# Practical
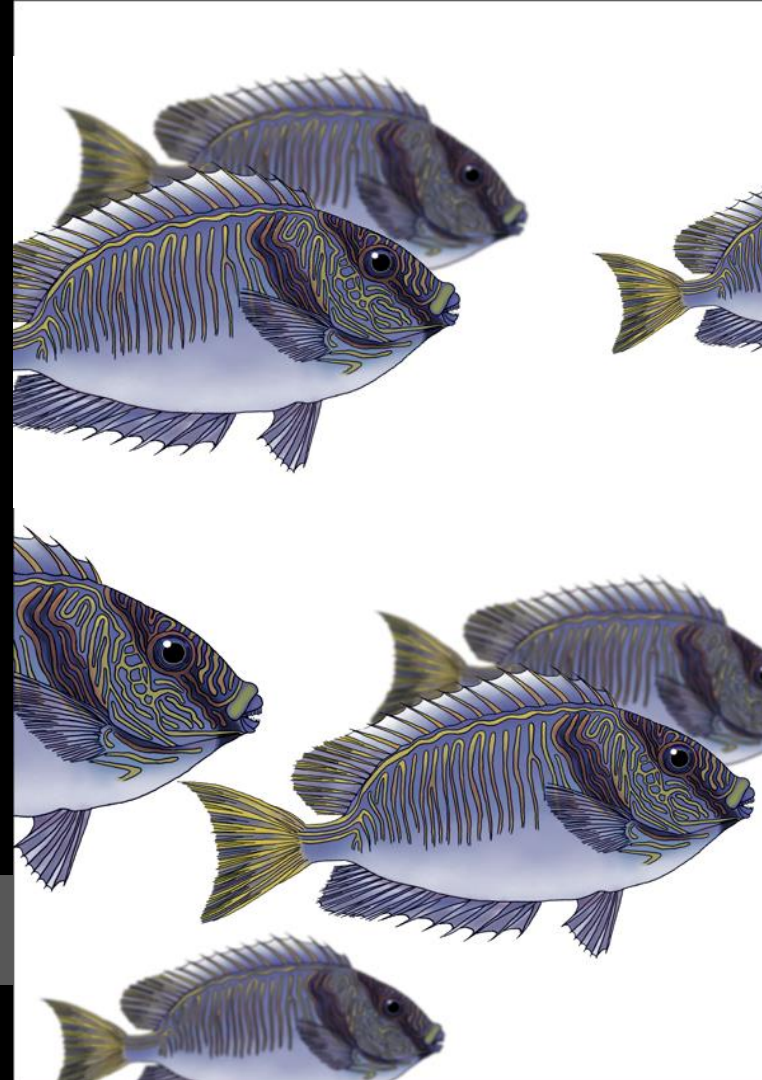# Process Automation

@berndruecker

The age of Amazon

**Jeff Bezos v the world:
why all companies fear
'death by Amazon'**

3-5 minutes

Slow, expensive ...

€€€

... and annoying
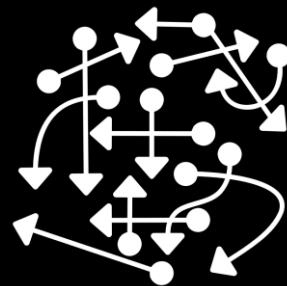
Camunda Con Live 2020

https://blog.bernd-ruecker.com/process-automation-in-harmony-with-rpa-720effdb0513
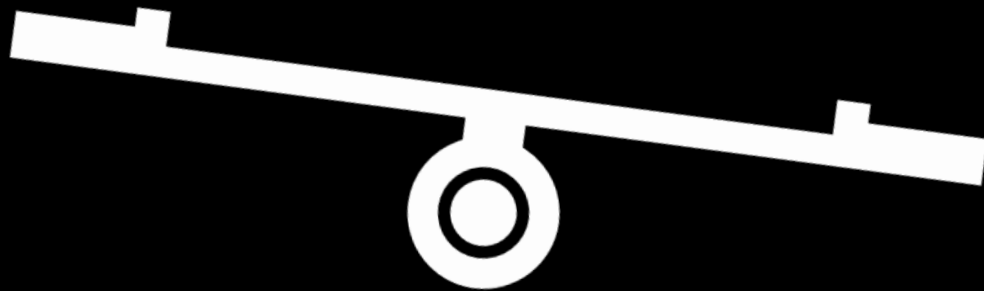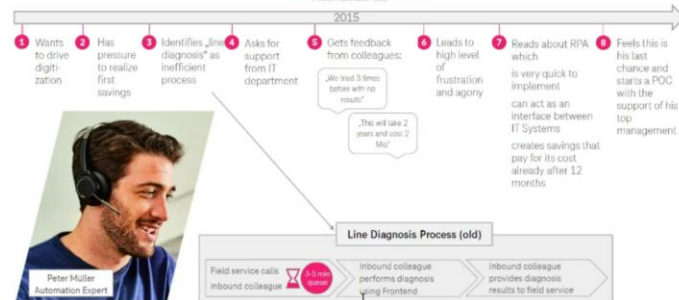
Robotic Process Automation
RPA

