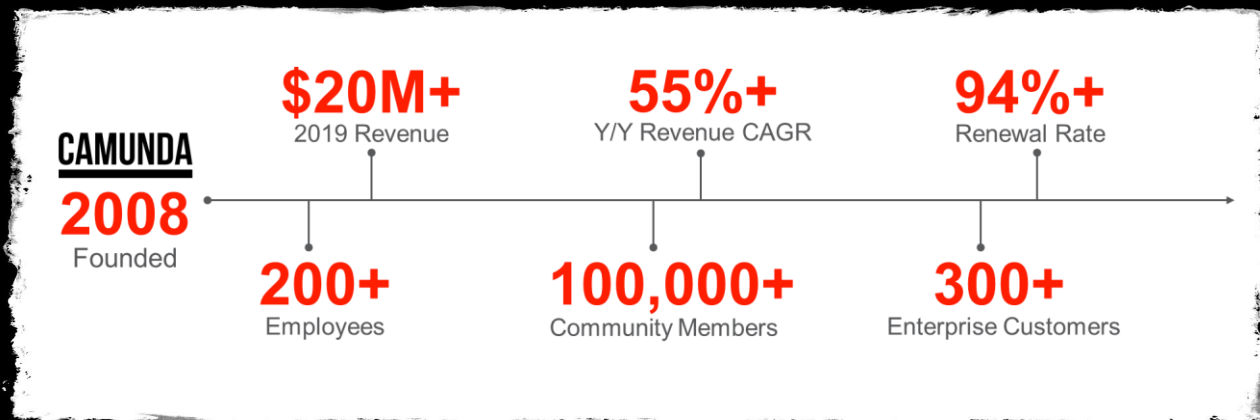


Live hacking



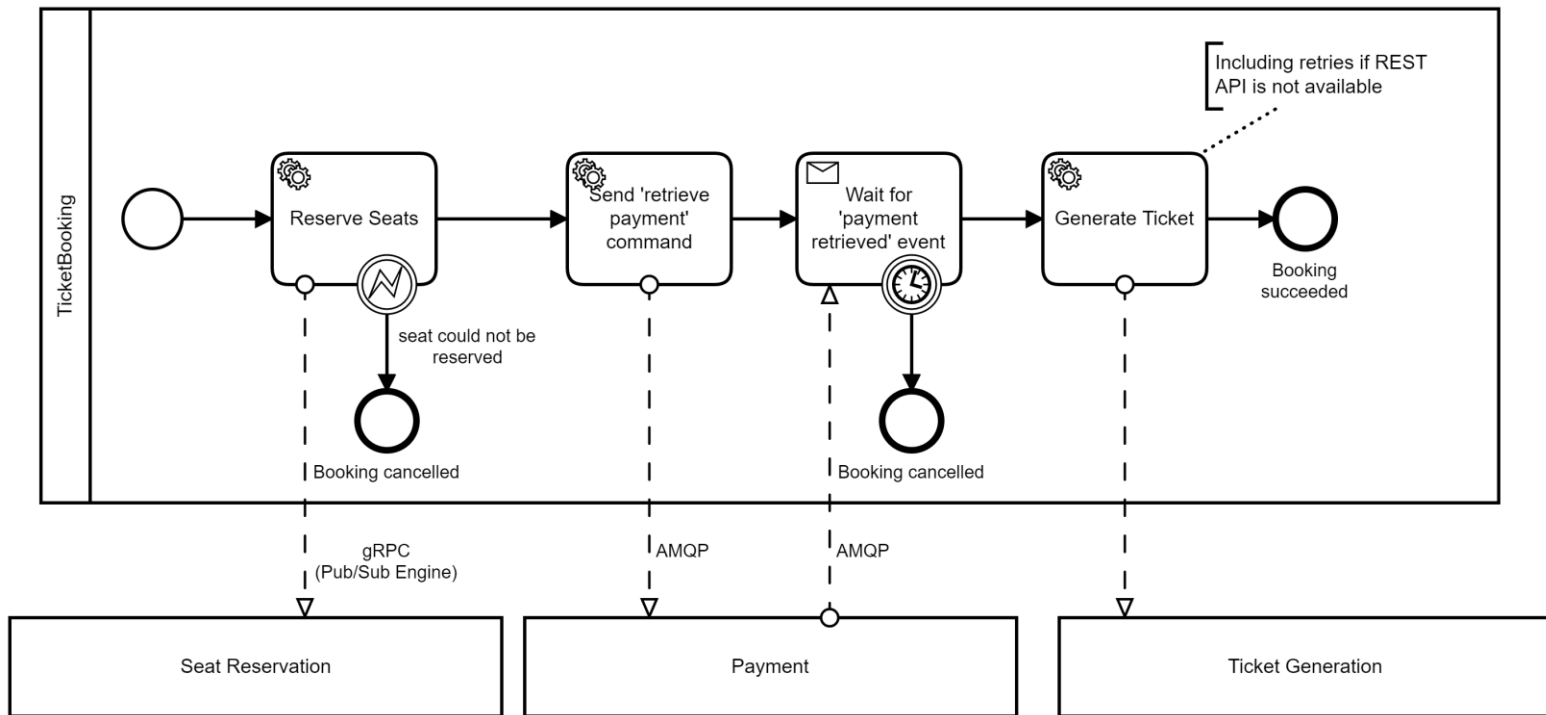
Camunda

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





 [berndruecker / ticket-booking-camunda-cloud](https://github.com/berndruecker/ticket-booking-camunda-cloud)

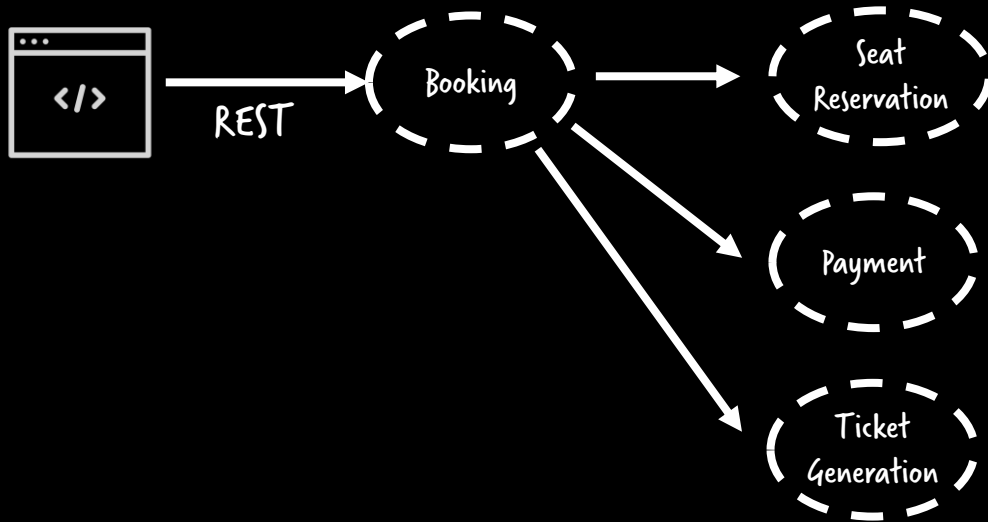


<https://github.com/berndruecker/ticket-booking-camunda-cloud>

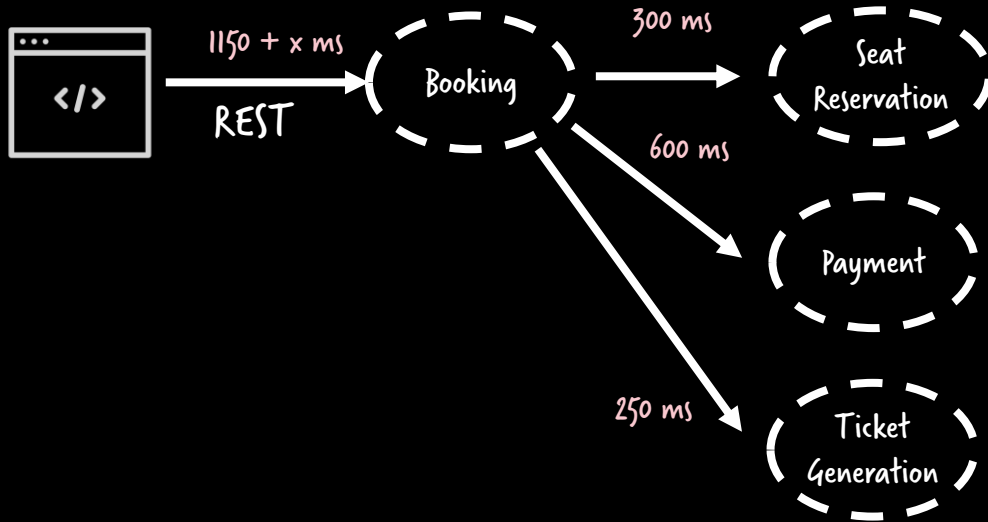
But...



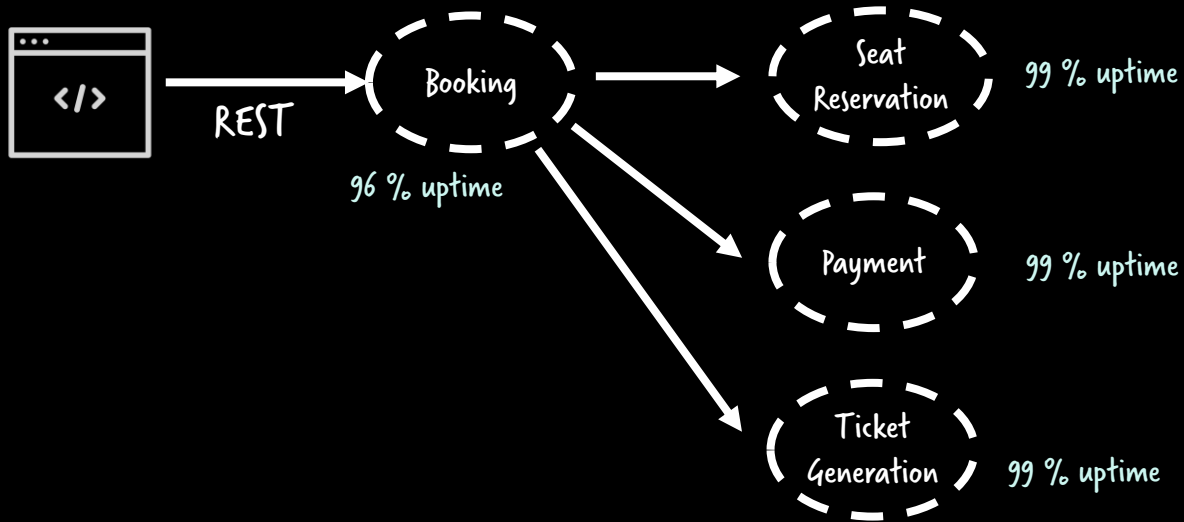
Weaknesses



Weaknesses: Latency creep



Weaknesses: Availability erosion



And...



