AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

BOA301

Using events and workflows to build distributed applications

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What you will learn in this session

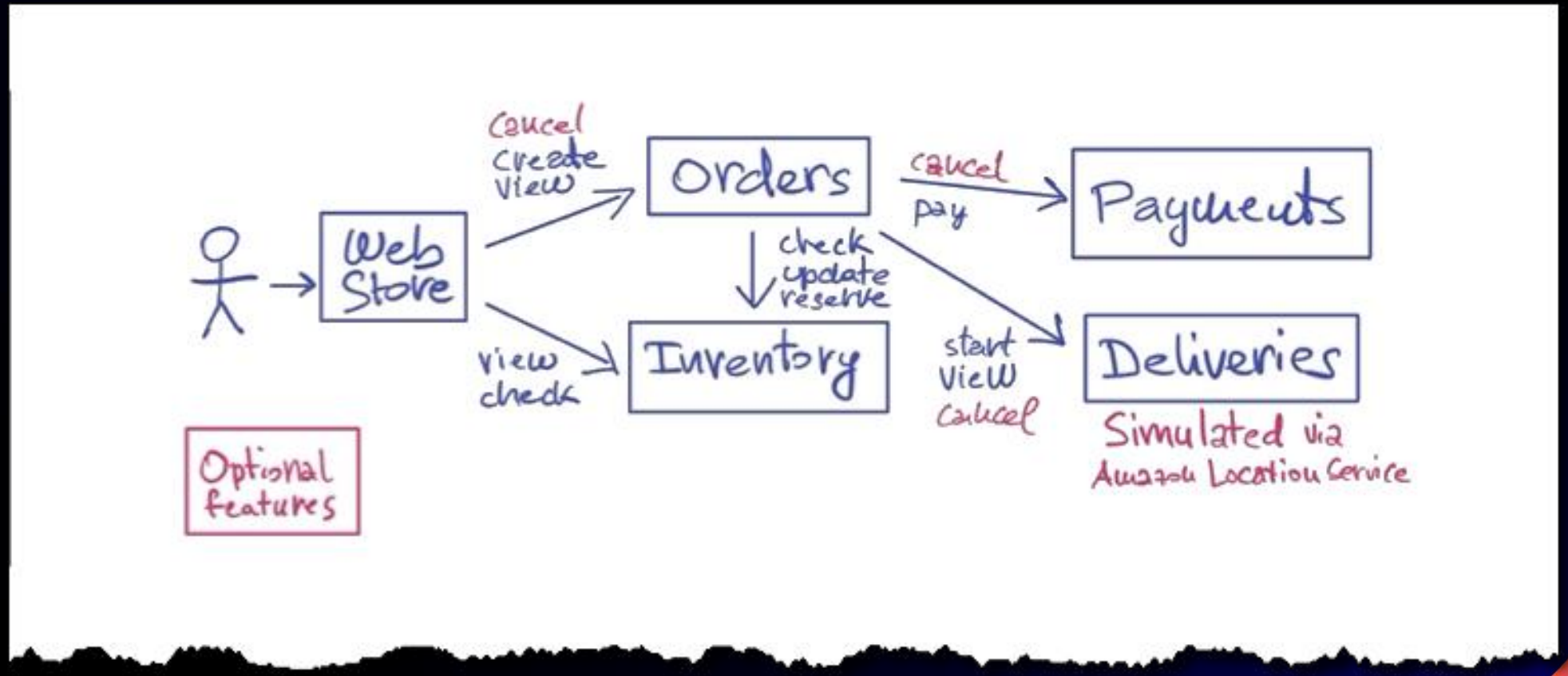
Events vs. workflows – which one to choose for your distributed applications

Orchestration vs. choreography – what are the advantages of one over the other?

