

# Challenges and opportunities of enterprise wide process automaton

@berndruecker





# The common reality



Manual work  
Ad-hoc problem  
solving

Legacy Systems

Website

Core Banking  
System

CRM System

Scoring System

Address Check

...

Point to point  
integrations  
(aka Spaghetti)

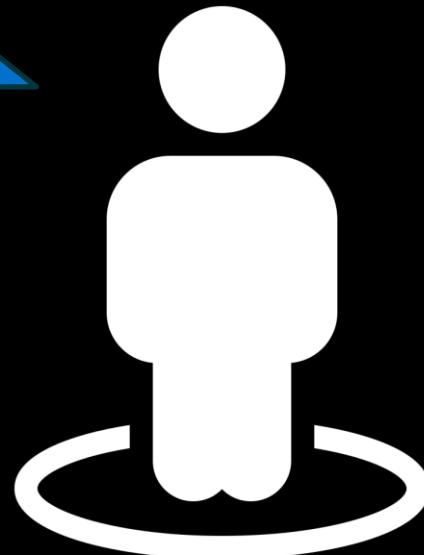


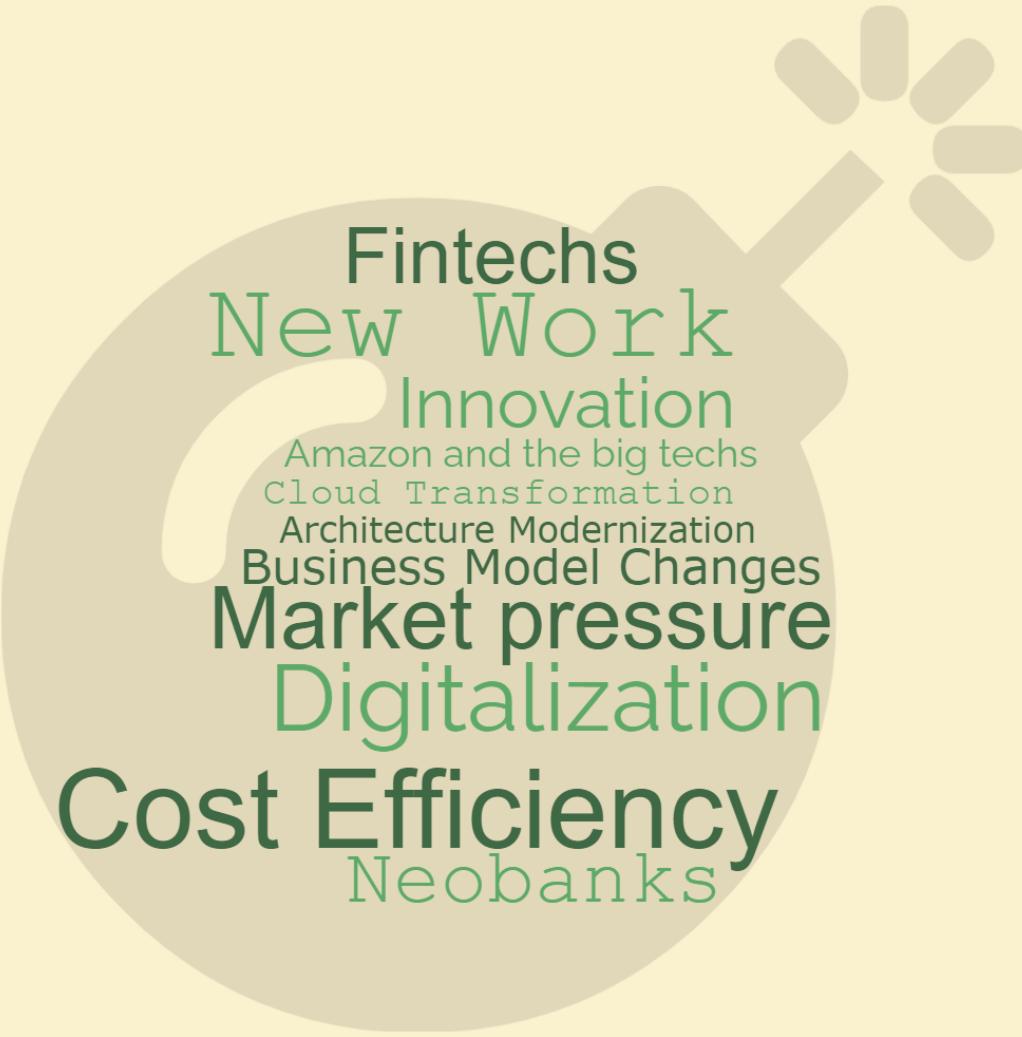
# The customer doesn't care

Please open  
a bank account  
for me

Wow, that  
was...

...slow 😞





**Fintechs**  
**New Work**  
**Innovation**

Amazon and the big techs  
Cloud Transformation  
Architecture Modernization  
Business Model Changes

**Market pressure**  
**Digitalization**

**Cost Efficiency**  
**Neobanks**

# Process orchestration



Fintechs  
New Work  
Innovation  
Amazon and the big techs  
Cloud Transformation  
Architecture Modernization  
Business Model Changes  
**Market pressure**  
Digitalization  
**Cost Efficiency**  
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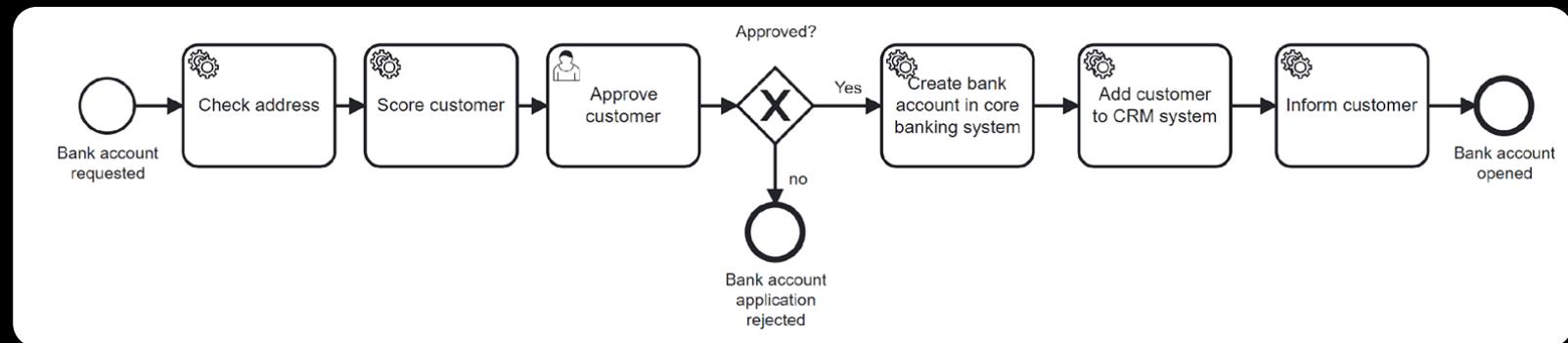