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 (Ibf)

20:42 München Hbf

Prices

Ticket, 2. class

75,90

1 Adult

City-Ticket

Incl.

Outward journey

Total

75,90 EUR

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DB

[Startseite](#) | [Kontakt](#) | [Häufige Fragen](#) | [A A A](#)

Meine Bahn

Logout

Hinweis

Sehr geehrte Kundin, sehr geehrter Kunde!

Bei der Verarbeitung Ihrer Anforderung ist ein Fehler aufgetreten. Vermutlich haben Sie mehrmals den gleichen Button angeklickt oder eine Funktion aus zwei Fenstern heraus doppelt aufgerufen. Bitte beachten Sie, daß Sie unsere Seiten nur aus einem einzelnen Browser-Fenster heraus bedienen sollten. Wir entschuldigen uns für die Unannehmlichkeiten.

Deutsche Bahn AG

Weiter

Can your company
leverage your
hipster architecture?

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



Redesign your business process accordingly!

The screenshot shows the DB website's 'Ticket & reservation' process. The top navigation bar includes 'Home | Contact | FAQs | A A A' and a 'My Bahn' button. Below the navigation bar is a progress indicator with steps: Search ✓, Select ✓, Ticket & reservation (current step), Payment, Check & book, and Confirmation. The main content area is titled 'Ticket and reservation' and asks 'How would you like to receive your ticket?'. There are two main options: 'Digital ticket' (selected) and 'Order and receive ticket by post'. The 'Digital ticket' option includes a 'Please note' section with a disclaimer. The 'Order and receive ticket by post' option shows a price of 5,90 EUR. Below this, there is a section 'You aren't travelling?' with a checkbox for 'Ticket for another person'. At the bottom, there is a section 'Our tip: reserve a seat now.' with a checkbox for 'Reservation of 1 seat' and a price of 4,50 EUR. A 'Proceed' button is at the bottom right.

happy
case



Sync in happy case

failure
case



or some interface
to poll for status

Async response

Redesign your business process accordingly!

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

☐  **Ticket for another person**
You have to login for this service

Our tip: reserve a seat now. [Questions concerning reservation?](#)

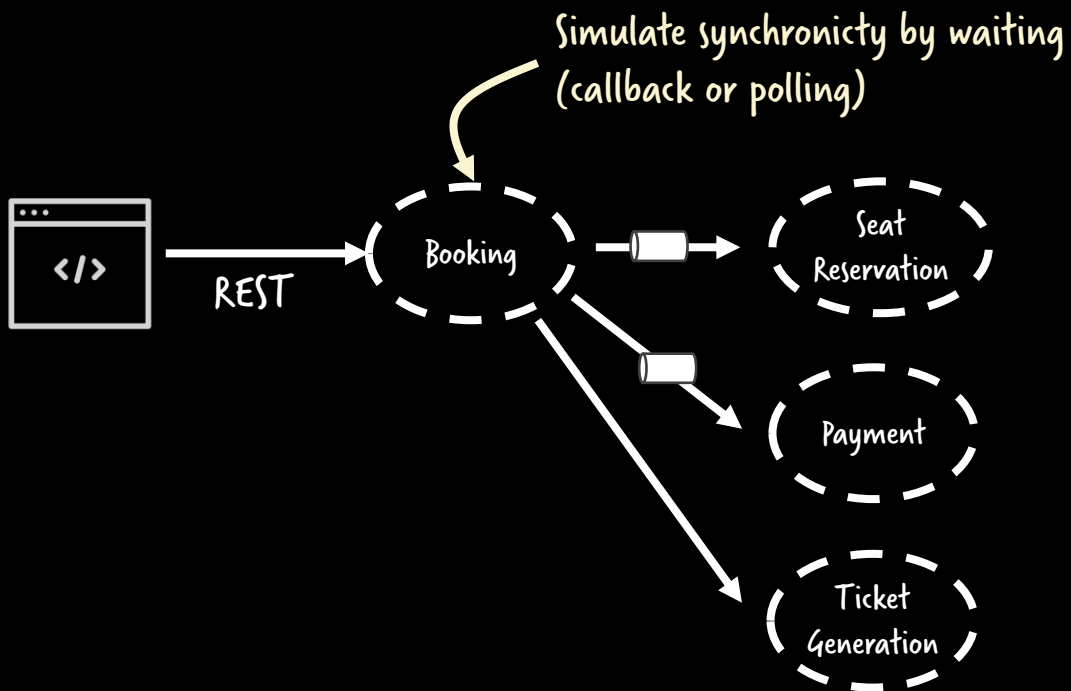
☐  **Reservation of** **4,50 EUR**

[Back](#) [Proceed](#)

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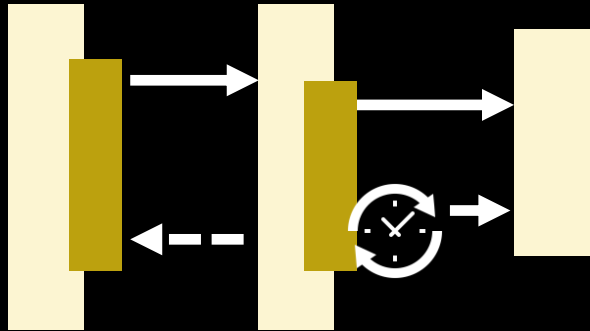