# RPA
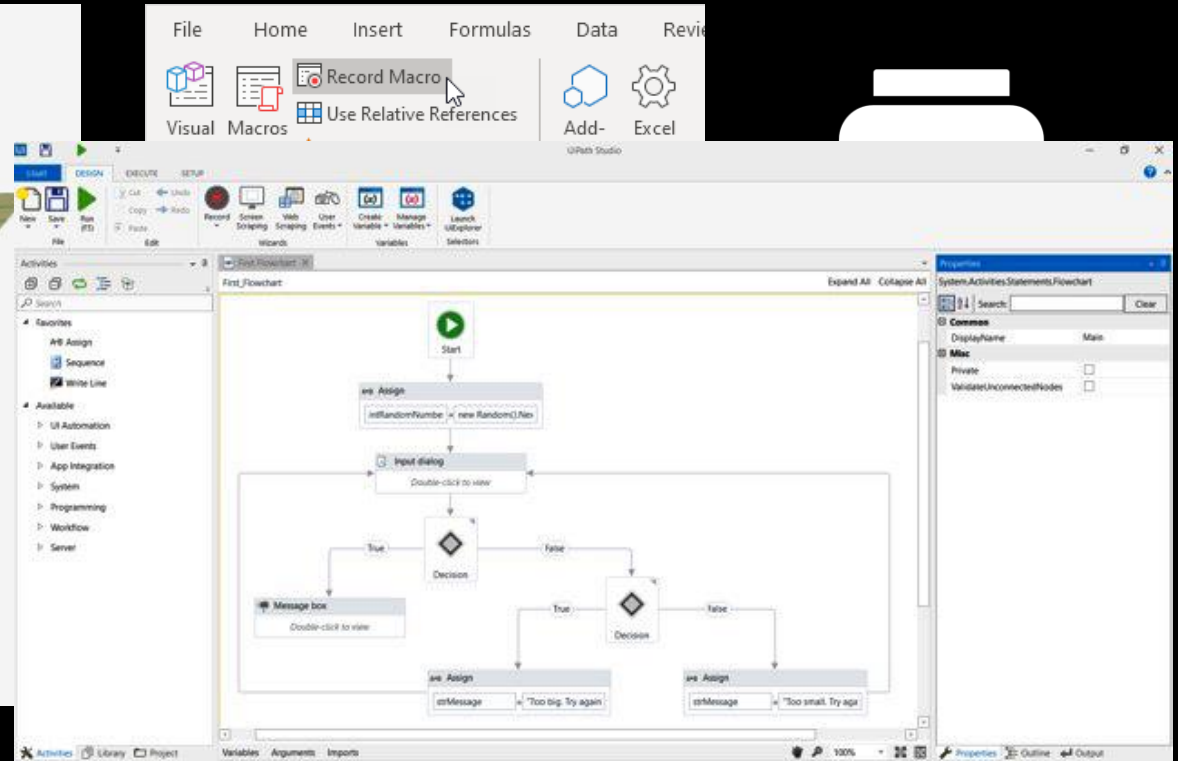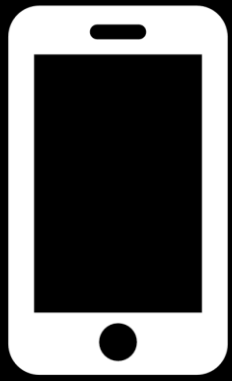
Self-service
Immediate
response

BUT...