Using Amazon EventBridge and AWS Step Functions so that your applications are easier to build and update

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High-level architecture



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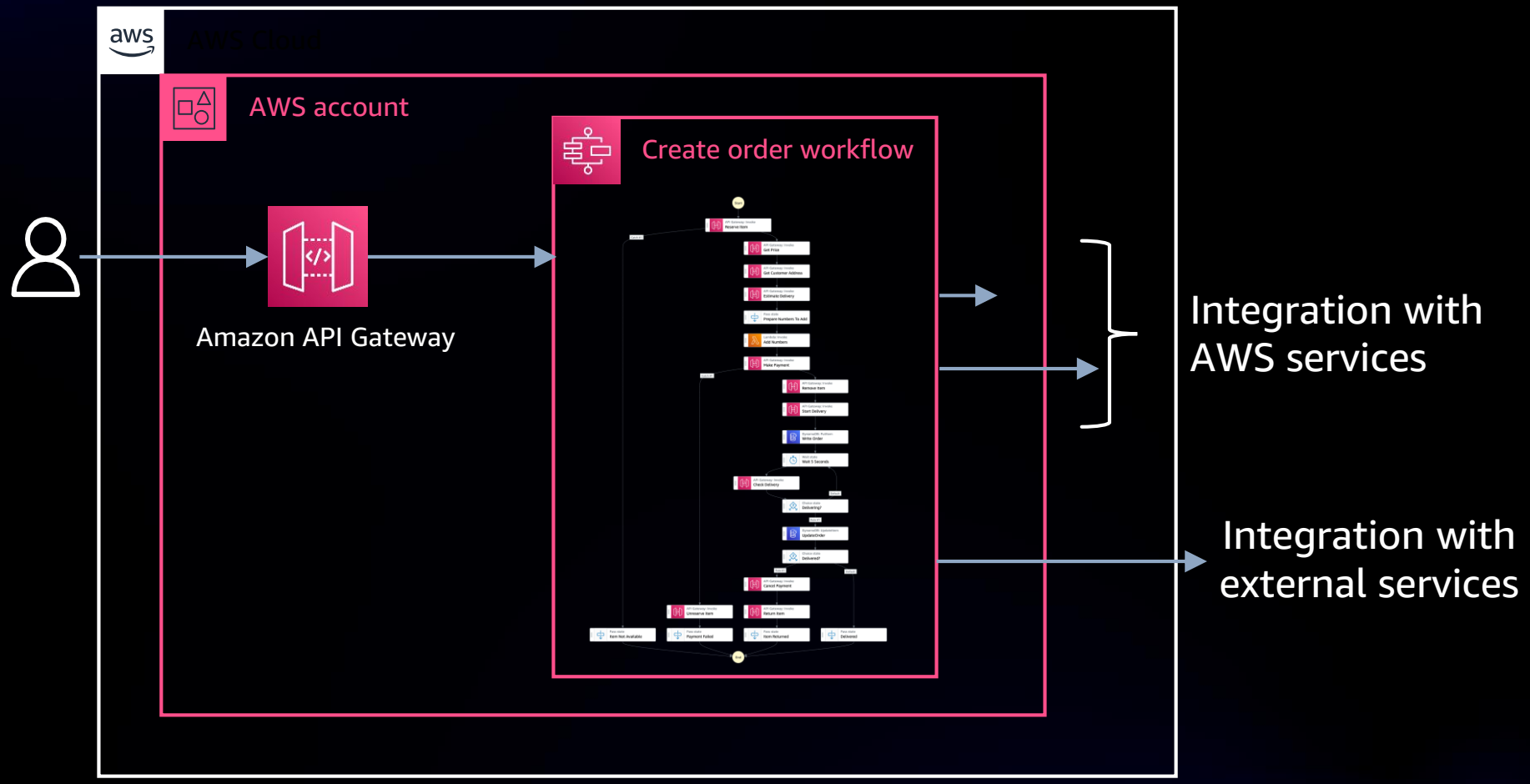
Workflow orchestration

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Based on a given activity,
I want to define the next step
(output)