Example

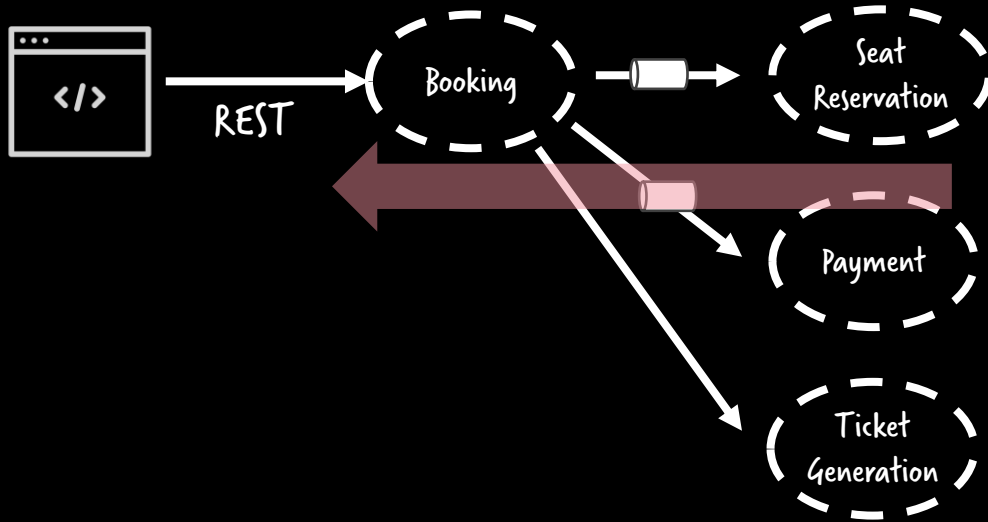


Synchronous Facade

Blocking Call

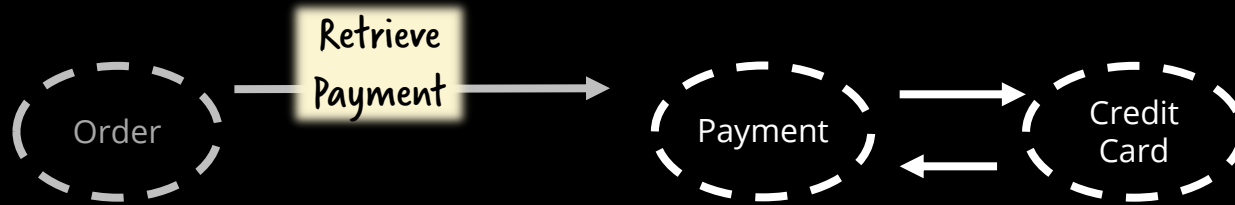


Push the facade towards the edge as far as possible

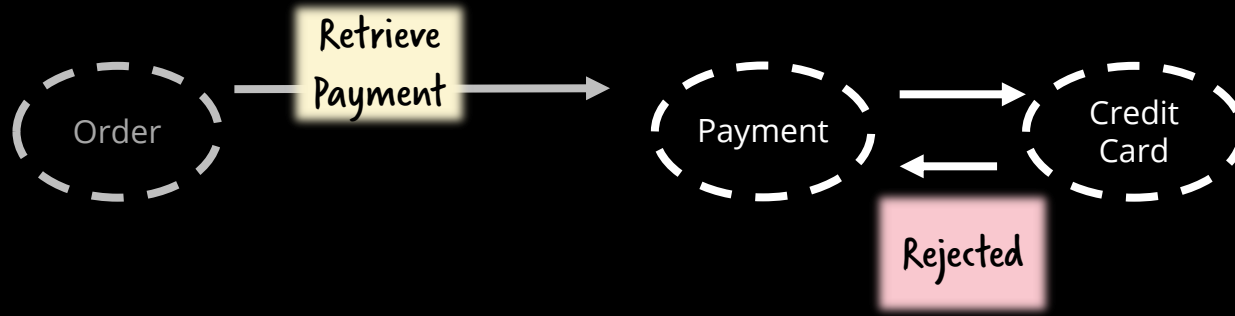


Long running services allow
to assign responsibility correctly

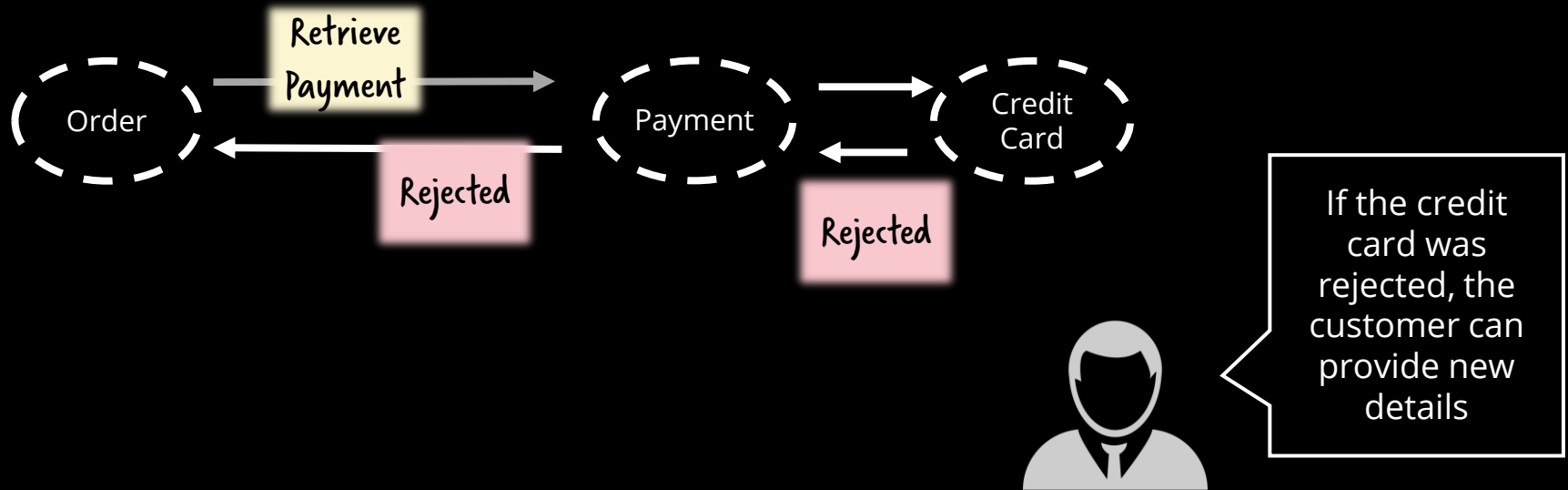
Example



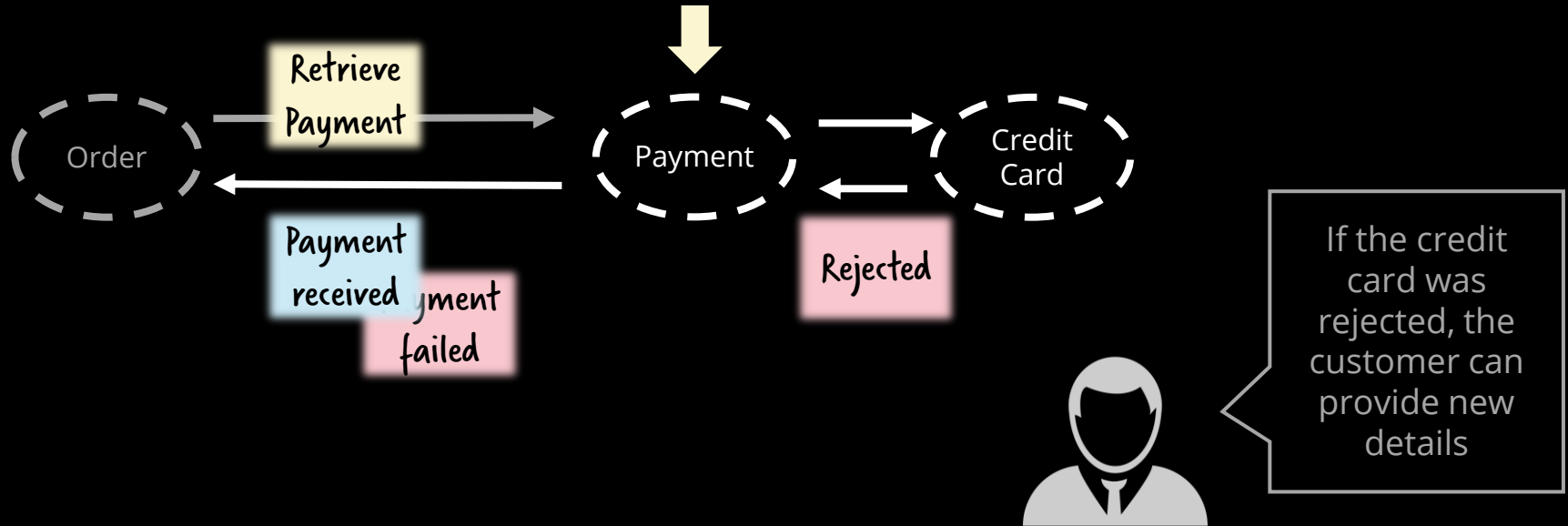
Example



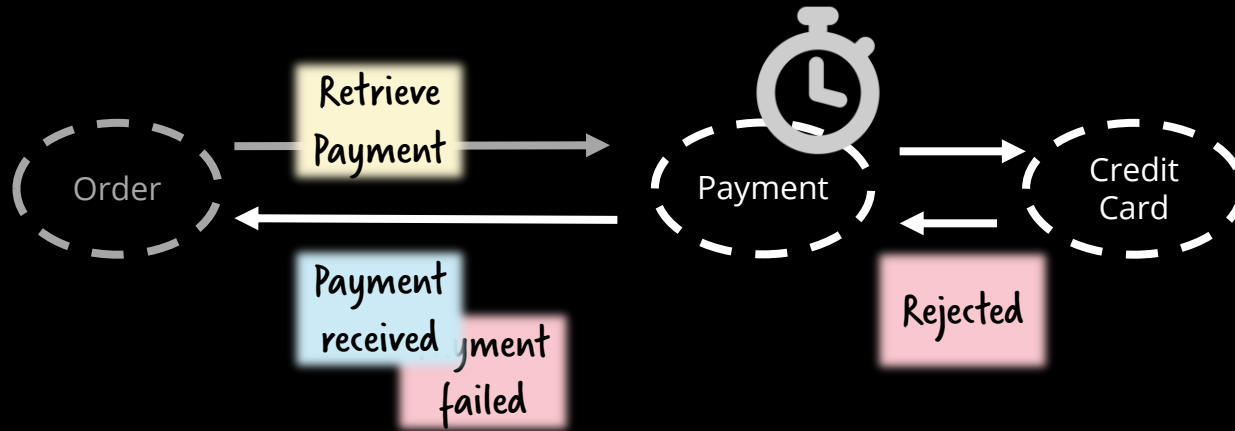
Example



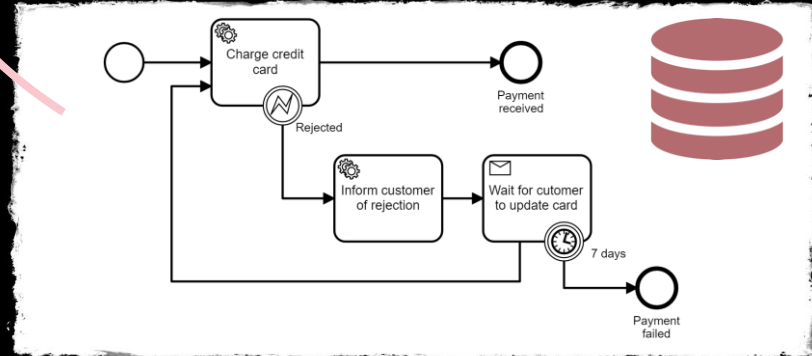
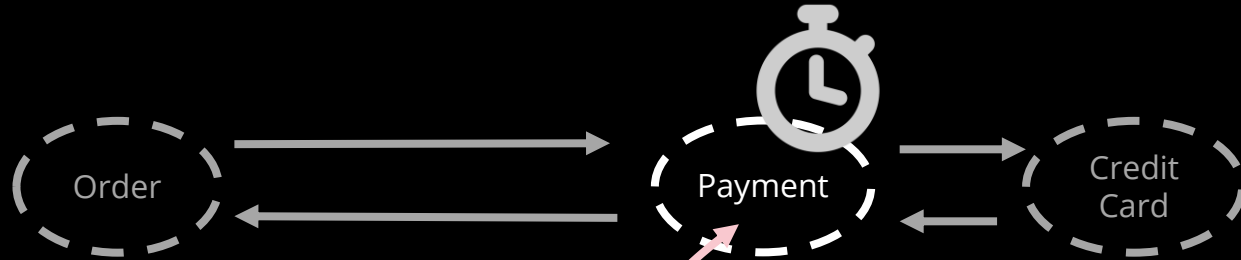
Who is responsible?