# Adding process orchestration



Clerks

Website



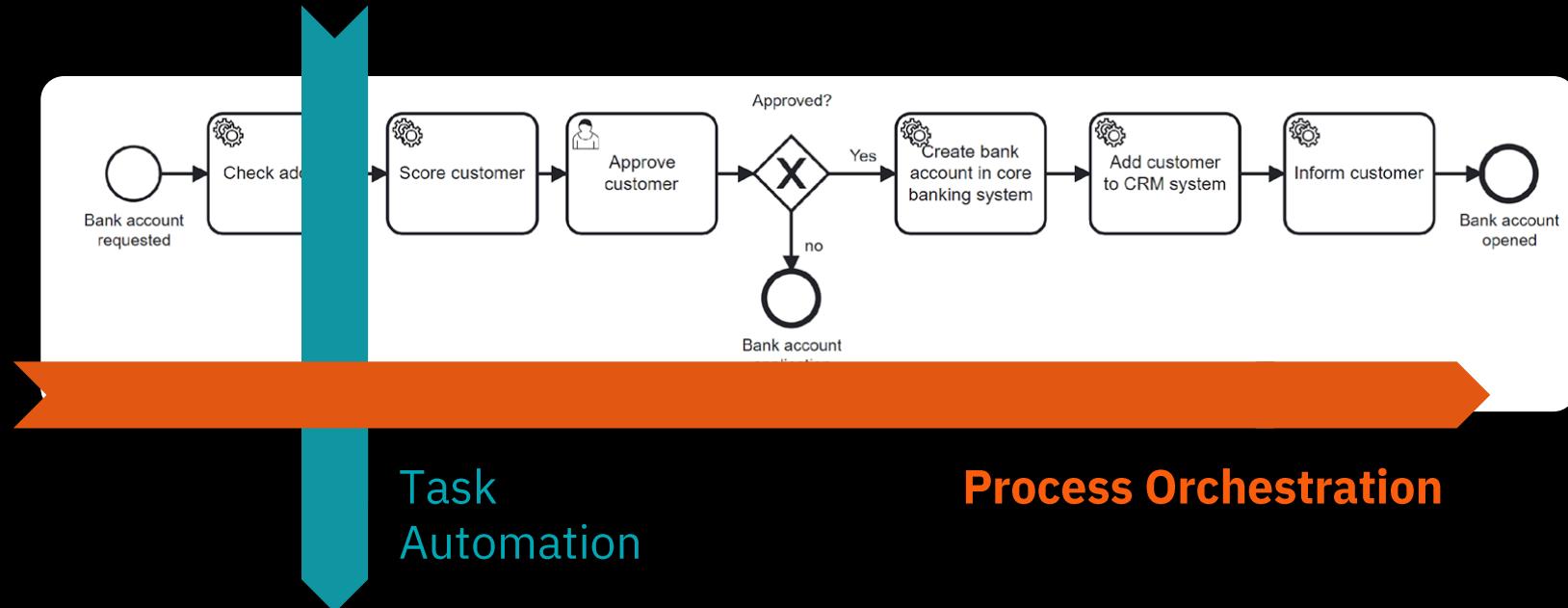
Core Banking System

CRM System

Scoring System

Address Check

# Process automation: Task automation vs. process orchestration



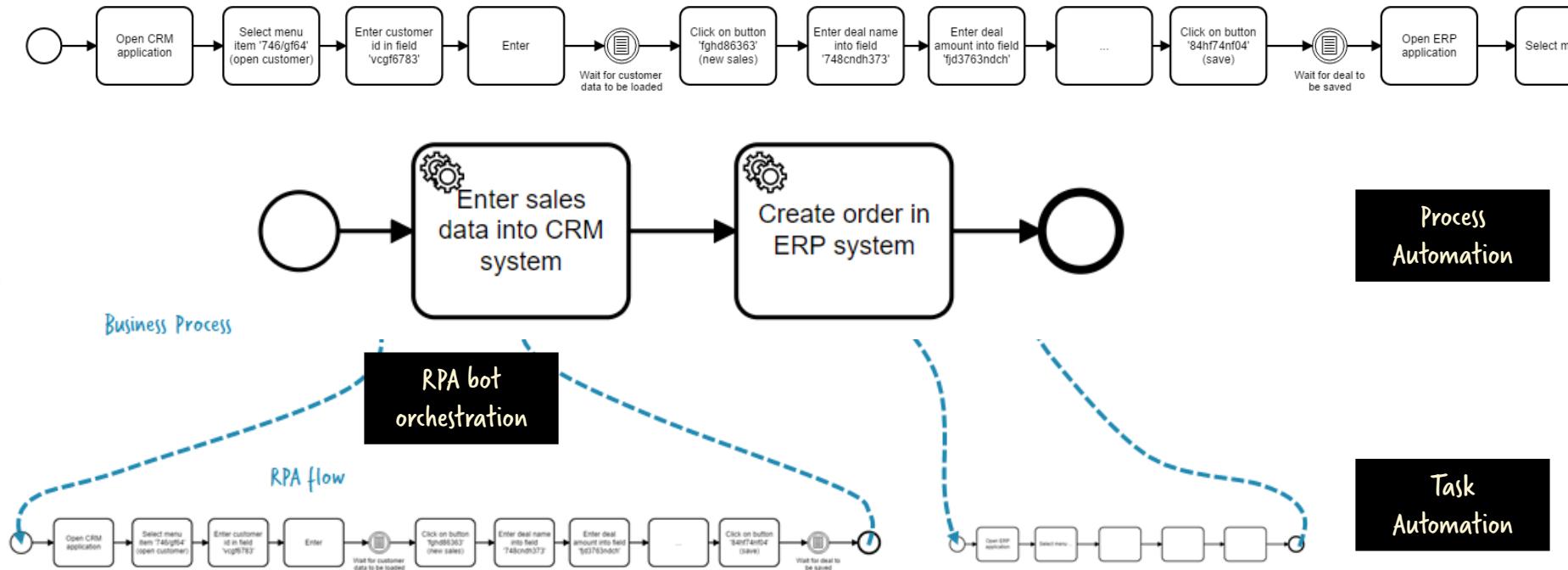
Task  
Automation

Process Orchestration

Robotic Process Automation  
RPA



# Task vs. Process Automation





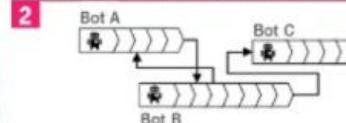
### 3: FROM FRONTEND AUTOMATION TO BACKEND AUTOMATION

#### Manual process



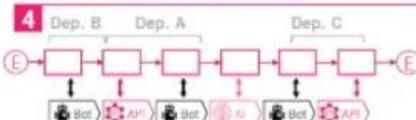
Short time-to-market results in "quick & dirty" process design  
→ Complex processes including workarounds

#### RPA / Frontend Automation



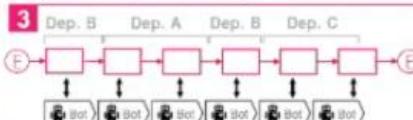
Robotic process automation imitates the human way of working  
→ Complex "Spaghetti Bot" automation

#### Backend Automation



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

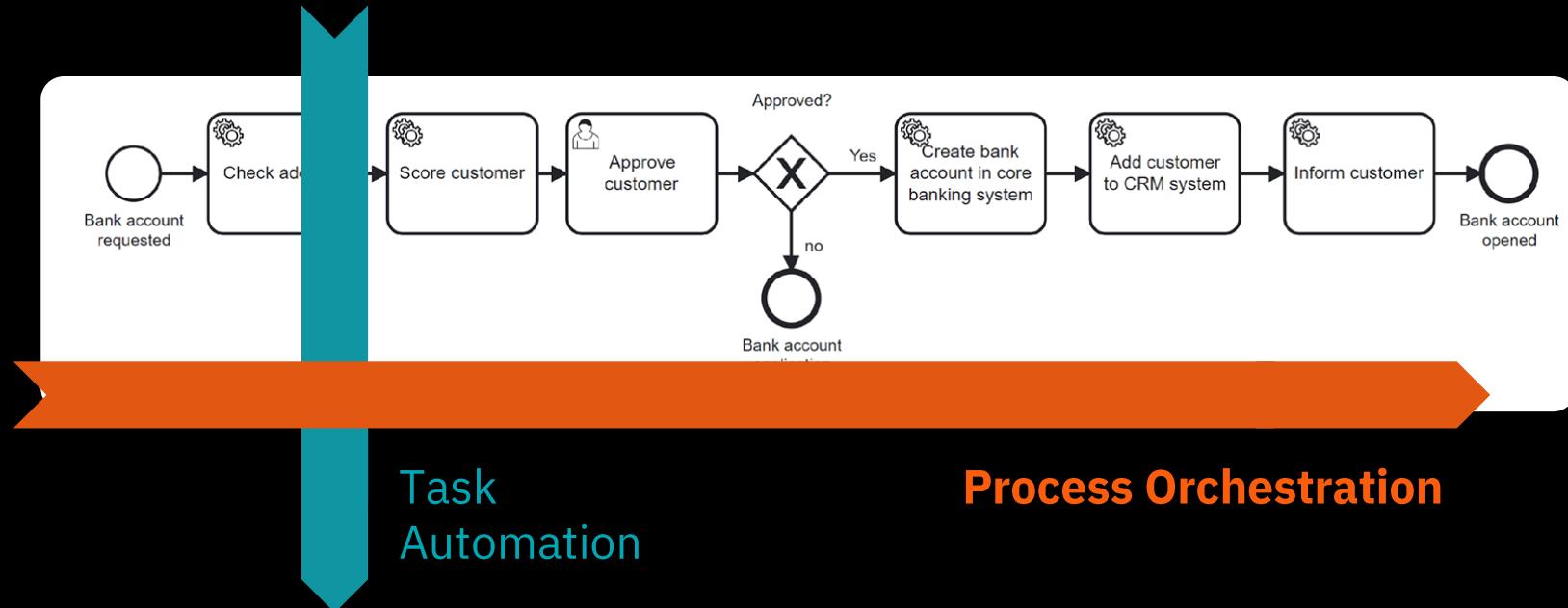


Separation of **Process Layer** (Bot Orchestration) and **Bot Layer**  
→ Increased process transparency and optimization

"Spaghetti bot automation"



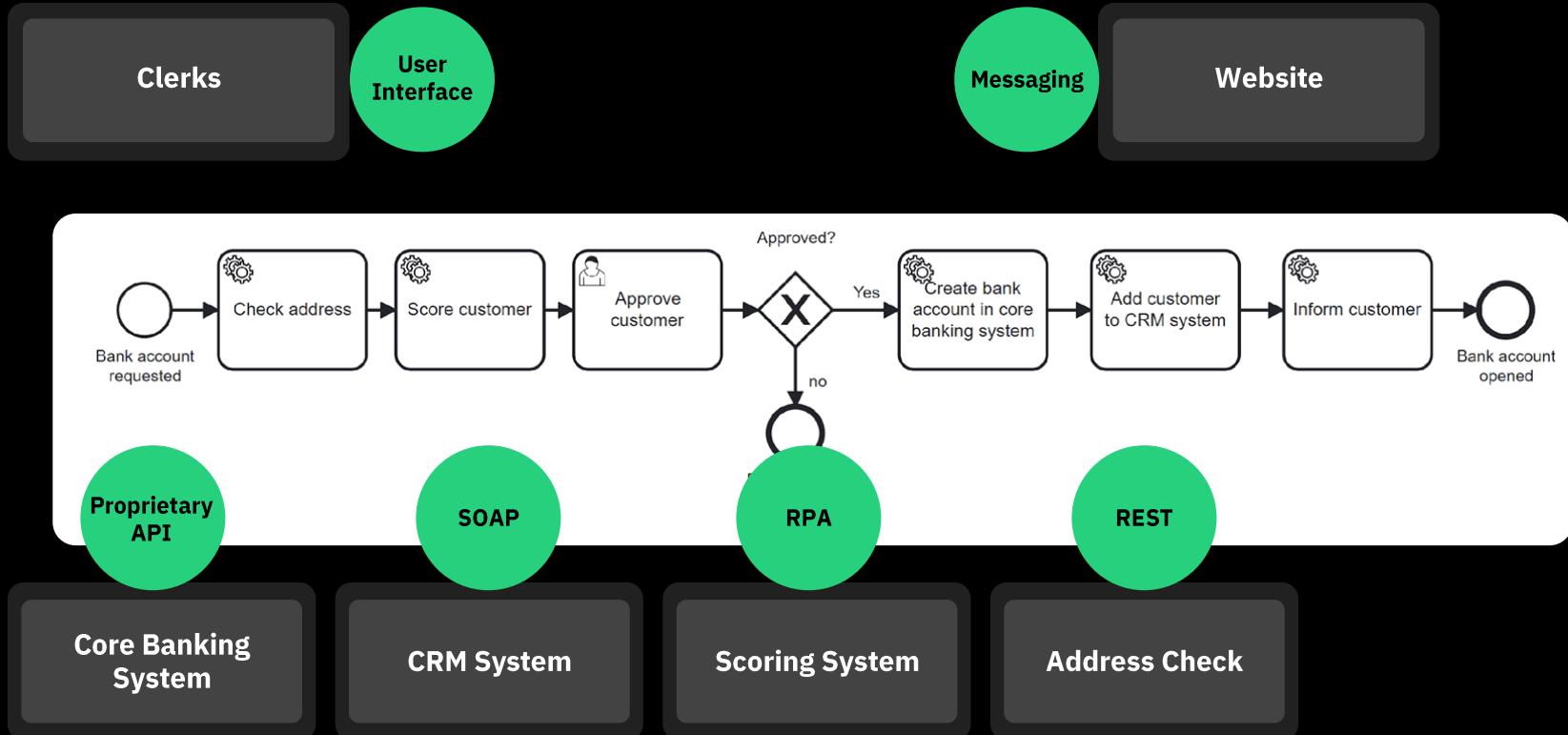
# Process automation: Task automation vs. process orchestration