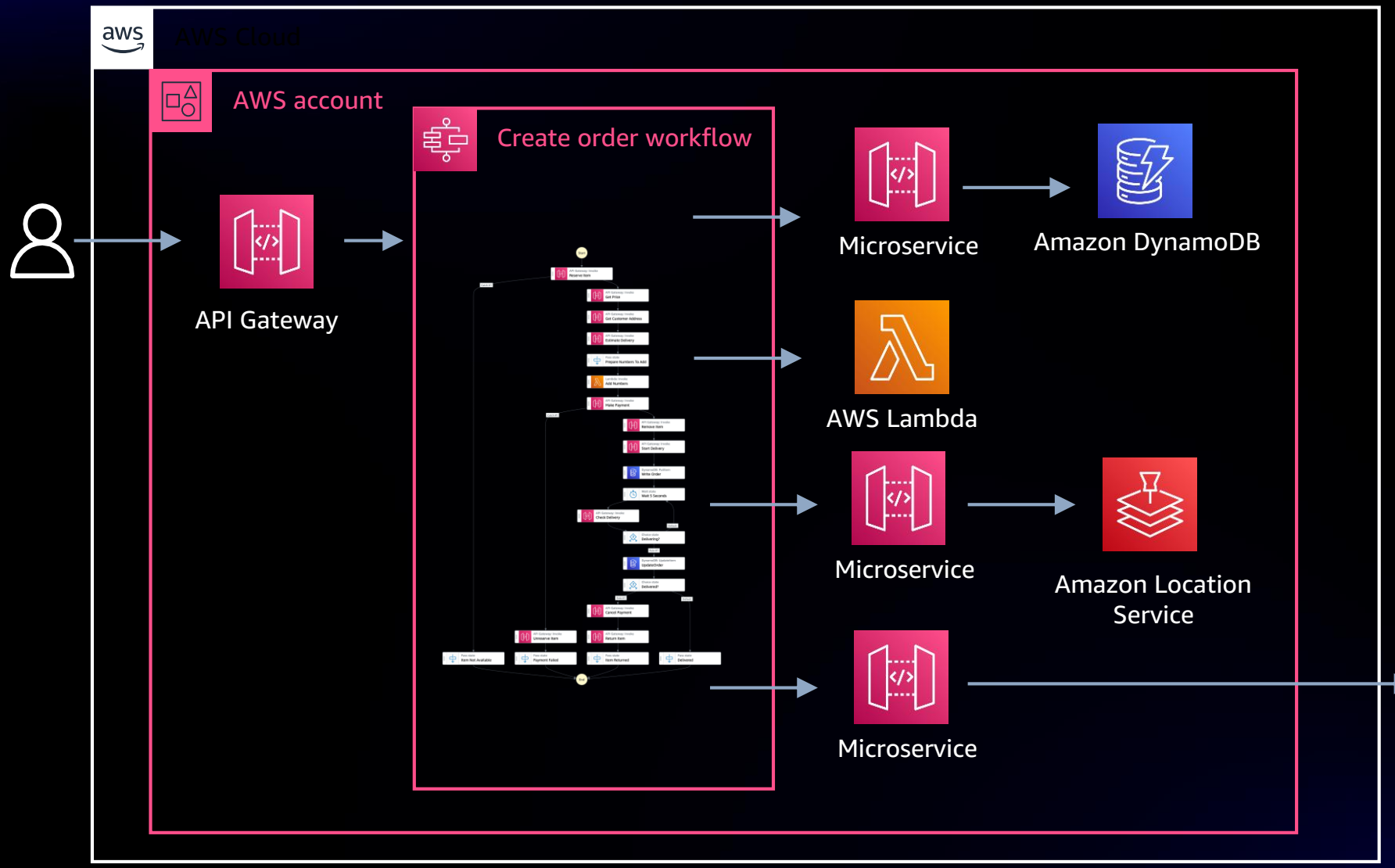
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What we are going to build?



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What we are going to build?