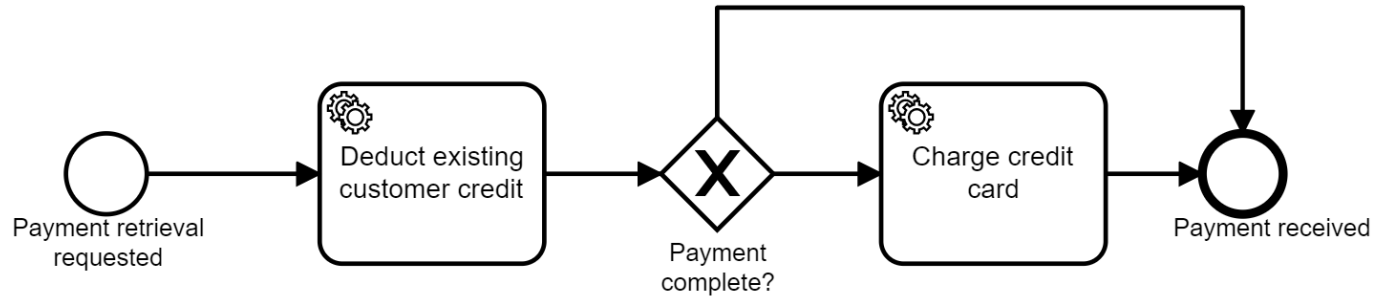
Long running services



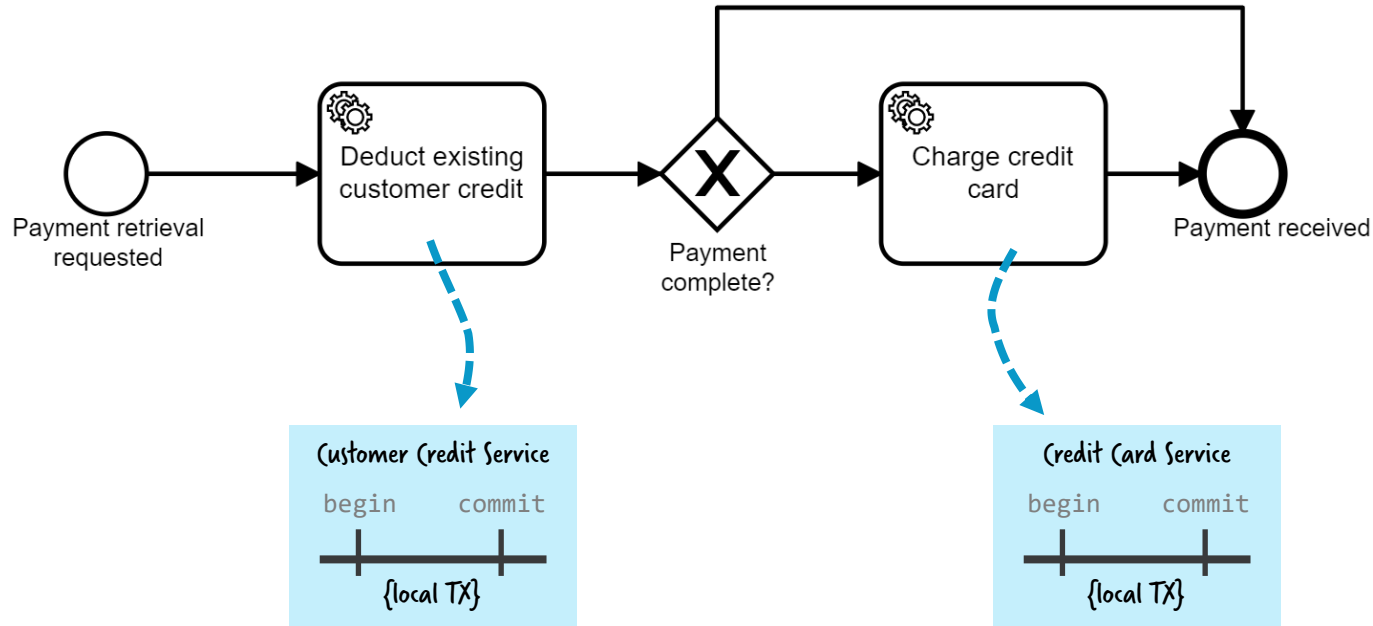
Long running services



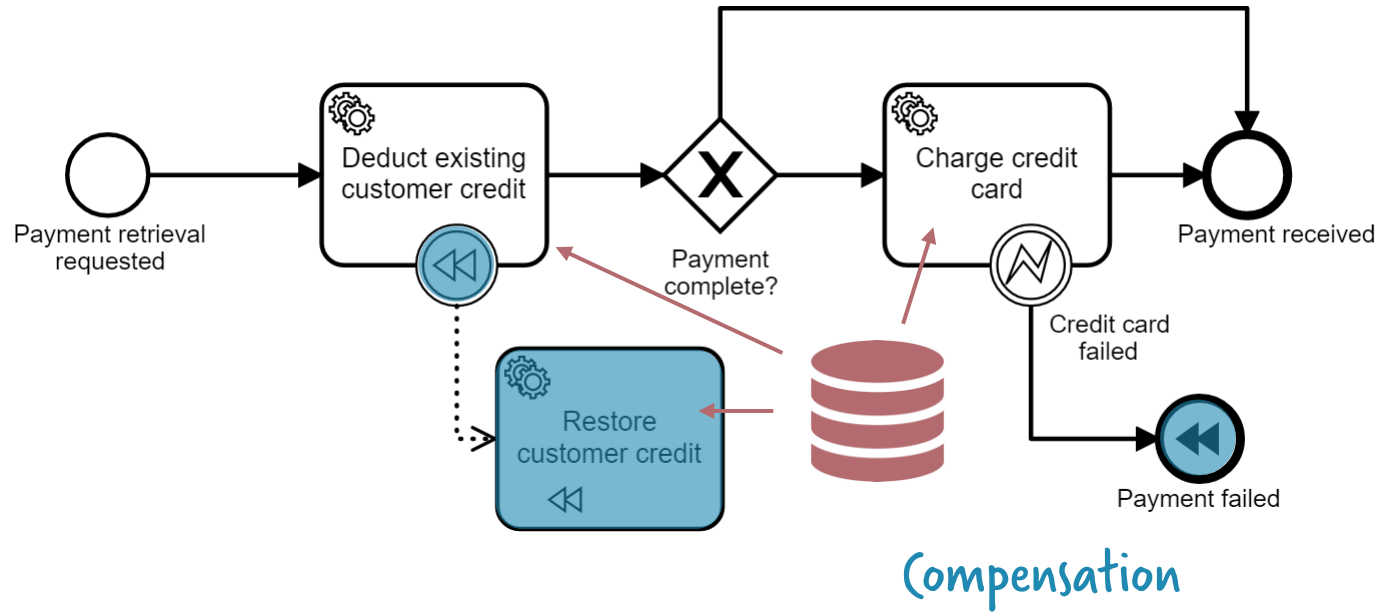
Extending Payment options



Extending Payment options



Distributed transactions using compensation *

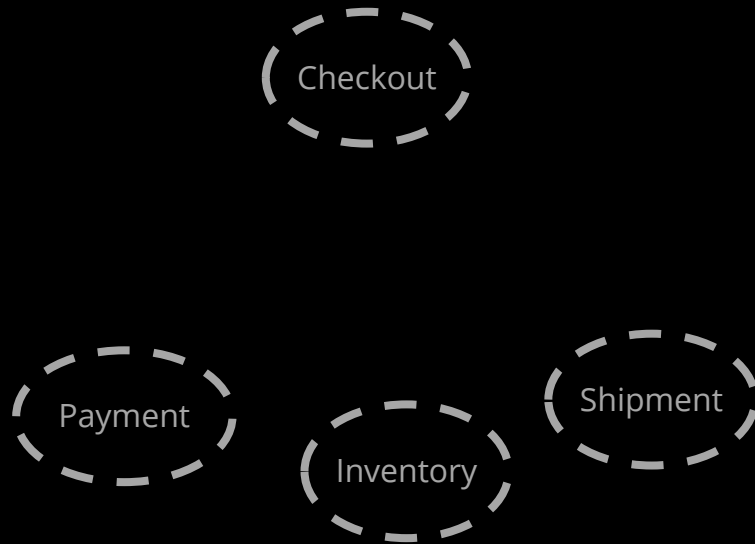


* aka Saga pattern

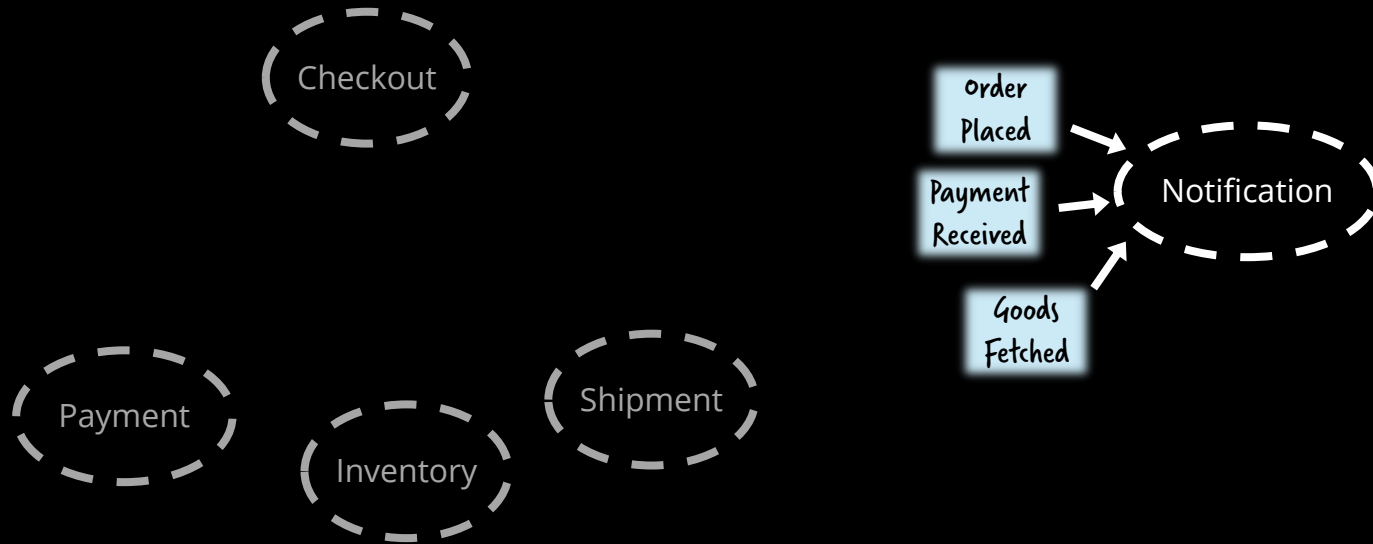
Let's talk about
Event-Driven Architecture