Task  
Automation

Process Orchestration

# Integrating diverse endpoints



# Integrating diverse endpoints



No problem!  
Just code  
in Spring  
Boot!

```

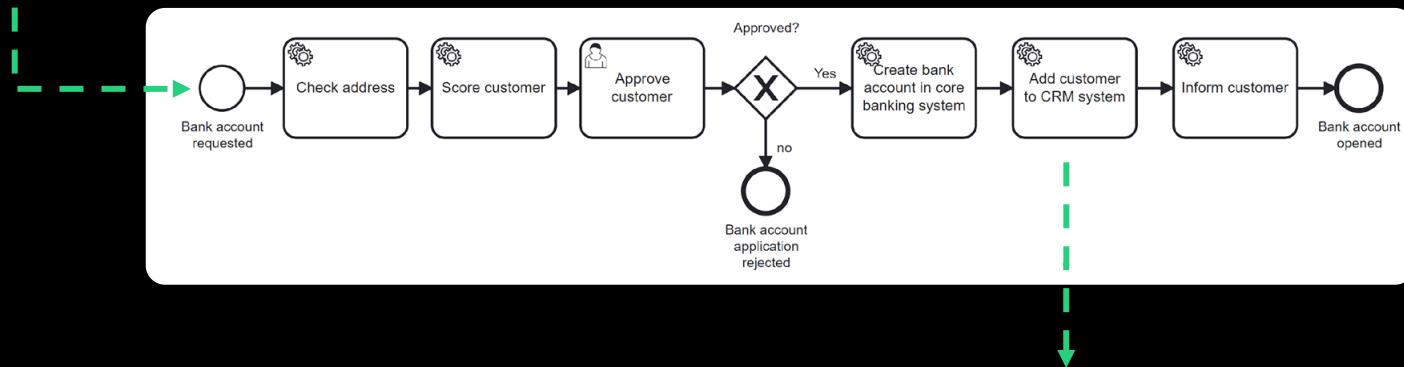
@PutMapping("/customer")
public ResponseEntity<CustomerOnboardingResponse> onboardCustomer(ServerWebExchange exchange) {
    HashMap<String, Object> variables = new HashMap<>();
    variables.put("automaticProcessing", true);
    variables.put("someInput", "yeah");

    client.newCreateInstanceCommand() //
        .bpmnProcessId("customer-onboarding") //
        .latestVersion() //
        .variables(variables) //
        .send().join();

    return ResponseEntity.status(HttpStatus.ACCEPTED).build();
}

```

Your code to provide a REST endpoint



Your code to implement the REST call

```

@ZeebeWorker(type = "addCustomerToCrm", autoComplete = true)
public void addCustomerToCrmViaREST(final ActivatedJob job) throws IOException {
    String request = "someData";
    restTemplate.put(ENDPOINT_CRM, request);
}

```

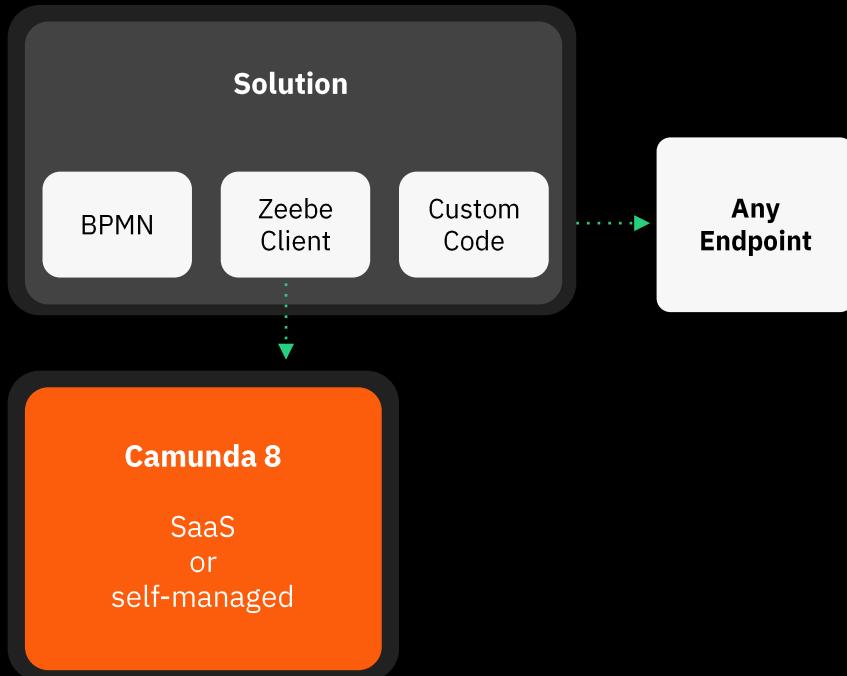
# Example



[https://github.com/berndruecker/  
customer-onboarding-camunda-8-springboot/](https://github.com/berndruecker/customer-onboarding-camunda-8-springboot/)



# Solution architecture example



## Supports any programming language

- Clients for Java, C#, NodeJS, Go, ... available
- Natively integrates into your stack

## Runs anywhere

- Available as a SaaS service
- Manage it yourself (in your own cloud, your datacenter, your laptop)

# About Camunda



**2008**

Founded



**350+**

Employees Globally



**100,000+**

Community Members



**Globally remote**

**500+**

Enterprise Customers

**190+**

Countries with people  
using Camunda

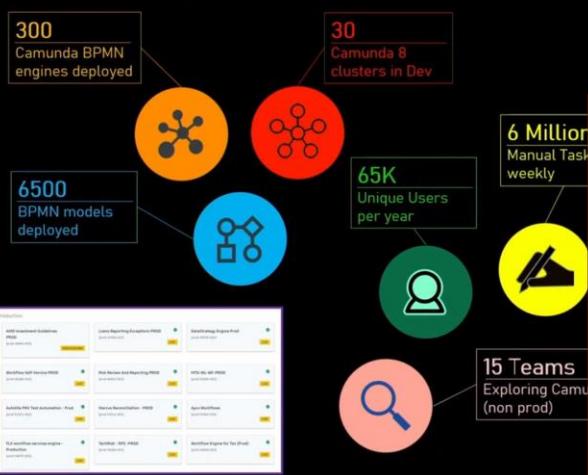
# Camunda at scale (e.g. at Goldman Sachs)



## Camunda Adoption in the Firm through our Platforms

GS Uses Camunda Platform and Camunda 8 to Provide Workflow Solutions to the Whole Firm

Zeebe Inventory	CLIENT	ID	ENV	LAYOUT	VERSION	HEALTH
5	CDE	cde-dev-cluster3	UAT3	small	1.2.4	B G I C O
6	CTRL	ctrl-dev-cluster1	DEV1	small	1.2.4	B G I C O
7	CWIM	cwm-dev-cluster2	DEV2	small	1.2.4	B G E C O
8	CWIM	cwm-dev-cluster3	DEV3	small	1.2.4	B G I C O
9	GR	gr-dev-cluster2	DEV2	small	1.2.4	B G I C O
10	ICOMM	icomm-dev-cluster1	DEV1	small	1.2.4	B G I C O
11	LEX	lex-dev-cluster1	DEV1	small	1.2.4	B G I C O
12	LEX	lex-pref-cluster2	PREM2	large2	1.2.4	B G I C O
13	PAYMENTS	payments-dev-cluster1	DEV1	small	1.2.4	B G I C O



TODO

# 5,000+ tech and industries business use cases

## 500+ customers globally



Financial Services	BNP PARIBAS	Desjardins	HALKBANK	ING	NATIONAL BANK OF CANADA	NatWest	Santander	TRUIST
Insurance	AXA	First American	GENERAL	hannover re®	R+V	SwissLife	talanx.	VISANA
Telecom	BT	NOKIA	O2	orange	swisscom	T	TELSTRA	vodafone
Logistics	AIRBUS	DB	KUEHNE+NAGEL	BNSF LOGISTICS	Lufthansa	OTR SOLUTIONS	SBB CFF	TRANSPORT Exchange Group
Software	amdocs	ATASSIAN	AUTODESK.	First Data.	Gainsight	intuit	opentext™	SENTINEL
Manufacturing	BMW	Duni	FUJITSU	Mercedes-Benz	Panasonic	PORSCHE	SIEMENS	zymergen
Public Sector	Belastingdienst	edf ENERGY	EU	Home Office	Ministry of Justice	MÜNCHEN	swissgrid	U.S. Department of Veterans Affairs
Other Industries	24FITNESS	BACARDI LIMITED	DECATHLON	priceline®	TOTAL	UNIVERSAL UNIVERSAL MUSIC GROUP	VIACOM	zalando



# How to accelerate solution creation?



**Camunda Adoption in the Firm through our Platforms**

GS Uses Camunda Platform and Camunda 8 to Provide Workflow Solutions to the Whole Firm

**300** Camunda BPMN engines deployed

**6500** BPMN models deployed

**GS Provinzial (Ccon NYC) Societe General?**

Guide decentralized teams building end-to-end processes → Organization enabled → Give more autonomy to decentralized teams → Extend hyper automation stack → CamundaCon 23 successfully passed

**PROVINZIAL**

**Exploring Camunda 8 (non prod)**

15 TEAMS  
Exploring Camunda 8 (non prod)

0+ 200+ (37 mil process instances)

4 5 (DMN)

Today – Scaling

2014 2018 2023

70+ 300+ (204 mil process instances)

**Federated Delivery Teams**

- Selection of Automation Candidates
- Process modeling
- Process development & improvement
- Operational process monitoring & controlling

**Business**

**Policy**

**CoE Workflow Automation**

**Claims**

**Document Output**

**Consulting**

**Document Input**

**Document**

**Authorizati**

**Business Partner**

**Policy Compon**

**Dfe Policy**

**CoE-Team**

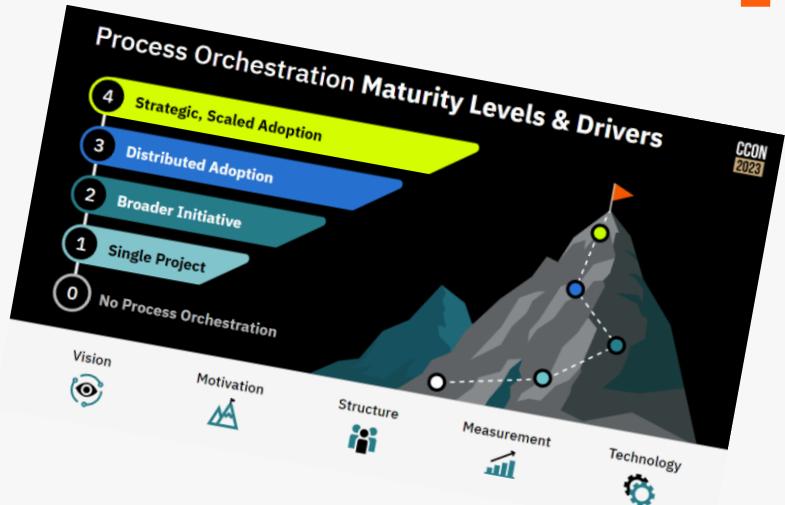
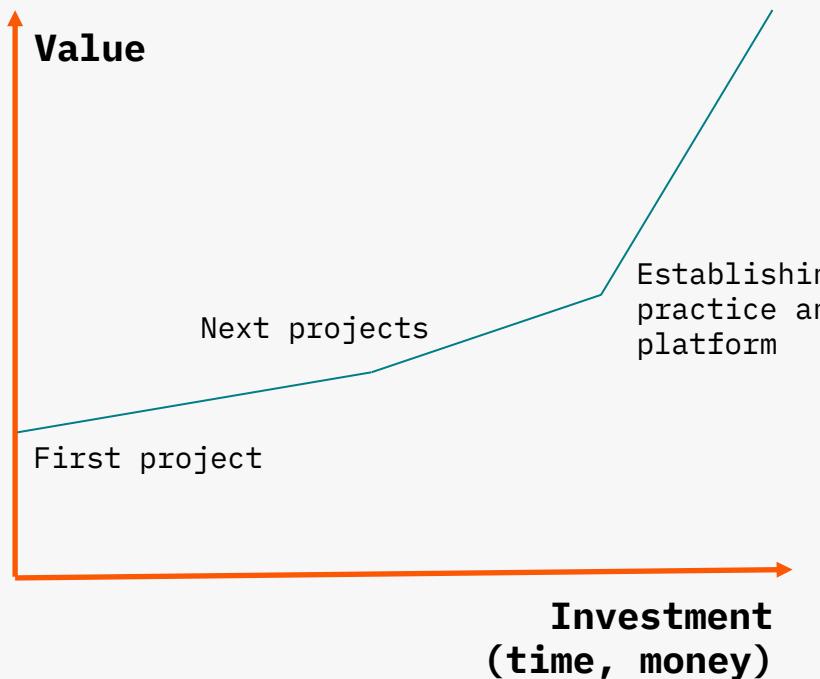
2 Process Engineers