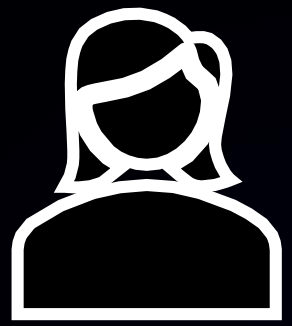
Integration with AWS services
- Amazon Location Service
- Fraud detection

Integration with external services
- Payment services
- Delivery services

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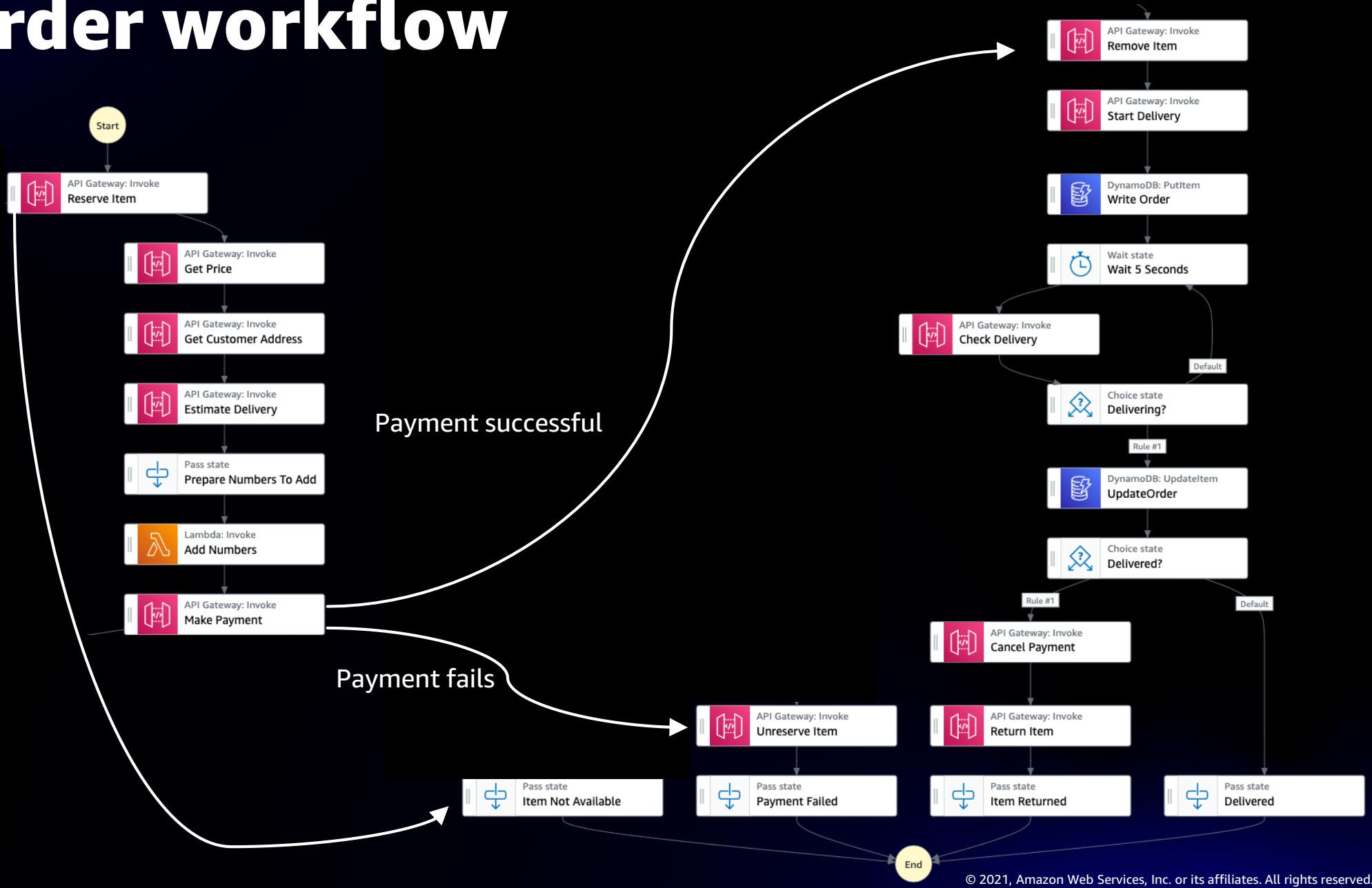
Application flows