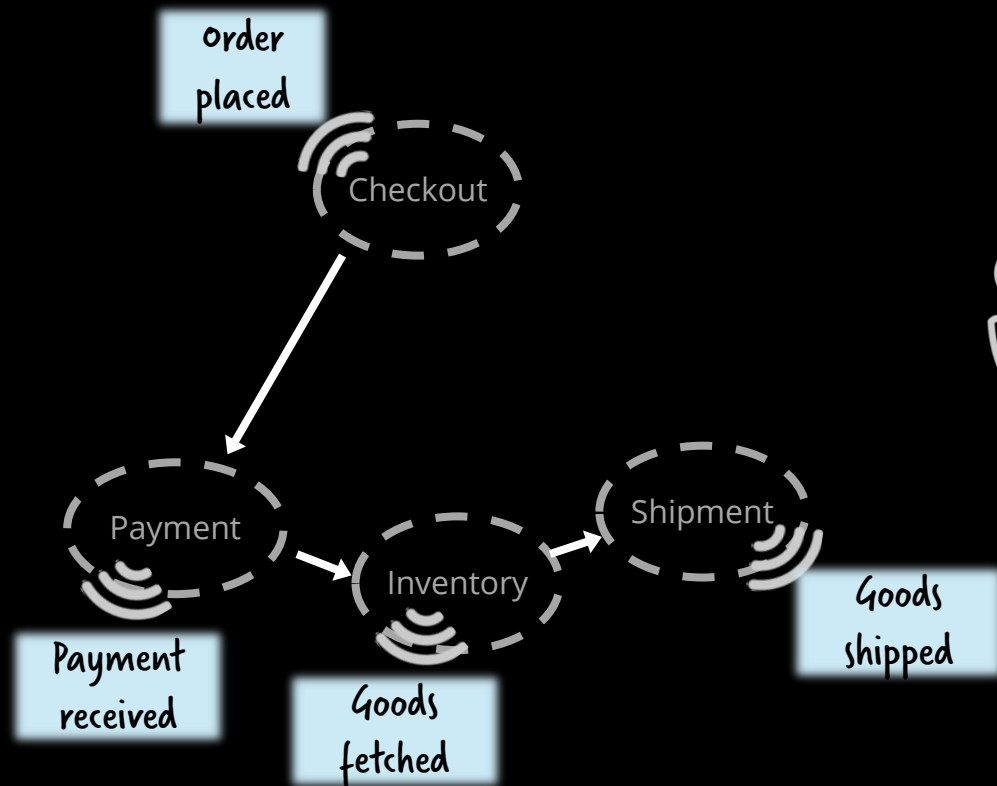
Example



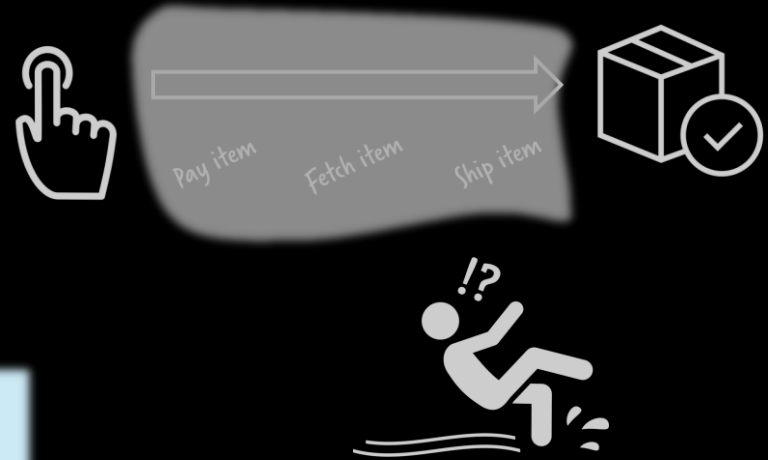
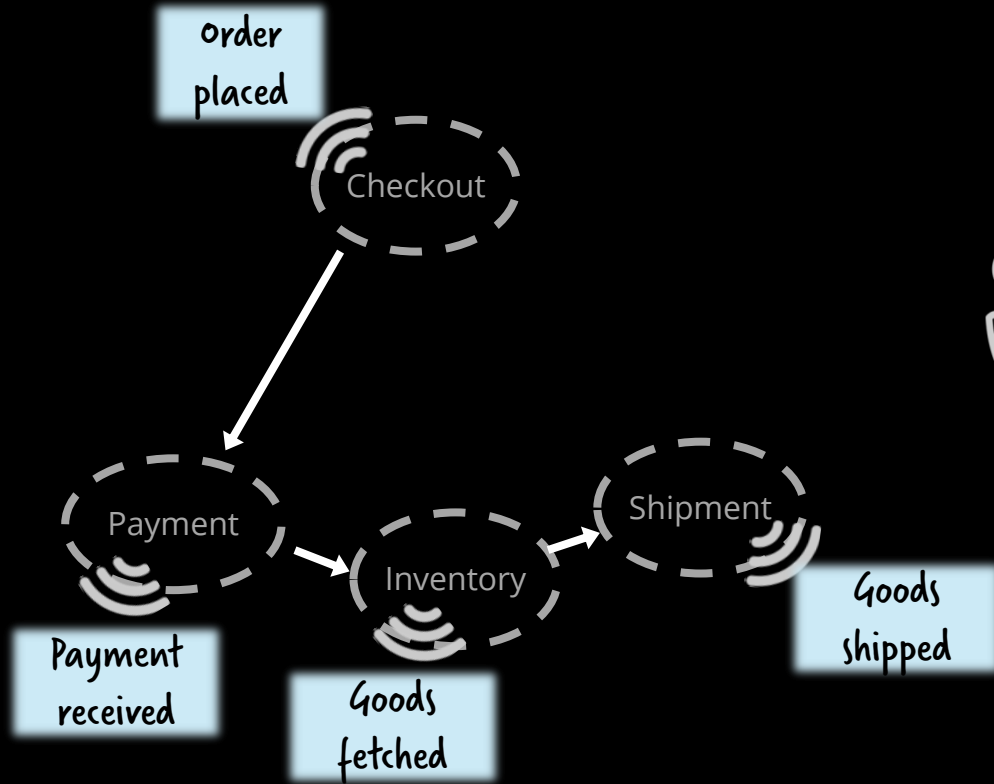
Event-driven



Peer-to-peer event chains



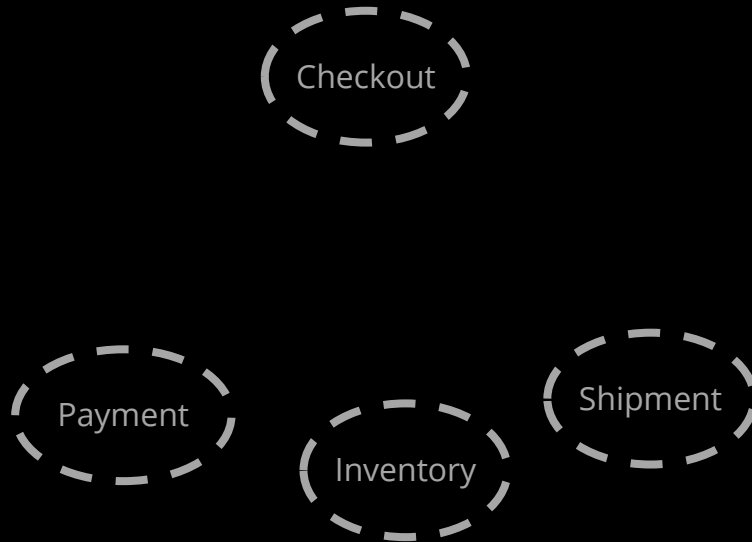
Peer-to-peer event chains



We were suffering from
Pinball machine Architecture

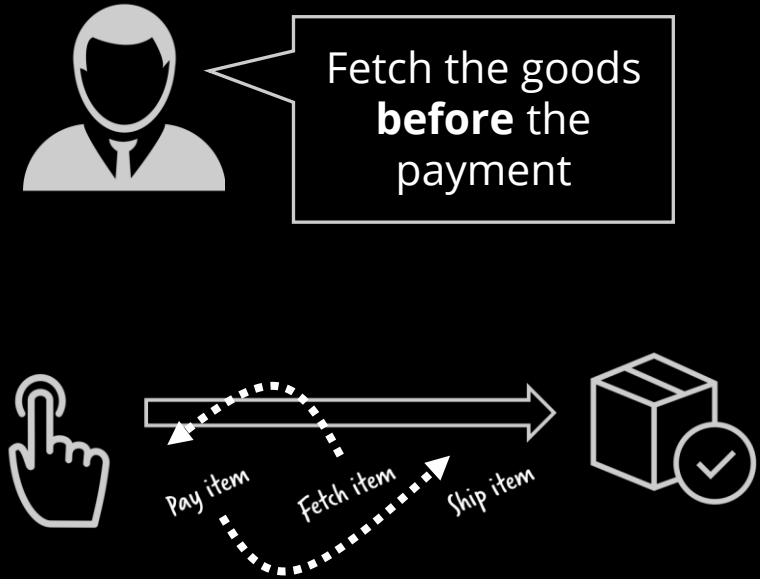
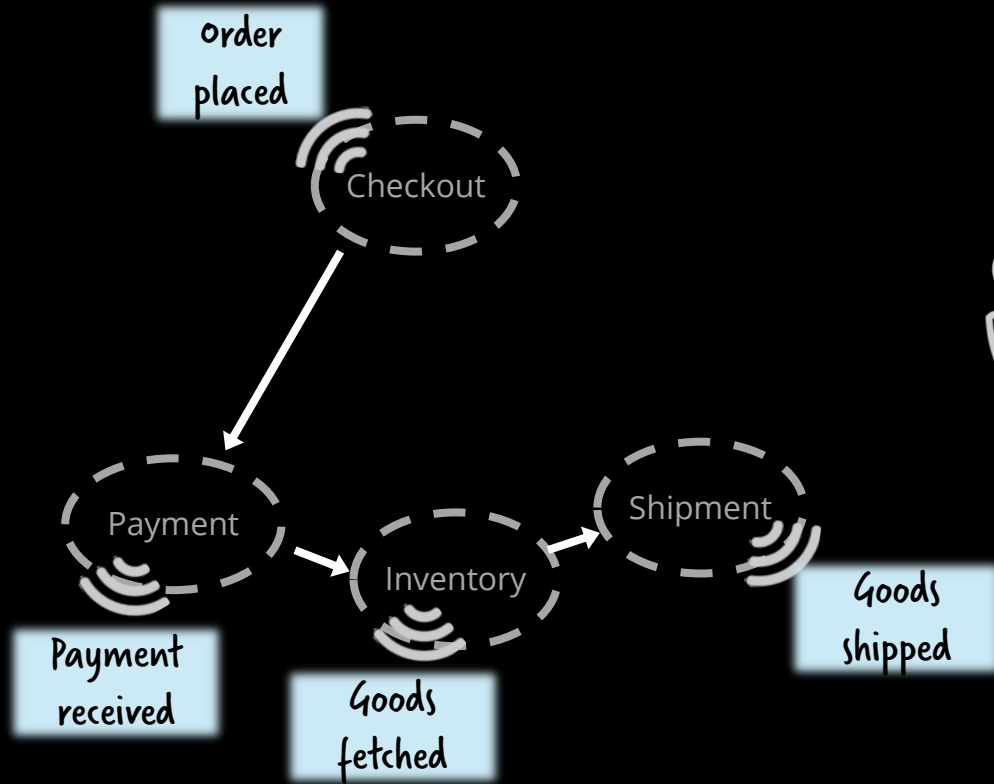