Governance
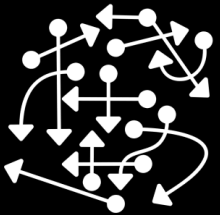
Mixing task and
process automation

# Task vs. Process Automation
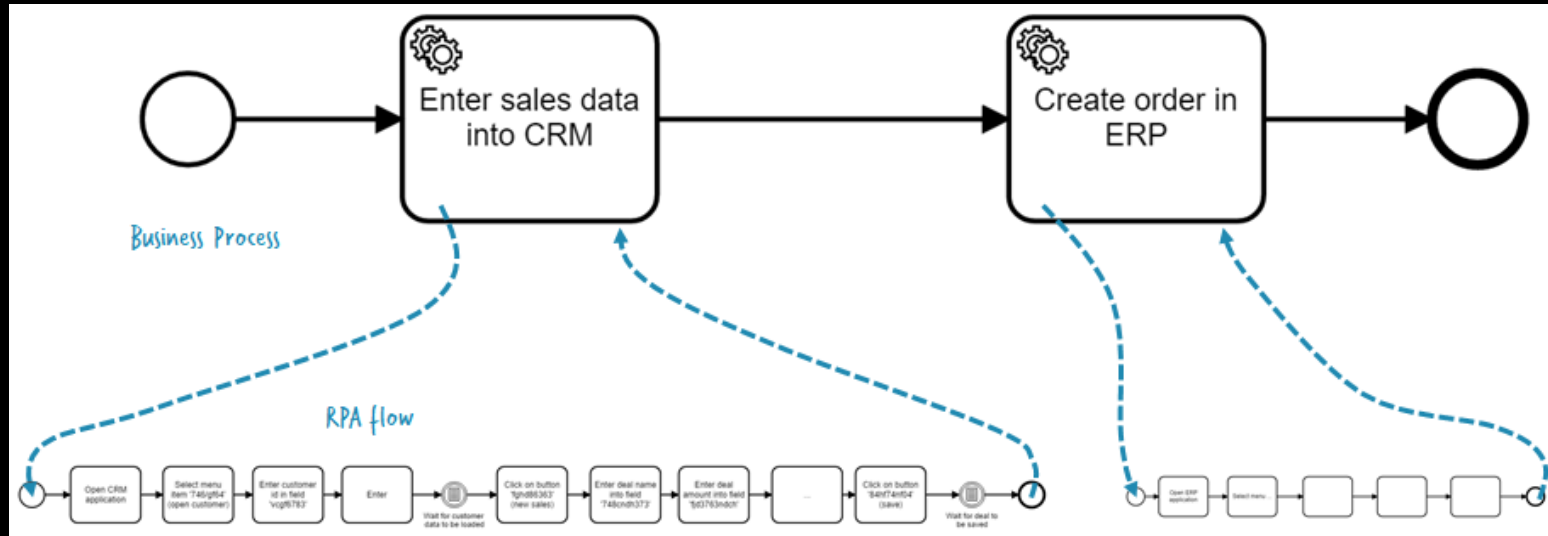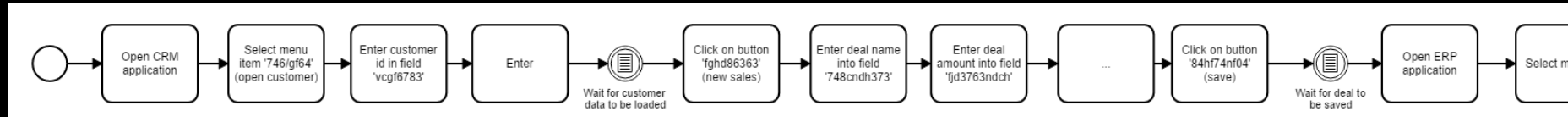


Process Automation

Task Automation

https://blog.bernd-ruecker.com/how-to-benefit-from-robotic-process-automation-rpa-9edc04430afa

# Telekom's Journey



## 3: FROM FRONTEND AUTOMATION TO BACKEND AUTOMTATION

**Manual process**

**1**
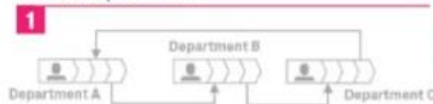
Short time-to-market results in "quick & dirty" process design
→ Complex processes including workarounds

**RPA / Frontend Automation**

**2**
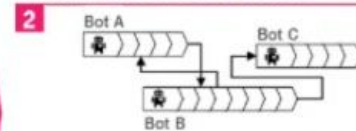
Robotic process automation imitates the human way of working
→ Complex "Spaghetti Bot" automation