2 BPM Experts

**CCON 2023** 25<sup>th</sup> Sep 2023 CCON2023 | Scaling Workflow Automation @ Provinzial | Brinkmann, Strauh, Wickerhofer

**Finanzgruppe**

# Broad-scale adoption



# Reusable building blocks



CAMUNDA Platform Who We Are Contact Us Search all products

The screenshot shows the Camunda marketplace homepage. At the top, there's a navigation bar with links for CAMUNDA, Platform, Who We Are, Contact Us, and a search bar labeled "Search all products". Below the navigation is a large, stylized process diagram. A central black rounded rectangle contains the text "CAMUNDA marketplace" with a small orange house icon. The diagram features various colored nodes (orange, green, blue, grey) connected by lines, some with arrows indicating flow direction. To the right of the diagram is a dashed box containing the text "Your hub for Camunda Connectors". At the bottom left, there's a link to "Marketplace | All Products". On the left side, there's a sidebar with "All Applications" (58 Results), "Filters" (with a "Clear Filters" button), and "Categories" (with checkboxes for Cloud Computing Services, Automation Services, External Data Services, Enterprise Applications, Collaboration Tools, and Content Management). The main content area displays three connector cards: "OpenAI Connector" (using the OpenAI logo), "AWS Lambda Connector" (using the AWS Lambda logo), and "GraphQL Connector" (using the GraphQL logo). Each card has a brief description and a "Creator: Camunda" note.

Marketplace | All Products

All Applications  
58 Results

Sort By Relevance

Filters Clear Filters

Categories

- Cloud Computing Services
- Automation Services
- External Data Services
- Enterprise Applications
- Collaboration Tools
- Content Management

**CAMUNDA marketplace**

Your hub for Camunda Connectors

OpenAI Connector

Leverage ChatGPT and OpenAI's Moderation API in your business processes.

Creator: Camunda

AWS Lambda Connector

Invoke AWS Lambda functions as part of orchestrated business processes.

Creator: Camunda

GraphQL Connector

Simplify GraphQL queries and optimize process performance.

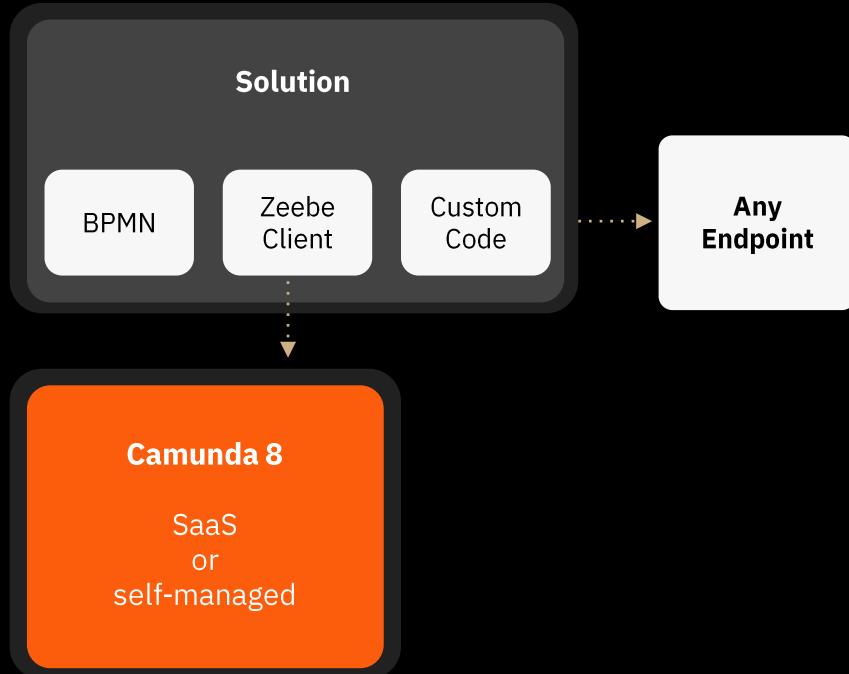
Creator: Camunda

Catalog of **business capabilities** made available to the **orchestration layer**

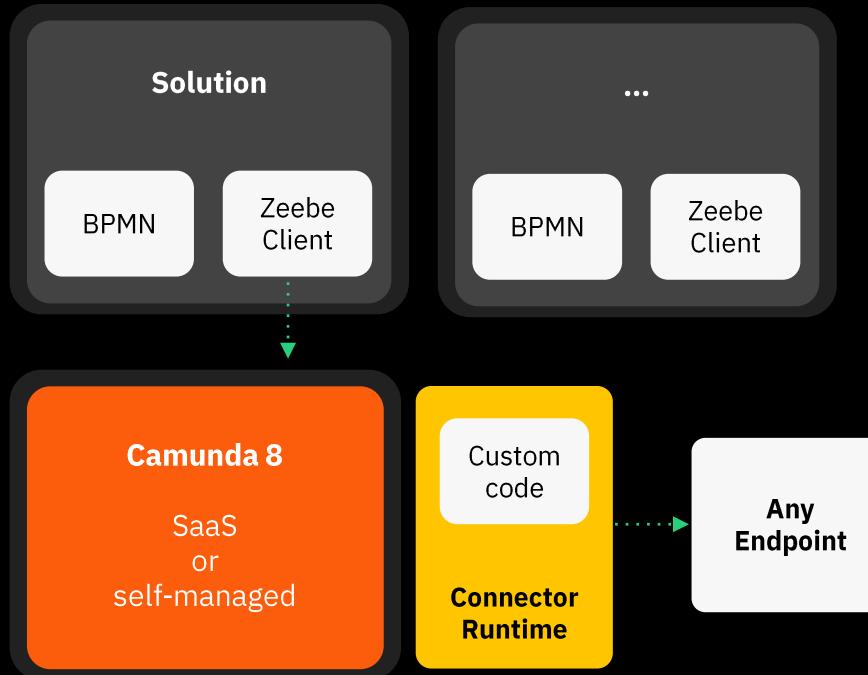
# Demo



# Solution architecture example



# Solution architecture example



**Runs anywhere**

- Multiple connector runtime options, including SaaS, self-managed, co-located, and local installations

# Out-of-the-box Connectors



{...} REST API



Kafka Producer



GitLab



GitHub

 SendGrid



Amazon SQS



OpenAI



Asana

 Slack



AWS Lambda



Camunda Operate



Google Maps

 Microsoft Teams



Amazon SNS



MessageBird



UiPath

 Google Drive



RabbitMQ



Twilio



Microsoft Power Automate

 Automation Anywhere



GraphQL



EasyPost

*... and more*



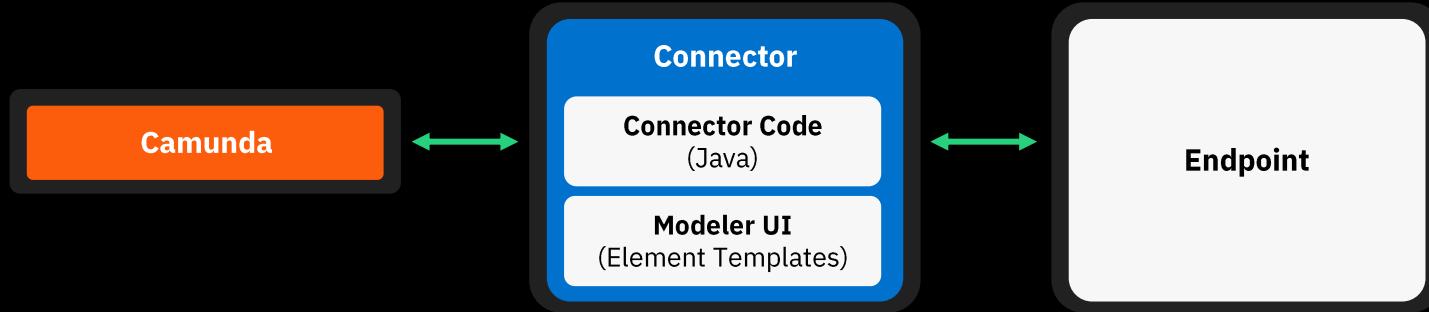
Low-code?

# Low-code as an accelerator



Dial-in low-code as much as you need

# What's a Connector?



```
@OutboundConnector(  
    type = "io.camunda:http-json:1", inputVariables = {"method", ...},  
)  
public class HttpJsonFunction implements OutboundConnectorFunction {  
  
    public Object execute(final OutboundConnectorContext context) throws Exception {  
        final var json =;  
        final var request = createRequest(context);  
        return httpService.executeConnectorRequest(request);  
    }  
}
```



```
{  
    "name": "REST Connector",  
    "properties": [  
        {  
            "type": "Hidden",  
            "value": "io.camunda:http-json:1",  
            "binding": {  
                "type": "zeebe:taskDefinition:type"  
            }  
        },  
        {  
            "id": "method",  
            "label": "REST Method",  
            "group": "endpoint",  
            "type": "Dropdown",  
            "value": "get",  
            "choices": [  
                "value": "get",  
                "label": "GET",  
                "selected": true  
            ],  
            "description": "The method used for the HTTP request."  
        },  
        {  
            "id": "url",  
            "label": "URL",  
            "group": "endpoint",  
            "type": "Text",  
            "value": "https://github.com/camunda/connectors-bundle/tree/main/connectors/http-json",  
            "description": "The base URL for the REST endpoint."  
        },  
        {  
            "id": "queryParameters",  
            "label": "Query Parameters",  
            "group": "endpoint",  
            "type": "Text",  
            "value": "",  
            "description": "A map of query parameters to add to the request URL."  
        },  
        {  
            "id": "httpHeaders",  
            "label": "HTTP Headers",  
            "group": "endpoint",  
            "type": "Text",  
            "value": "",  
            "description": "A map of HTTP headers to add to the request."  
        },  
        {  
            "id": "connectTimeout",  
            "label": "Connect Timeout",  
            "group": "endpoint",  
            "type": "Text",  
            "value": "20",  
            "description": "The connect timeout for the HTTP connection."  
        }  
    ]  
}
```

REST CONNECTOR  
Make a request

General

Template Applied

Authentication

Type None

Choose the authentication type. Select 'None' if no authentication is necessary

HTTP Endpoint

Method GET

URL Must not be empty.