Pinball Machine Architecture

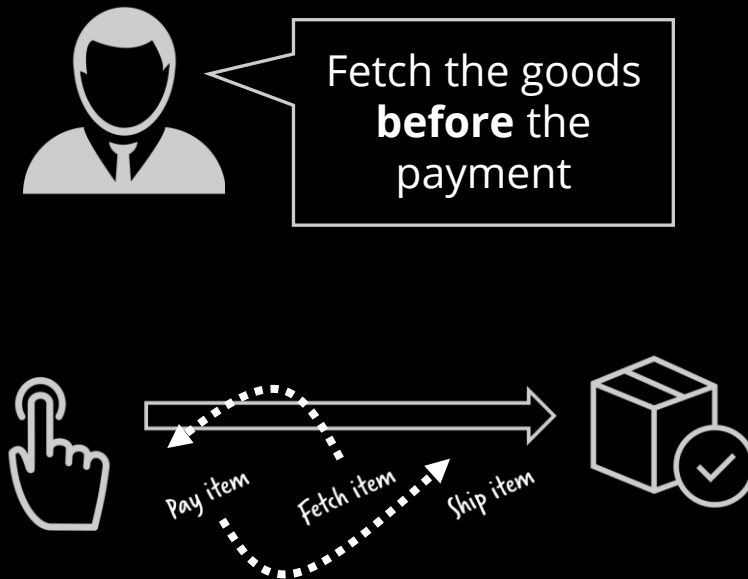
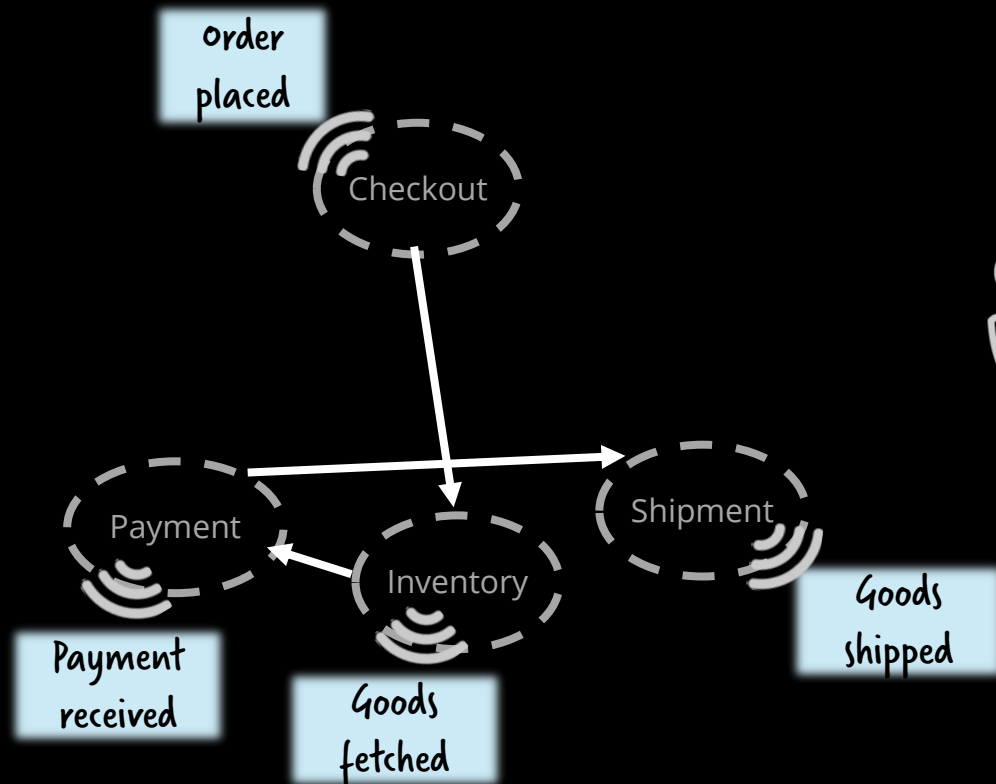