**Backend Automation**

**4**
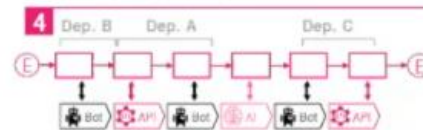
Shift from Bots (Front-End) to APIs (Back-End) and other technologies better fit for purpose
→ Enlarged scope for automation + higher efficiency

**Separation process layer**

**3**
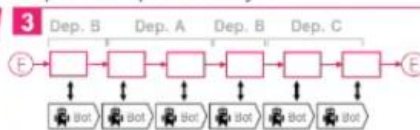
Separation of Process Layer (Bot Orchestration) and Bot Layer
→ Increased process transparency and optimization

# Software to Build Software (to Automate Processes)

Low code

Pro code
Developer-friendly

Process
Automation

Traditional BPMS

iBPMS

Task
Automation

RPA

App Integration Tools

Event-Driven Architecture
(EDA)

Integration Frameworks

Batch Jobs

Software Development

Digital Process Automation (DPA)

Workflow engines, process orchestrators, or microservice orchestrators
distributed as OSS product, SaaS, or unproductized OSS project

Data Pipelines

Custom Software Development

To be published on InfoWorld soon

Process automation
scenarios

# Process Automation Scenario

| e.g. accounting software | Standard | Process | Unique | e.g. onboarding process that needs to include a lot of legacy systems |
| e.g. webshop selling innovative products | Unnecessary | Process Innovation | Desired | e.g. insurances using telematics data |
| e.g. integrating one standard cloud system with another | Simple | Process complexity | Complex | e.g. end-to-end load origination process invoking lots of other services |
| e.g. one business department solving a local pain | Small | Scale | Big | e.g. lots of applications, people or developers involved. Large volume of instances. |
| e.g. automating one single task in a larger process | Task | Scope | Process | e.g. end-to-end processes like customer onboarding, loan origination, order fulfillment. |
| e.g. a one-time data adjustment for millions of records | Ad-hoc or temporary | Project setup | Planned | e.g. a budgeted IT project resulting in an application having a couple of years life time. |

# Process Automation Scenario

| Standard | Process | Unique |
|---|---|---|

| Unnecessary | Process Innovation | Desired |
|---|---|---|

| Simpl | Process complexity | Complex |
|---|---|---|

| Small | Scale | Big |
|---|---|---|

| Task | Scope | Process |
|---|---|---|

| Ad-hoc or temporary | Proje setup | Planned |
|---|---|---|
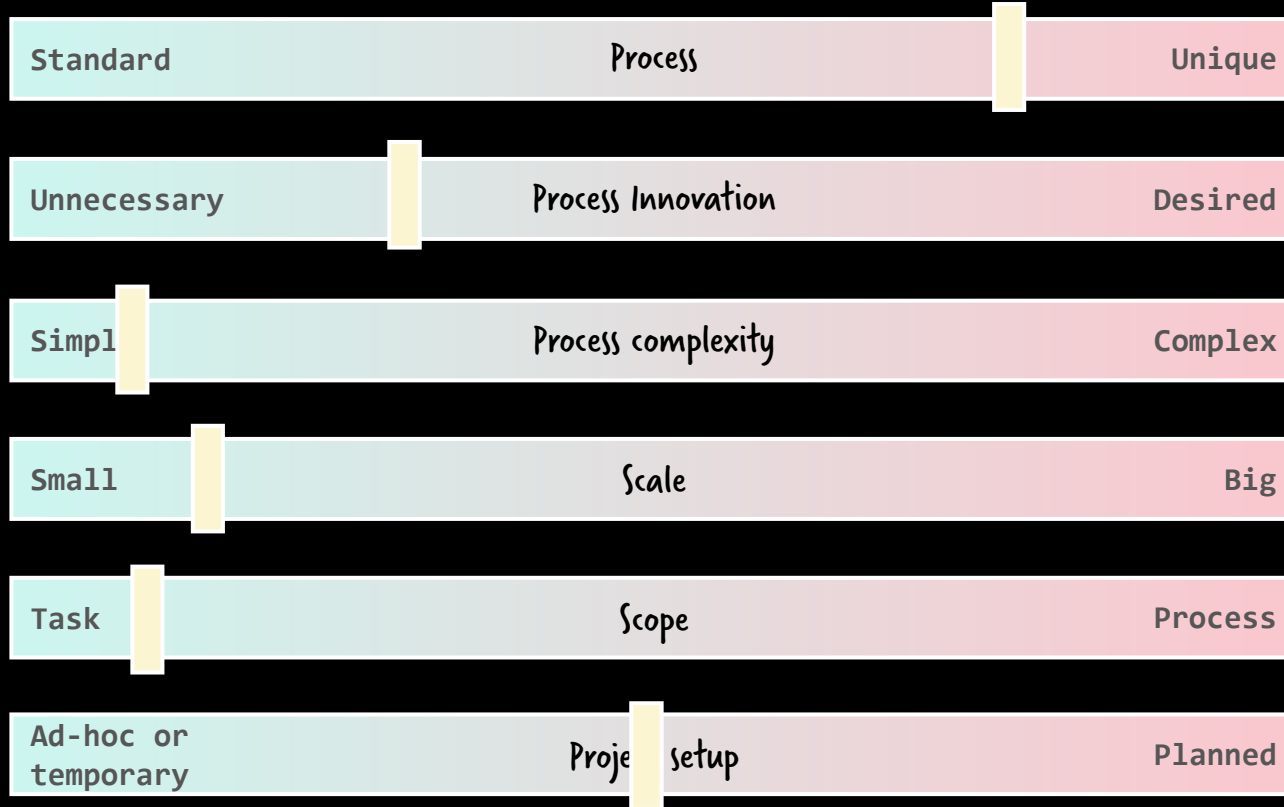
# Selling Insurance Online in 2 Days