Query Parameters

HTTP Headers

Connect Timeout Connection Timeout 20

# Protocol



REST CONNECTOR  
Make a request

General

Template **Applied**

Authentication

Type  
**None**

Choose the authentication type. Select 'None' if no authentication is necessary

HTTP Endpoint

Method  
**GET**

URL

Must not be empty.

Query Parameters

=

Map of query parameters to add to the request URL

HTTP Headers

=

Map of HTTP headers to add to the request

Connect Timeout

Connection Timeout  
20

Java &  
JSON

@berndruecker

# Protocol > Generic > Specific Connectors



**REST CONNECTOR**  
Make a request

**General**

**Template** **Applied**

**Authentication**

Type  
**None**

Choose the authentication type. Select 'None' if no authentication is necessary

**HTTP Endpoint**

Method  
**GET**

URL  
Must not be empty.

Query Parameters  
Map of query parameters to add to the request URL

HTTP Headers  
Map of HTTP headers to add to the request

**Connect Timeout**

Connection Timeout

20

**Java & JSON**

**SENDGRID OUTBOUND CONNECTOR**

**General**

**Template** **Applied**

**Authentication**

SendGrid API key *fx*  
SendGrid API key must not be empty.

**Sender**

Name *fx*  
Name must not be empty.

Email address *fx*  
Email address must not be empty.

**Receiver**

Name *fx*  
Name must not be empty.

Email address *fx*  
Email address must not be empty.

**Compose email**

Simple (no dynamic template)

Subject *fx*  
Subject must not be empty.

Content type *fx*  
text/plain

**JSON**

**SEND EMAIL**

**General**

**Template** **Applied**

**Compose email**

Recipient Name *fx*  
Recipient Name must not be empty.

Recipient Email address *fx*  
Recipient Email address must not be empty.

Subject *fx*  
Subject must not be empty.

Body (plain text) *fx*  
Body (plain text) must not be empty.