I want to create an order please



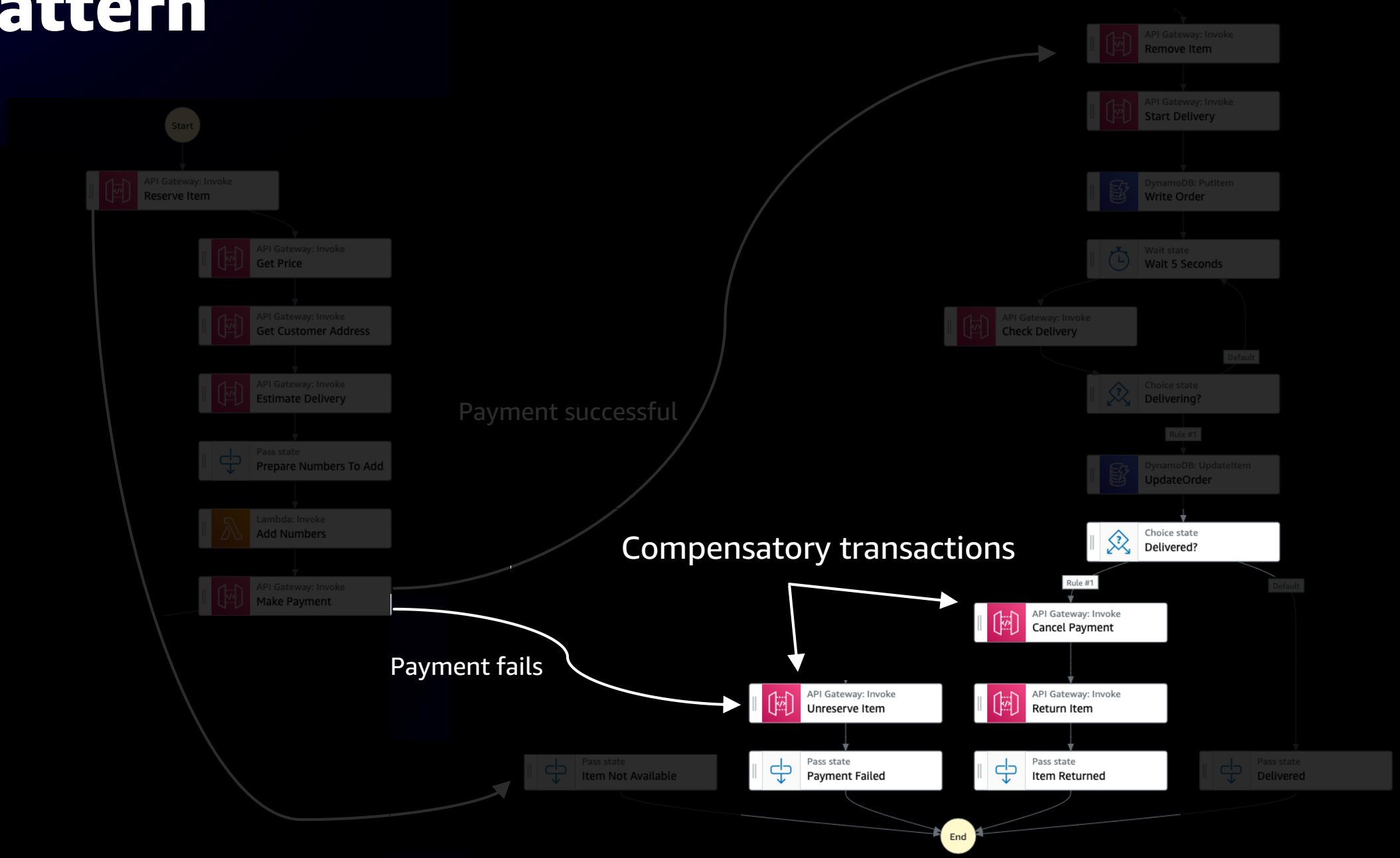
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Create order workflow



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Saga pattern



Demo

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Event driven

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Based on a given activity,
I will publish an event in output

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Event-driven application flow