# Helsana

## Challenge

Switzerland's largest healthcare insurer needed a quick and compliant way to quickly let customers buy insurance products online.

## Solution

New self-service web portal, let customers verify their identity and purchase products directly online. With the 'Helsana Process Cockpit', based on Camunda Optimize, the team can see the status of all applications and automatically alerts internal stakeholders to process issues.

*" Camunda worked immediately, straight out of the box. This solution allows us to show our stakeholders where problems are arising -- adding value without any added coding.*

**Dr. Eric Euerlings**
**Senior Integration Architect**
**Helsana**

## Results with Camunda

### 15.000+
applications processed in first 3 months

### 48 hours
to complete backend integration

### 0 code
no new code needed to deliver self-service documentation portal

CAMUNDA

# Process Automation Scenario

| Standard | Process | Unique |
|---|---|---|

| Unnecessary | Process Innovation | Desired |
|---|---|---|

| Simple | Process complexity | Complex |
|---|---|---|

| Small | Scale | Big |
|---|---|---|

| Task | Scope | Process |
|---|---|---|

| Ad-hoc or temporary | Project setup | Planned |
|---|---|---|
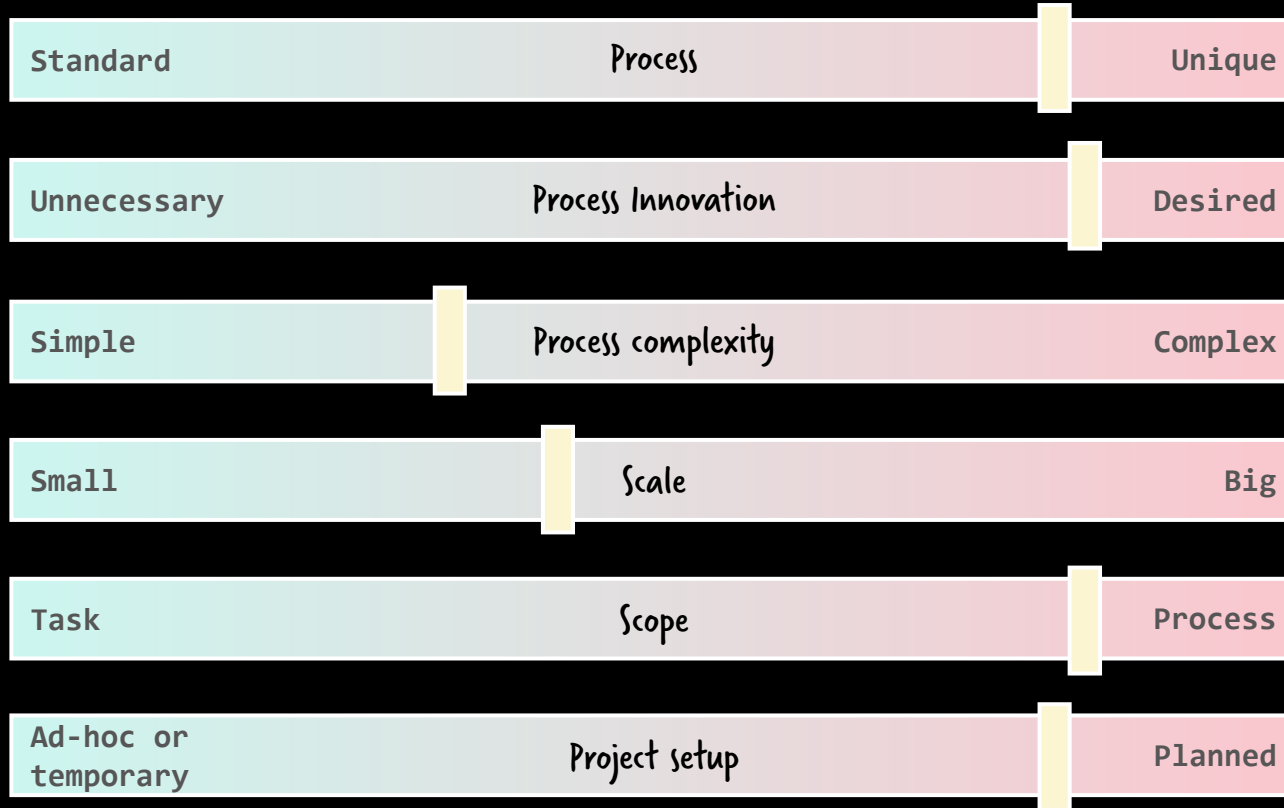
# Zalando adds transparent and predictable order fulfillment at scale… stay calm and shop online

zalando

## Challenge

Zalando is Europe's largest online platform for fashion, partnering with over 1,500 brands in 15 European markets. Since 2014, every order placed by Zalando's 16 million customers has been executed by Camunda Platform. Zalando needed to replace a home-grown system that was inflexible and difficult for business stakeholders to use.