**JSON**

# A sad story



# A sad story

We need to  
automate  
X

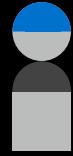
Business

IT

But we need  
to automate,  
let's do some  
shaky low  
code solution

Oh – not a big  
priority, please  
come back in 6  
months

# Diversity of roles



Business Person



Citizen Developer



Consultant  
or  
Power User



Bot Developer



Low-code Developer



Junior Developer

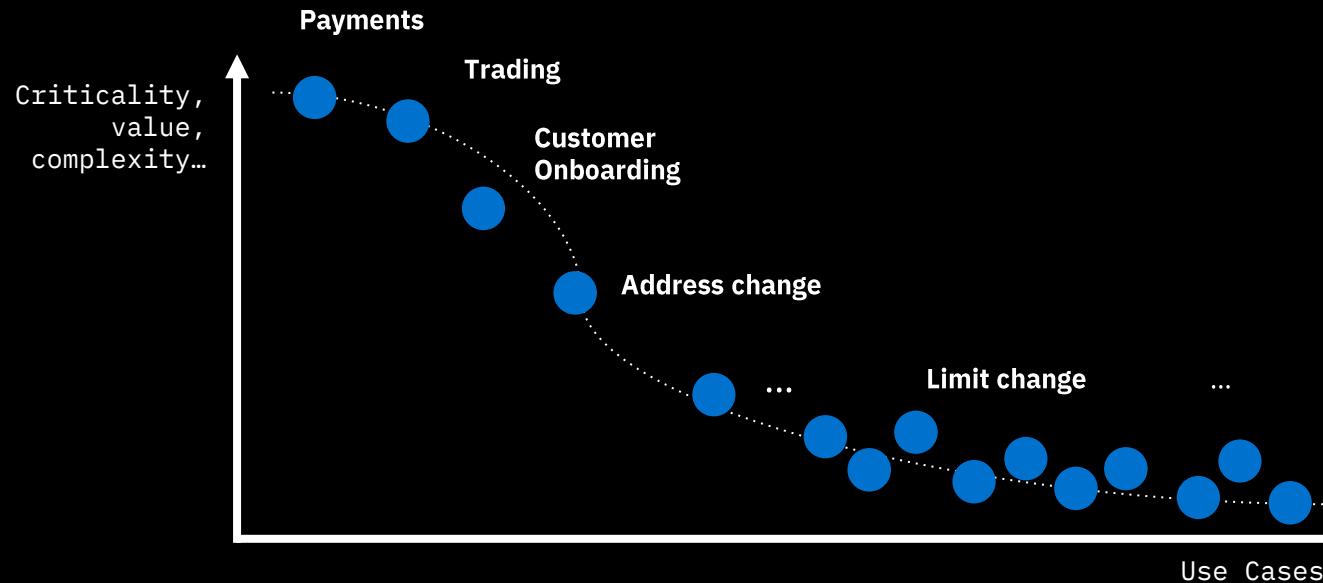


Senior Developer

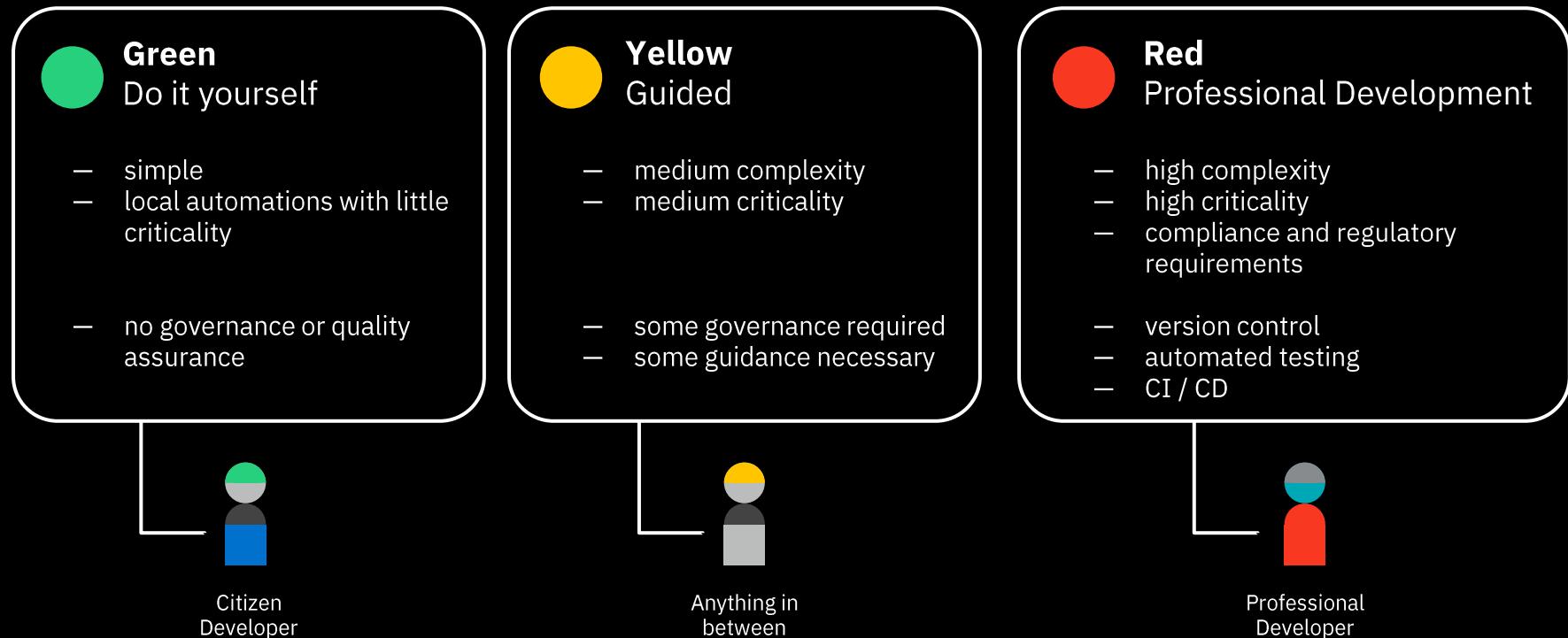


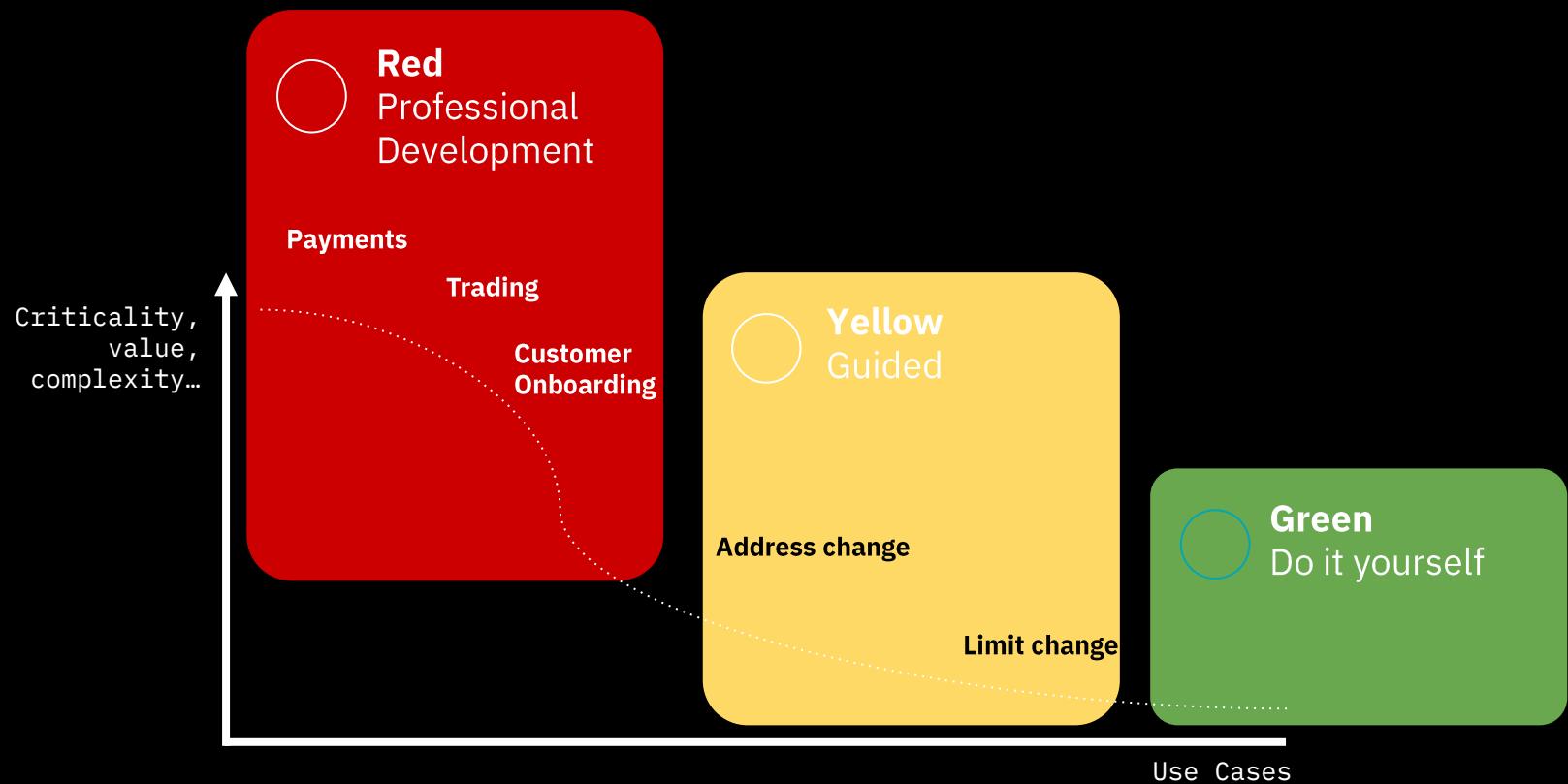
Principal Developer

# Process != process

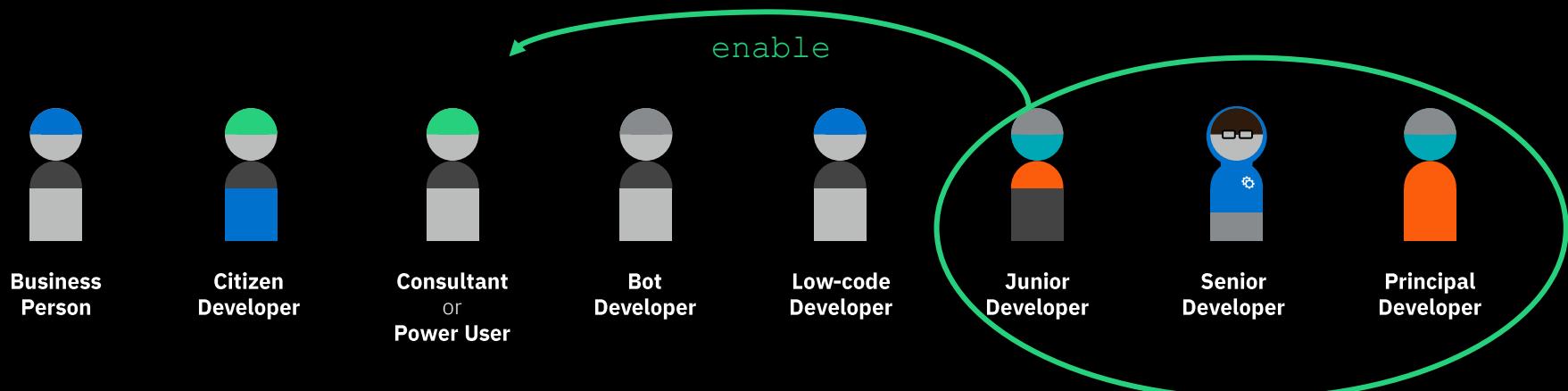


# Categorize your use case

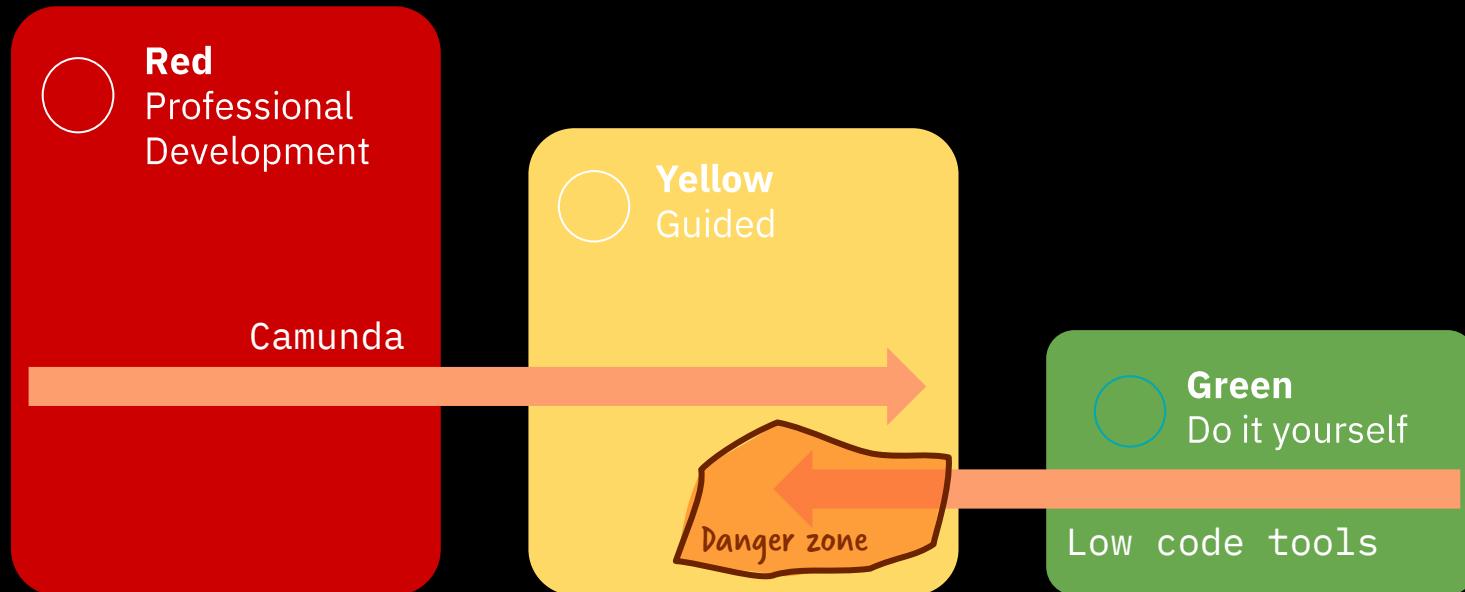




# Enabling more roles to participate



# Avoid the danger zone around tool harmonization



# Camunda 8



Horizontally  
scalable, resilient  
technology (Zeebe)

Low code  
accelerators



**Red**  
Professional  
Development

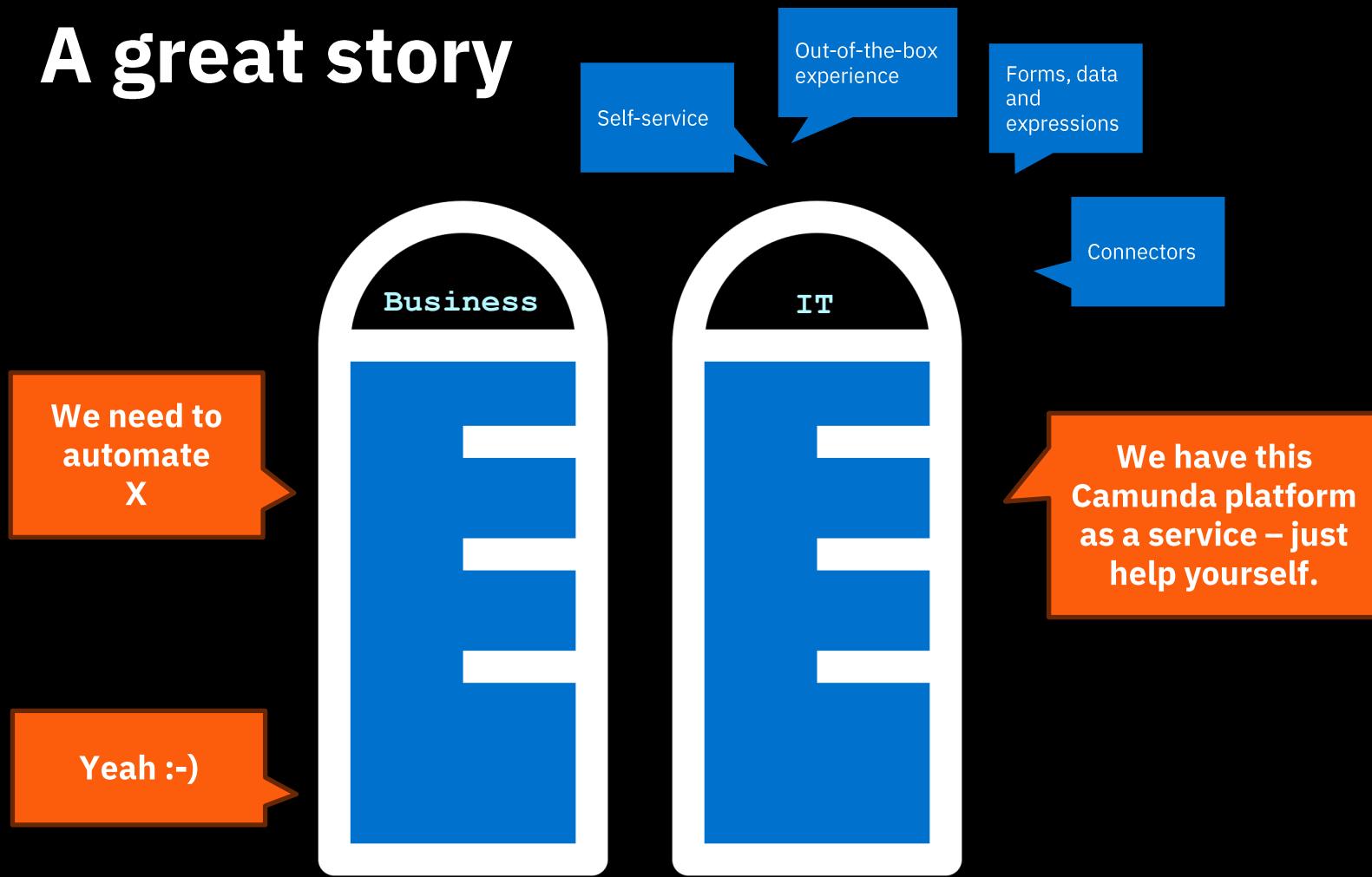


**Yellow**  
Guided



**Green**  
Do it yourself

# A great story



# Camunda Recognized as A Strong Performer



## The Forrester Wave™

Digital Process Automation Software, Q4 2023



Highest possible scores for the following criteria:

- End-to-end orchestration
- Data-driven automation
- Vision
- Innovation
- Adoption
- Pricing flexibility and transparency

[Download Report](#)

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# Hyperautomation Tech Stack



Discovery

Design

Automation

Improvement

Process  
Mining

Process  
Modeling

Process Orchestration

Business  
Intelligence

Event Bus

Frontend  
Technology

RPA

Low-Code  
Integration

Decision  
Automation

AI



{...}



# Best of Breed



Discovery

Design

Automation

Improvement

Process  
Mining

Process  
Modeling

Process Orchestration

Business  
Intelligence

Event Bus

Frontend  
Technology

RPA

Low-Code  
Integration

Decision  
Automation

AI



Camunda

Partnerships

# The big(ger) picture



Value chain  
(e.g. Customer Acquisition)



End-to-end  
process orchestration  
(e.g. account opening)