Input

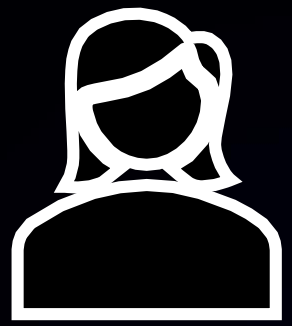
Which events I listen to

Internal

What I do with the events

Output

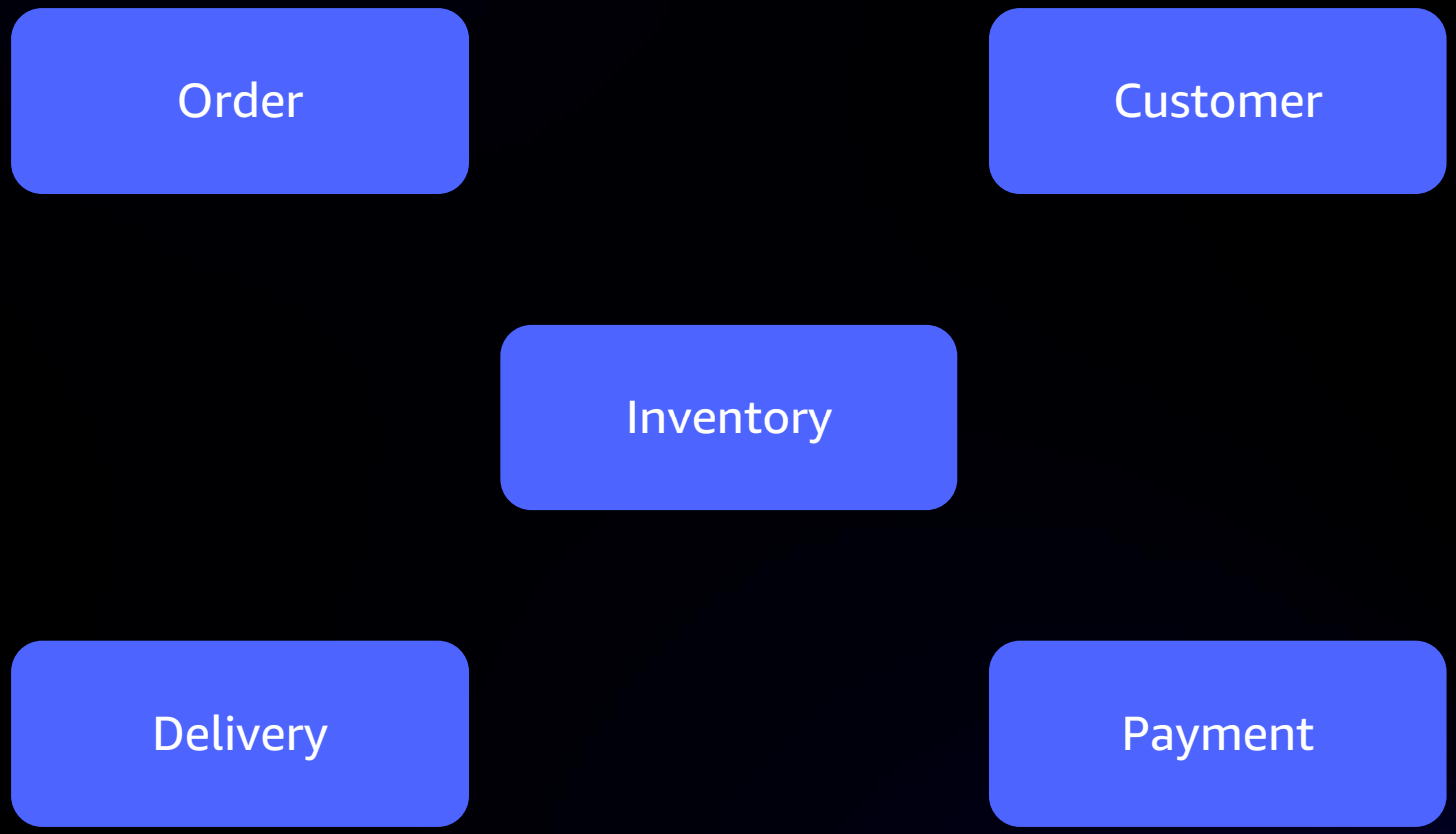