## Solution

Seamless integration with the existing Java infrastructure was a key reason Camunda was chosen to drive order execution within 300 ms – even at scale. Simple configurability and process transparency that can be updated as requirements change drove Zalando's choice of Camunda.

## Results with Camunda

### 300 ms
Process execution time for order completion at scale

### 144 million
Annual online orders processed by Zalando using Camunda

### clarity
With documented processes that align technical reality and business expectations

"   *Camunda's open platform supports our individual needs in a way that closed BPM suites just cannot achieve. Our BPMN process models are executed directly, which improved communication between business and development, which also shortens development cycles.*

**Marko Lehn**
**Software Engineering Team Lead**
**Zalando**

CAMUNDA

# Process Automation Scenario

| Standard | Process | Unique |
|---|---|---|

| Unnecessary | Process Innovation | Desired |
|---|---|---|

| Simple | Process complexity | Complex |
|---|---|---|

| Small | Scale | Big |
|---|---|---|

| Task | Scope | Process |
|---|---|---|

| Ad-hoc or temporary | Project setup | Planned |
|---|---|---|

Sweet Spots

Commercial Off-the-shelf

| Standard | Process | Unique |
| Unnecessary | Process Innovation | Desired |
| Simple | Process complexity | Complex |
| Small | Scale | Big |
| Task | Scope | Process |
| Ad-hoc or temporary | Project setup | Planned |