„What the hell
just
happened?“

Peer-to-peer event chains

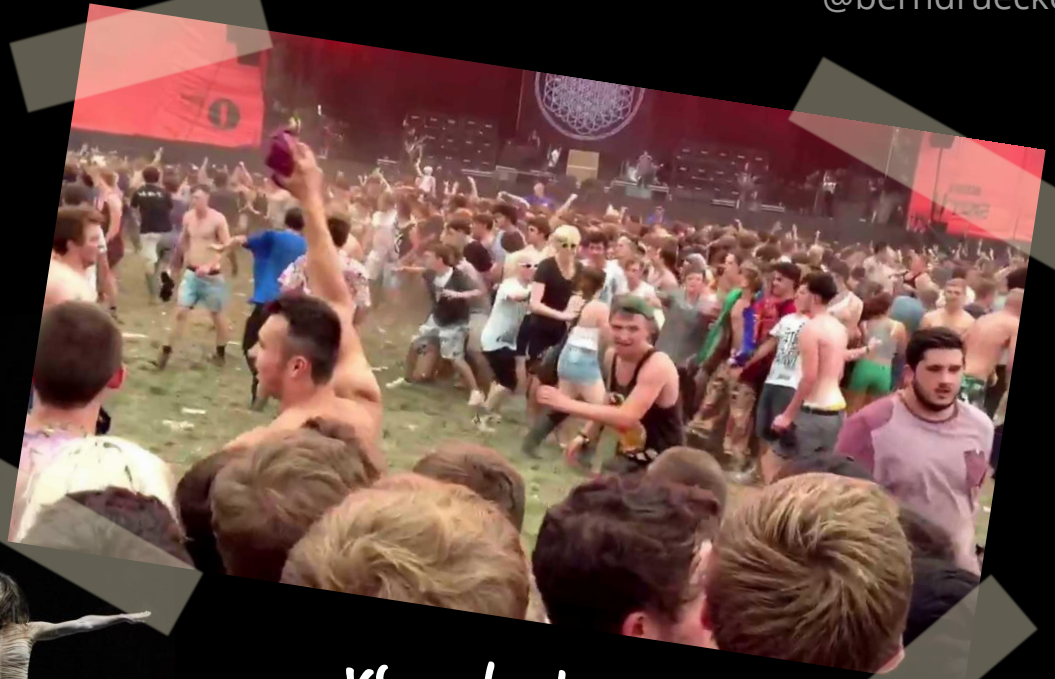


Peer-to-peer event chains



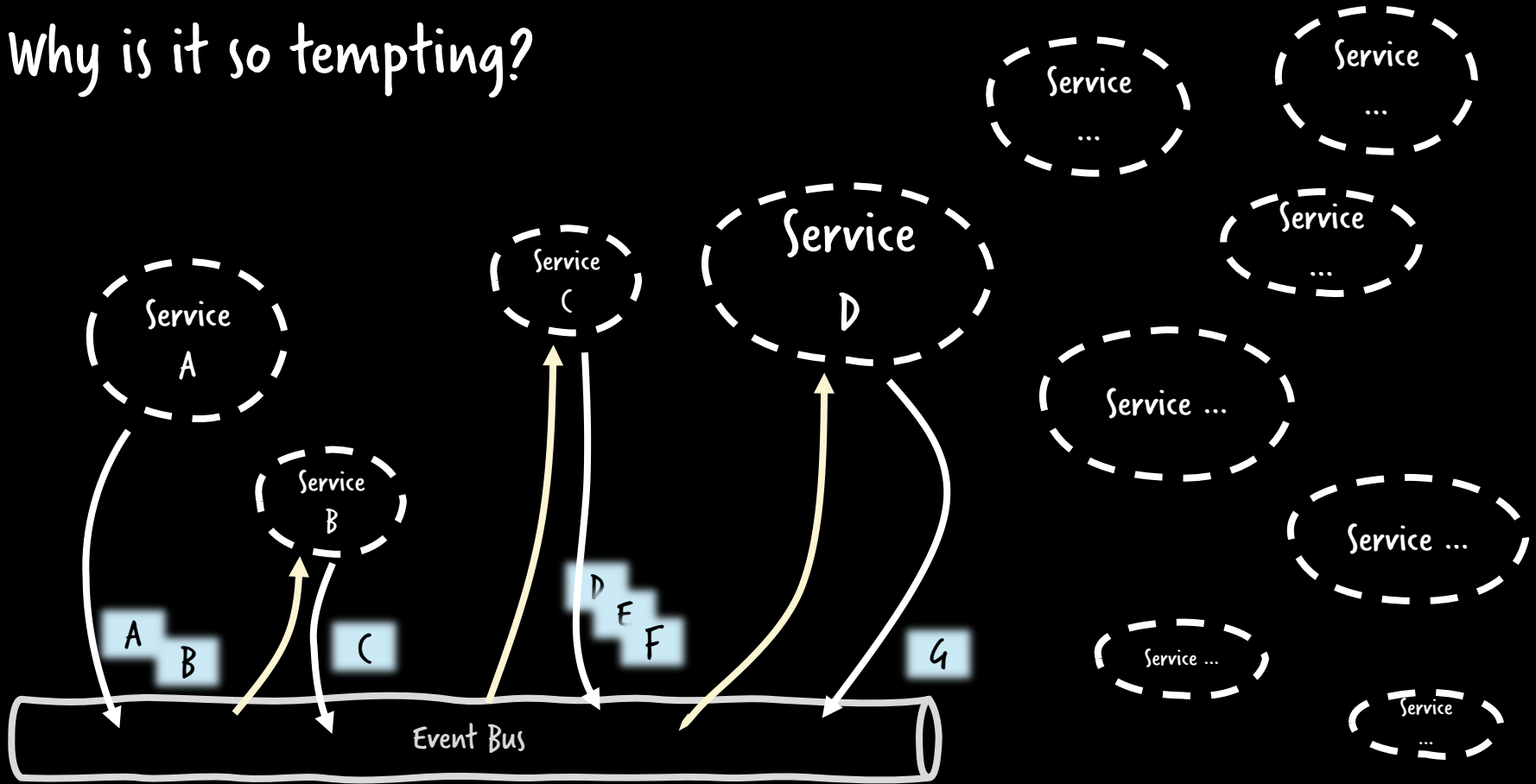
Choreography

What we wanted

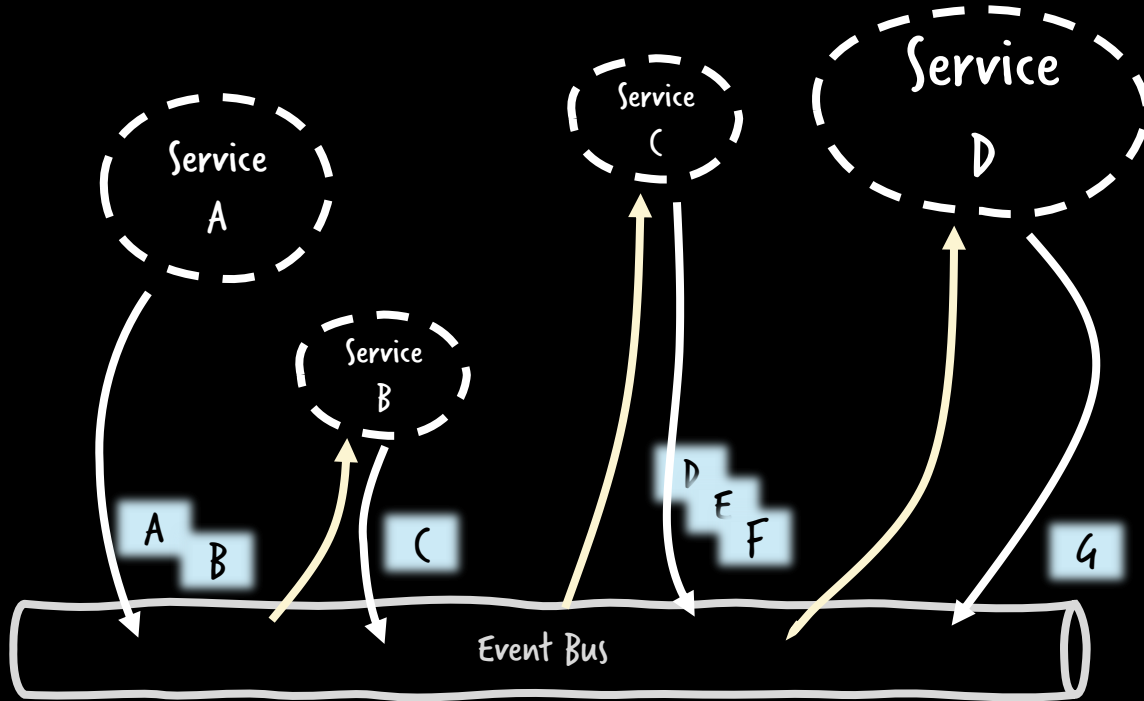


vs. what we got

Why is it so tempting?



Why is it so tempting?



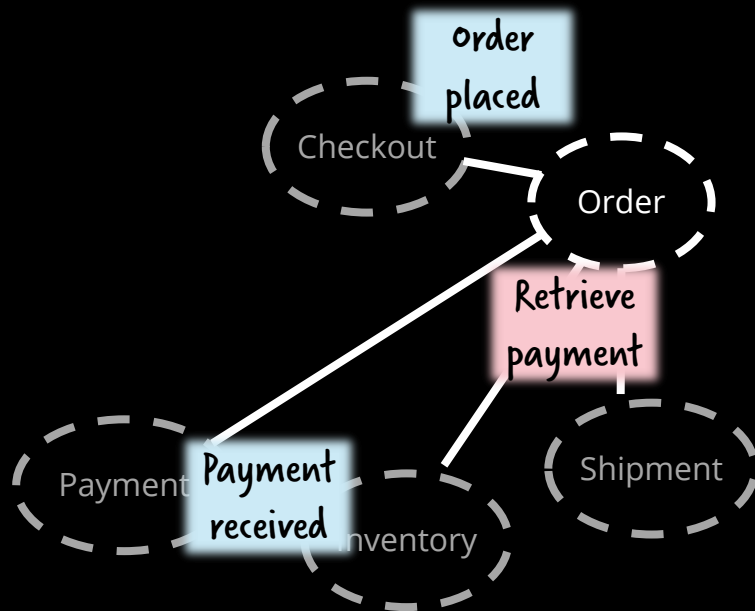
Adding is easy!

You can „buy“ a shorter initial time-to-value by choreography.

It yields in technical debt.

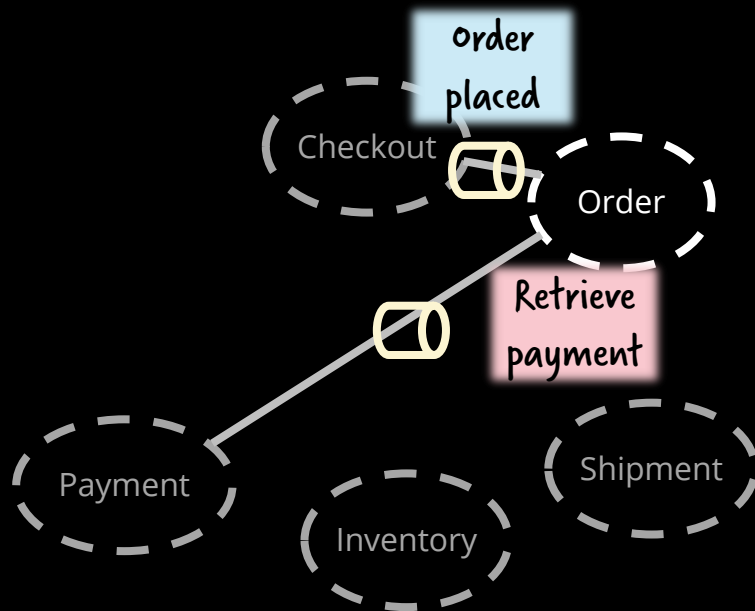


orchestration



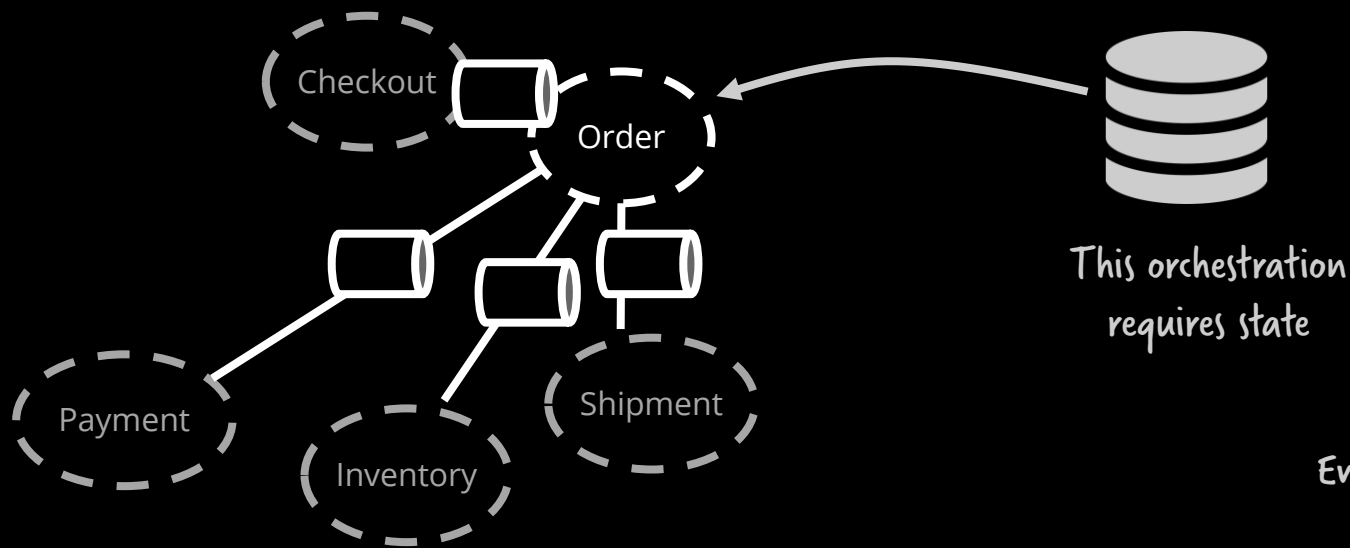
Decide about
responsibility!