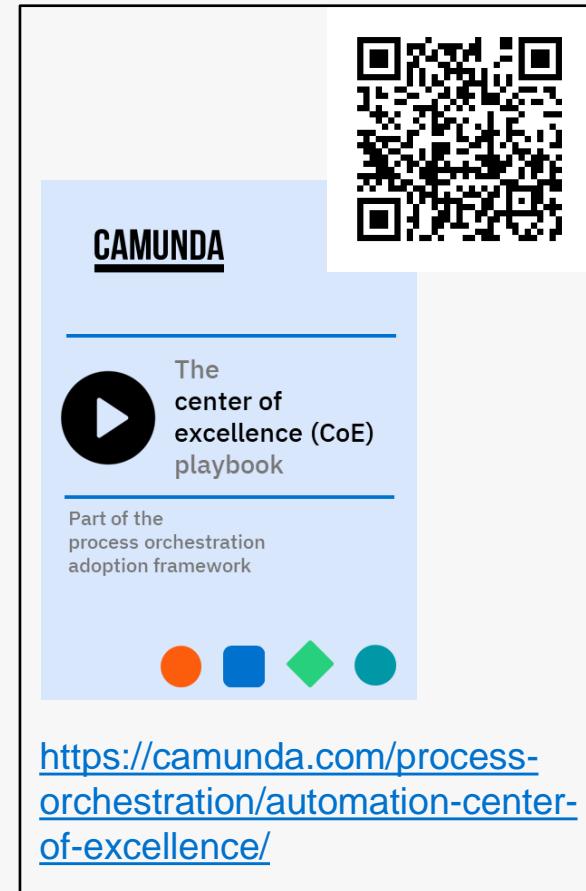
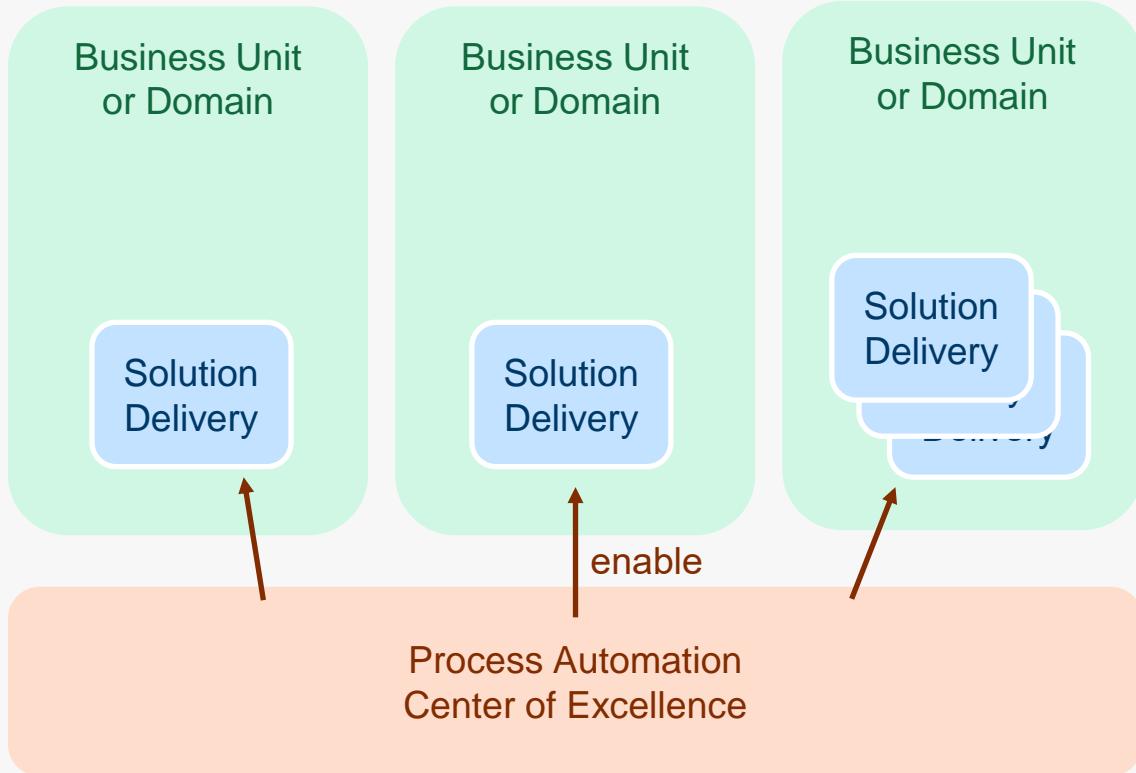
Business capabilities  
provided via APIs  
(e.g. fraud check)



Technical capabilities and  
platforms  
(e.g. event streaming, RPA,  
process orchestration)

Center of excellence /  
Community of practice

# Center of excellence



# Centralization vs. autonomy?

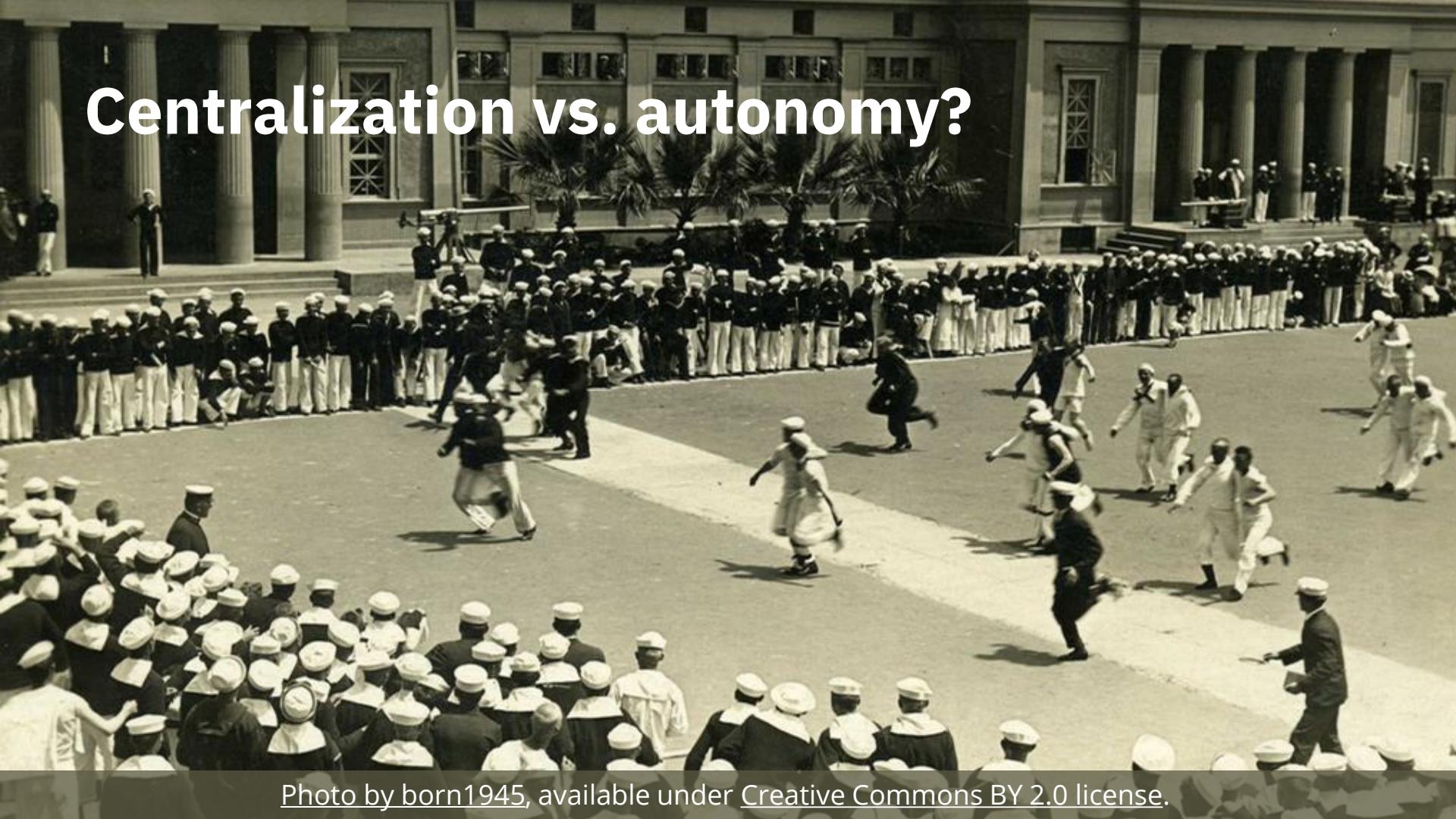
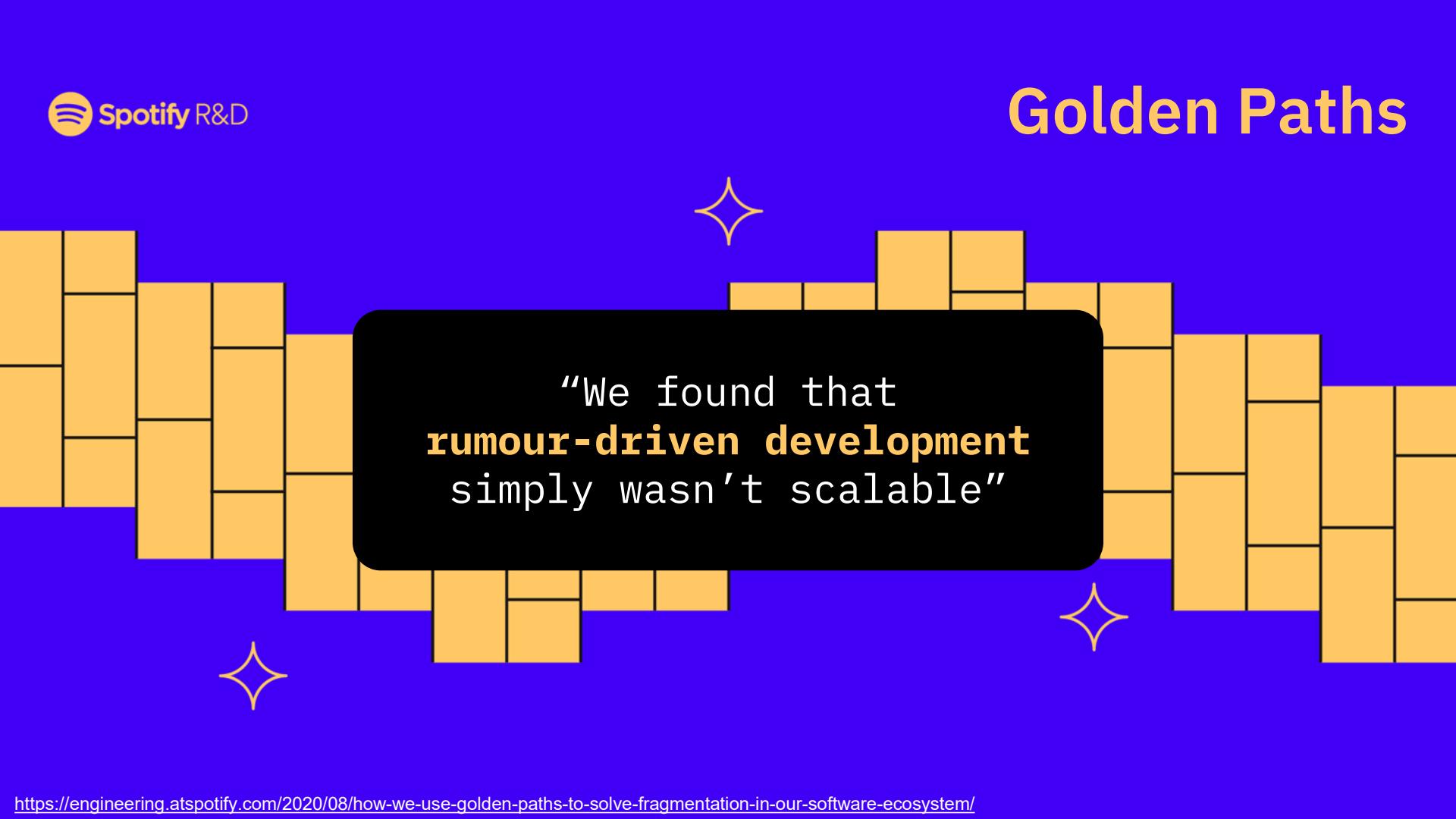


Photo by born1945, available under [Creative Commons BY 2.0 license](#).