Low Code

Pro Code

Developer Friendly Tools

Developers

Business folks

Process Automation

Low code development
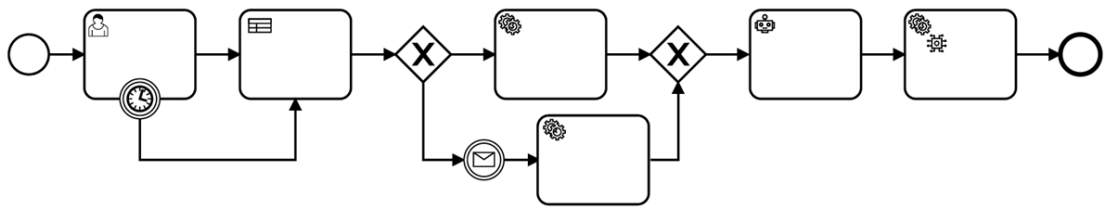
# Your code to provide a REST endpoint

```java
@PutMapping("/ticket")
public ResponseEntity<BookTicketResponse> bookTicket(ServerWebExchange exchange) {
  // TODO: extract data for process from request
  // Start new instance of the ticket-booking workflow
  client.newCreateInstanceCommand()
    .bpmnProcessId("ticket-booking").latestVersion()
    .variables(variables) // Map with variables to pass to process instance
    .send();
  return ResponseEntity.status(HttpStatus.ACCEPTED).build();
}
```



Developers

Process Automation

BPMN diagram: Ticket booked → Reserve Seats → Generate Ticket → Booking succeeded
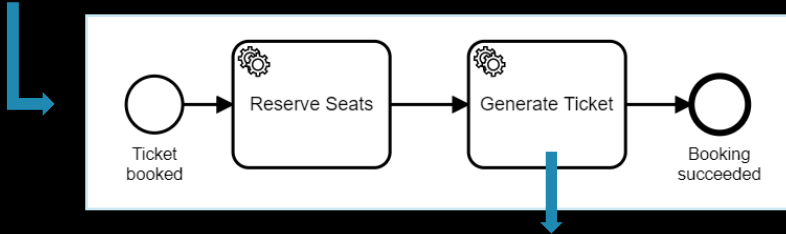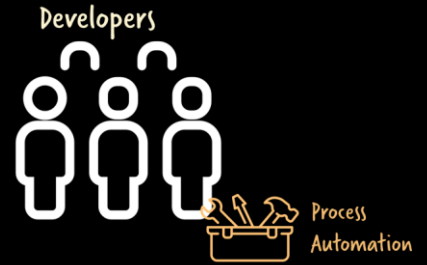
# Your glue code to implement the REST call

```java
@ZeebeWorker(type = "generate-ticket")
public void callGenerateTicketRestService(final JobClient client, final ActivatedJob job) throws IOException {
  // TODO: prepare request
  // execute REST call
  CreateTicketResponse ticket = restTemplate.getForObject(ENDPOINT, CreateTicketResponse.class);
  // continue in the process and remember response data
  client.newCompleteCommand(job.getKey())
    .variables(Collections.singletonMap(VAR_TICKET_ID_NAME, ticket.ticketId))
    .send()
    .exceptionally(throwable -> { throw new RuntimeException("Could not complete job " + job, throwable); });
```