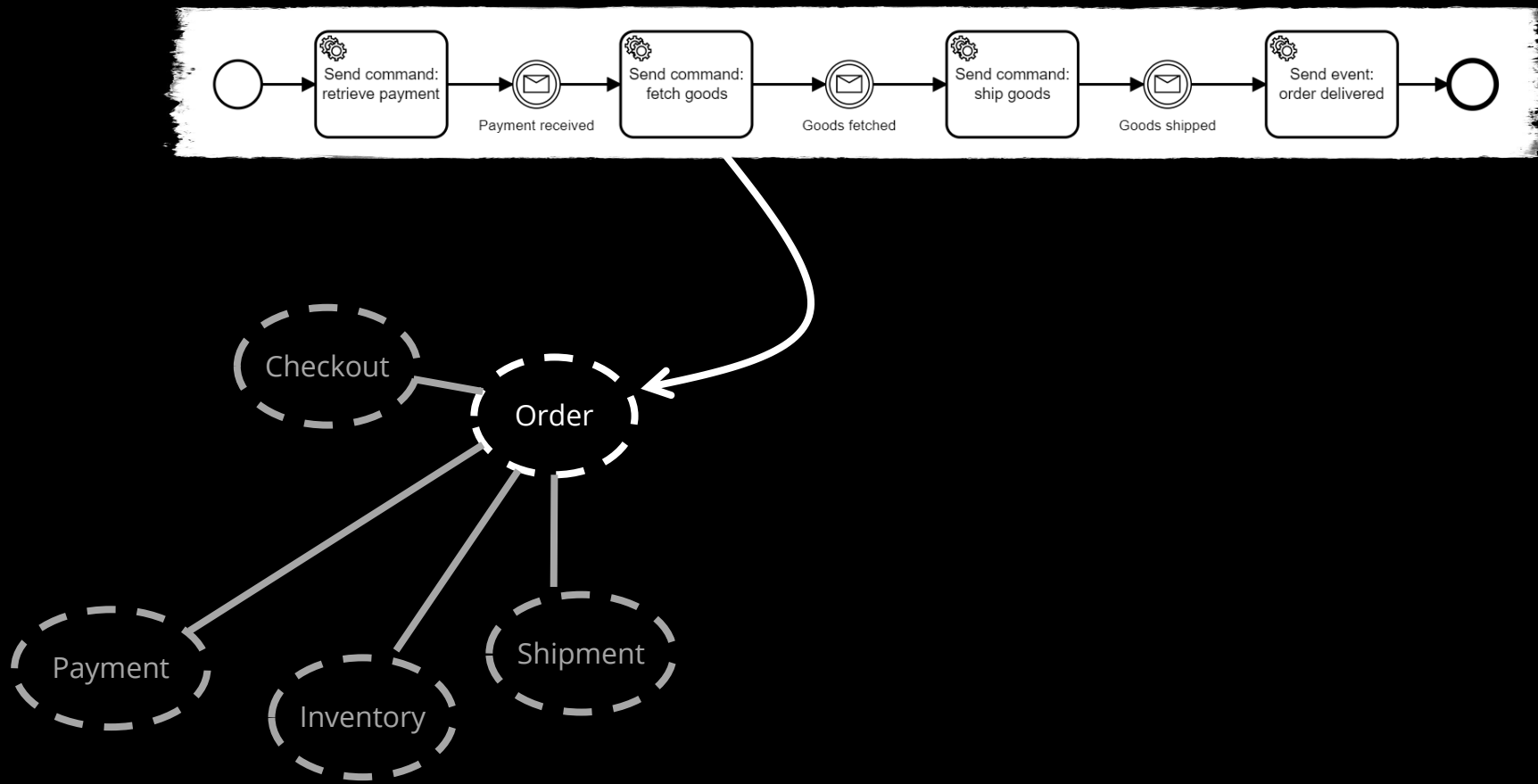
orchestration



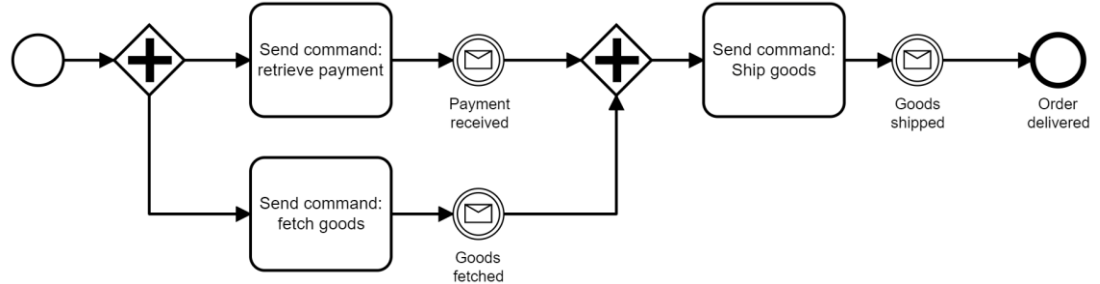
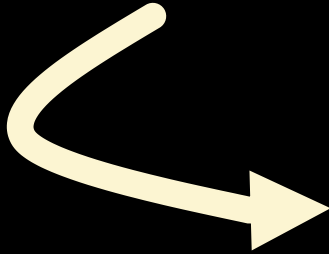
It can still be messaging!

Stateful orchestration

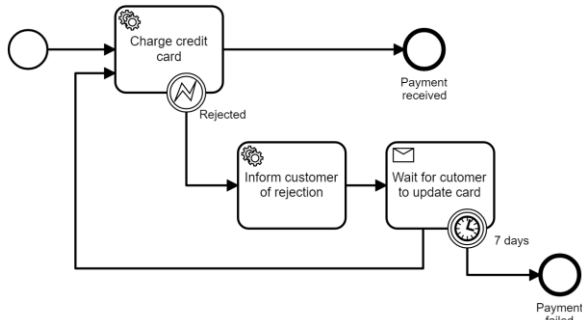
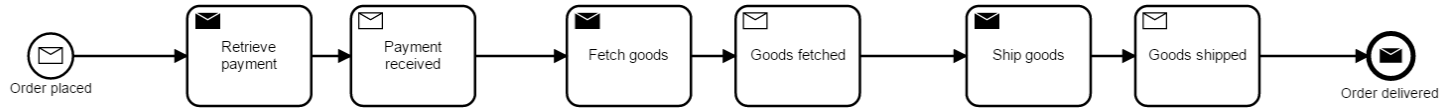




Now it is easy to change the process flow

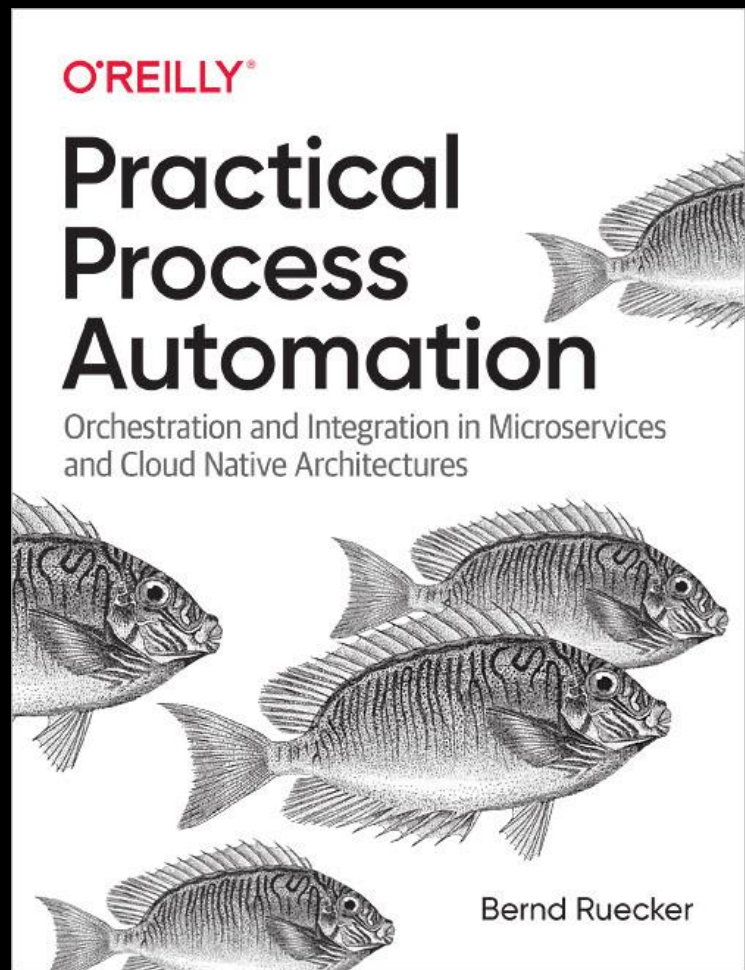


Processes are domain logic that live inside boundaries



Want to learn more?

<https://learning.oreilly.com/get-learning/?code=PPAER20>



Summary

- Workflow engines solve hard developer problems
- Workflow engines can orchestrate anything in a developer-friendly way
- Being able to implement long-running services improves your architecture
- Executable process models increase business agility
- Event-driven choreography is not a magic cure
- orchestration works in harmony with modern architectures

Code, code, code...

The screenshot shows the GitHub interface for the repository 'berndruecker / flowing-retail'. The repository is described as a 'Sample application demonstrating an order fulfillment system decomposed into multiple independent components (e.g. microservices). Showing concrete implementation alternatives using e.g. Java, Spring Boot, Apache Kafka, Camunda, Zeebe, ...'. It has 106 commits, 1 branch, 0 releases, 2 contributors, and 55 watchers. The repository is licensed under Apache-2.0. The commit history is shown with a table of recent changes.

berndruecker / **flowing-retail**

Code Issues (3) Pull requests (1) Projects (0) Wiki Insights Settings

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Sample application demonstrating an order fulfillment system decomposed into multiple independent components (e.g. microservices). Showing concrete implementation alternatives using e.g. Java, Spring Boot, Apache Kafka, Camunda, Zeebe, ...

Manage topics Edit

106 commits 1 branch 0 releases 2 contributors Apache-2.0

Branch: master New pull request

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berndruecker	Started to add runners for windows-cmd and docker-compose (#12 and #13)	Latest commit 64909d8 3 hours ago
docs	included .NET example in readme	
kafka	Started to add runners for windows-cmd and docker-compose (#12 and #13)	5 months ago
rest	fixed V6 and removed some dead code	3 hours ago
runner	Started to add runners for windows-cmd and docker-compose (#12 and #13)	5 days ago
zeebe	Use JPA entity instead of HashMap to allow restarts	3 hours ago
.gitignore	changed docker names	5 months ago
.travis.yml	Started to add runners for windows-cmd and docker-compose (#12 and #13)	4 days ago
LICENSE		

Thank you!



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[@berndruecker](#)

Slides: <https://berndruecker.io>

Blog: <https://medium.com/berndruecker>

Code: <https://github.com/berndruecker>

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

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

THE NEW STACK

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