# Golden Paths



“We found that  
**rumour-driven development**  
simply wasn’t scalable”



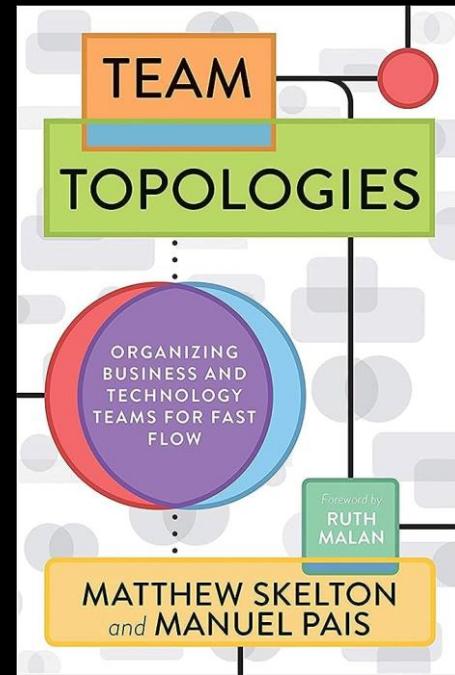
## The Speed Paradox

At Spotify, we've always believed in the speed and ingenuity that comes from having autonomous development teams. But as we learned firsthand, the faster you grow, the more fragmented and complex your software ecosystem becomes. And then everything slows down again.

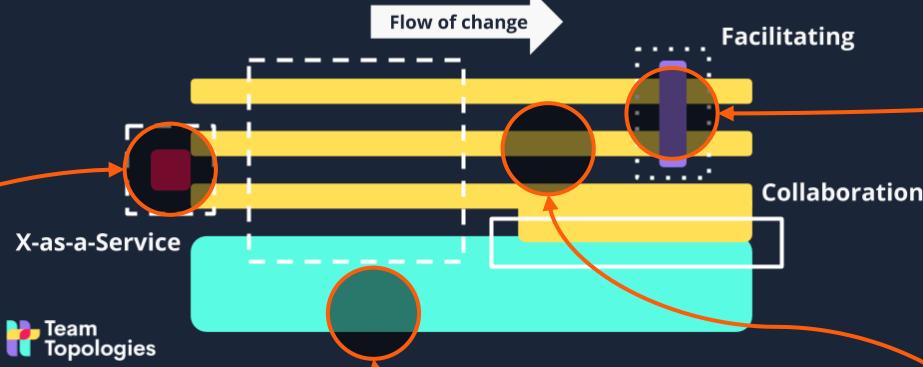


## The Standards Paradox

By centralizing services and standardizing your tooling, Backstage streamlines your development environment from end to end. Instead of restricting autonomy, standardization frees your engineers from infrastructure complexity. So you can return to building and scaling, quickly and safely.



# 3 core interaction modes

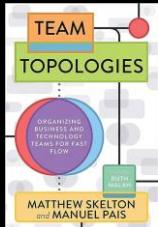


Fraud  
detection

Center of  
Excellence

Camunda  
+ X

Bank Account  
Opening



- Stream-aligned team
- Enabling team
- Complicated Subsystem team
- Platform team

# Reducing cognitive load



## Intrinsic cognitive load

Fundamentals

("How to program with Java?")

## Extraneous cognitive load

Environment

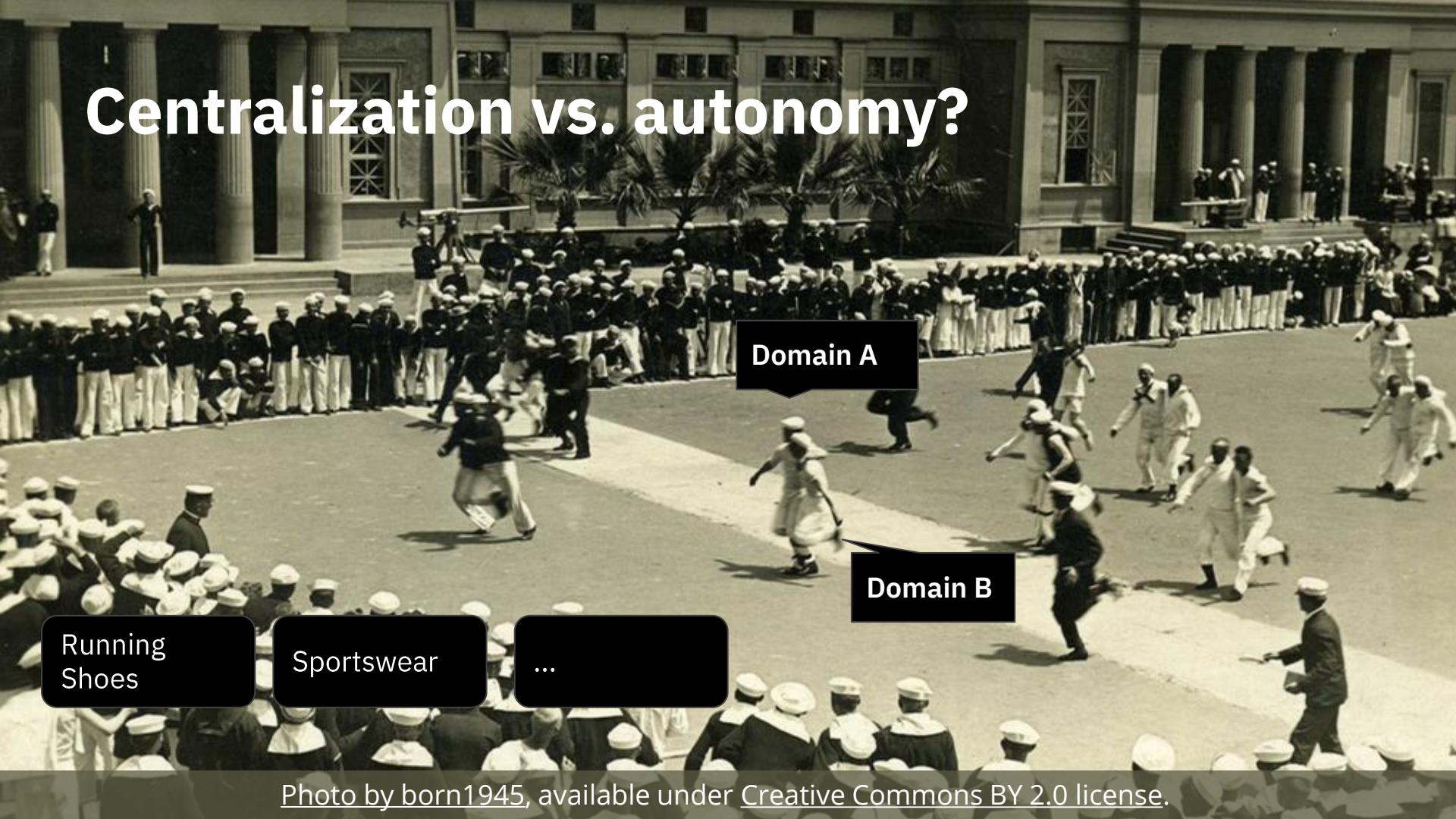
("How to deploy this?")

## Germane cognitive load

The real task

("How to solve this business problem?")

# Centralization vs. autonomy?



Running  
Shoes

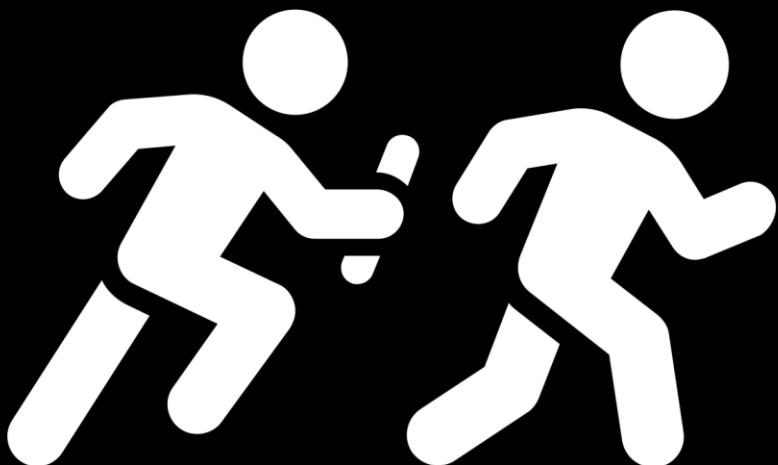
Sportswear

...

Domain A

Domain B

# End-to-end processes



Full autonomy of  
isolated teams  
doesn't give you good  
end-to-end processes

# Get started...



<https://github.com/berndruecker/customer-onboarding-camunda-8-springboot>

<https://camunda.com/blog/2023/12/pro-code-low-code-role-of-camunda/>

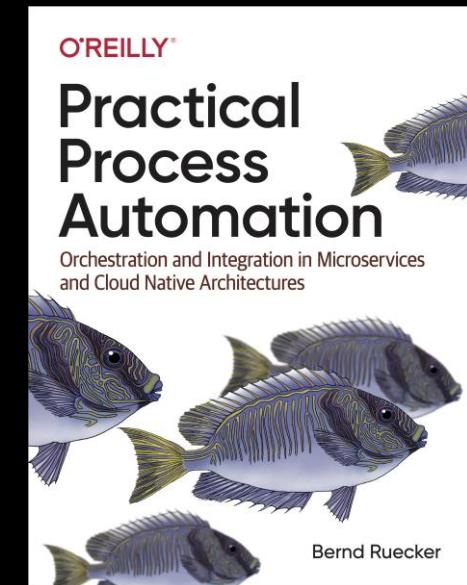
<https://camunda.com/process-orchestration/automation-center-of-excellence/>



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Thank you!