# CAMUNDA

## Automate Any Process, Anywhere

Human Work · Business Rules · API · IoT · Microservice · RPA · AI

CAMUNDA

# Example Architecture

## Java Maven Project (using Spring Boot)
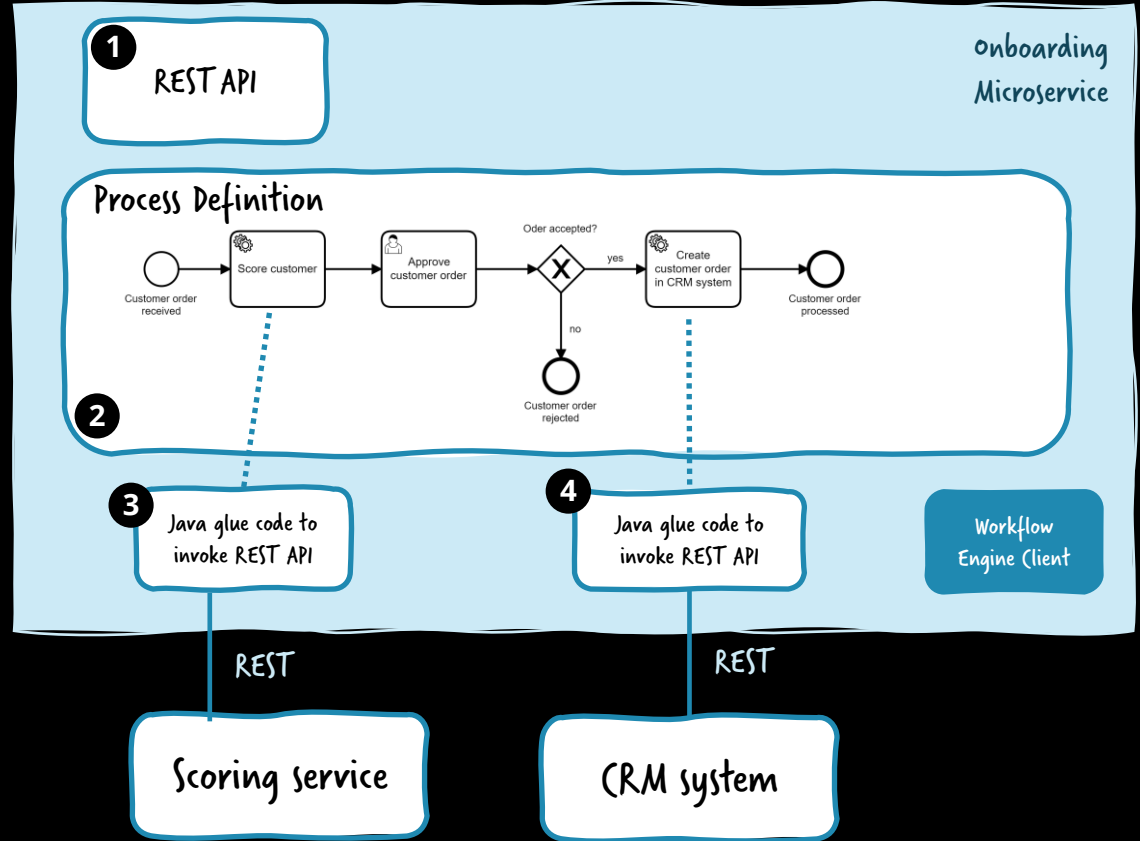
```
v 📁 src
  v 📁 main
    v 📁 java
      v 📁 io.berndruecker.onboarding.customer
        v 📁 process
            © CustomerOnboardingGlueCode        4
            © ProcessConstants
            © ScoringAdapter                    3
        v 📁 rest
            © CustomerOnboardingRestController   1
          © CustomerOnboardingSpringbootApplication
    v 📁 resources
        📊 application.properties
        ❓ customer-onboarding.bpmn              2
  v 📁 test
    v 📁 java
      v 📁 io.berndruecker.onboarding.customer
          © CustomerOnboardingTests
```

**Onboarding Microservice**

1  REST API

## Process Definition



2

3  Java glue code to invoke REST API

4  Java glue code to invoke REST API

Workflow Engine Client

REST

REST

Scoring service

CRM system

What do you need?

# Existing team of developers

# A Camunda training,
   coach or expert

# Want to learn more?

https://ProcessAutomationBook.com/
Free electronic version available
Featuring code examples:
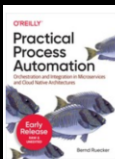


## The Architect Always Implements

Discussing concepts is only half the fun if you cannot point to concrete code examples. Runnable code forces you to be precise, to think about details you can leave out on the conceptual level and, most importantly, it often explains things best. I am personally a big fan of the motto "the architect always implements".

This is why there is source code belonging to this book, which you can find in this part of the website. These examples will not only help you better understand the concepts described in this book - they also give you a great opportunity to play with technology whenever you are bored from reading.

### Examples Overview

- Customer Onboarding Example: A process solution used in Chapter 2 of the book to introduce executable process models. It contains a process to onboard new mobile phone customers in a telecommunication company.
- Order Fulfillment Example: Example using microservices implementing an end-to-end order fulfilment process that involves multiple microservices and various local process models. While mentioned at multiple places in the book, it the core example in Chapter 7 and Chapter 8.
- Other Example: Curated list of interesting links to more executable examples, typically demonstrating specific concepts.

### License

The book and this website is here to help you get your job done. In general, if example code is offered here or in the book, you may use it in your programs and documentation. You do not need to contact me for permission, code on Github is typically licensed under Apache 2 or MIT anyway.

**Sidebar navigation:**
What To Expect From This Book
About The Author
Code Examples
   Customer Onboarding Example
   Order Fulfillment Example
   Other Examples
Additional Resources
   Curated List of Tools
   Blogs, Talks And Articles
   BPMN
   DMN
Feedback
Errata

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O'REILLY®

# Practical Process Automation

## Orchestration and Integration in Microservices and Cloud Native Architectures

**Bernd Ruecker**

Thank you!

@berndruecker