Which events I produce



aws

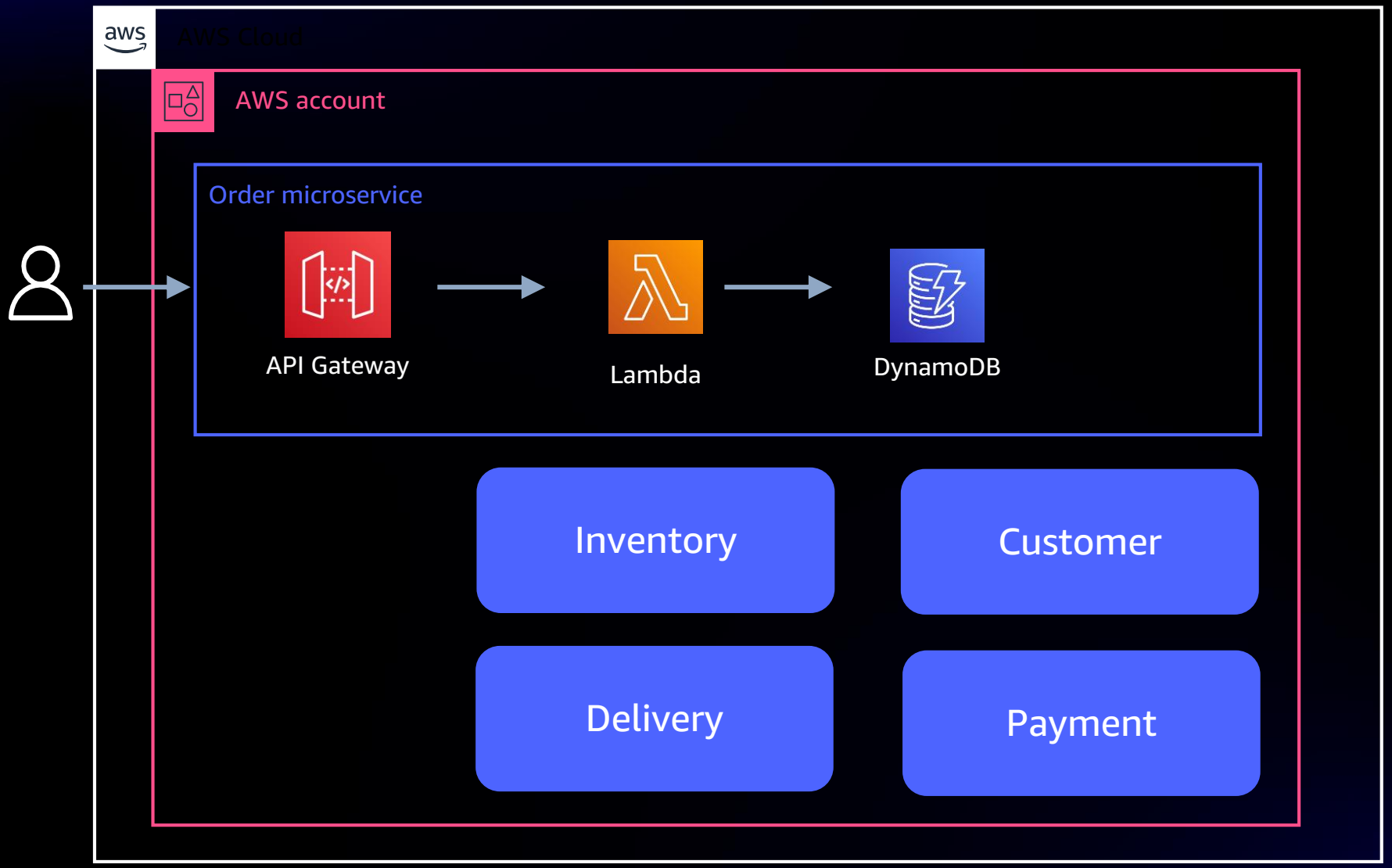
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What we are going to build?



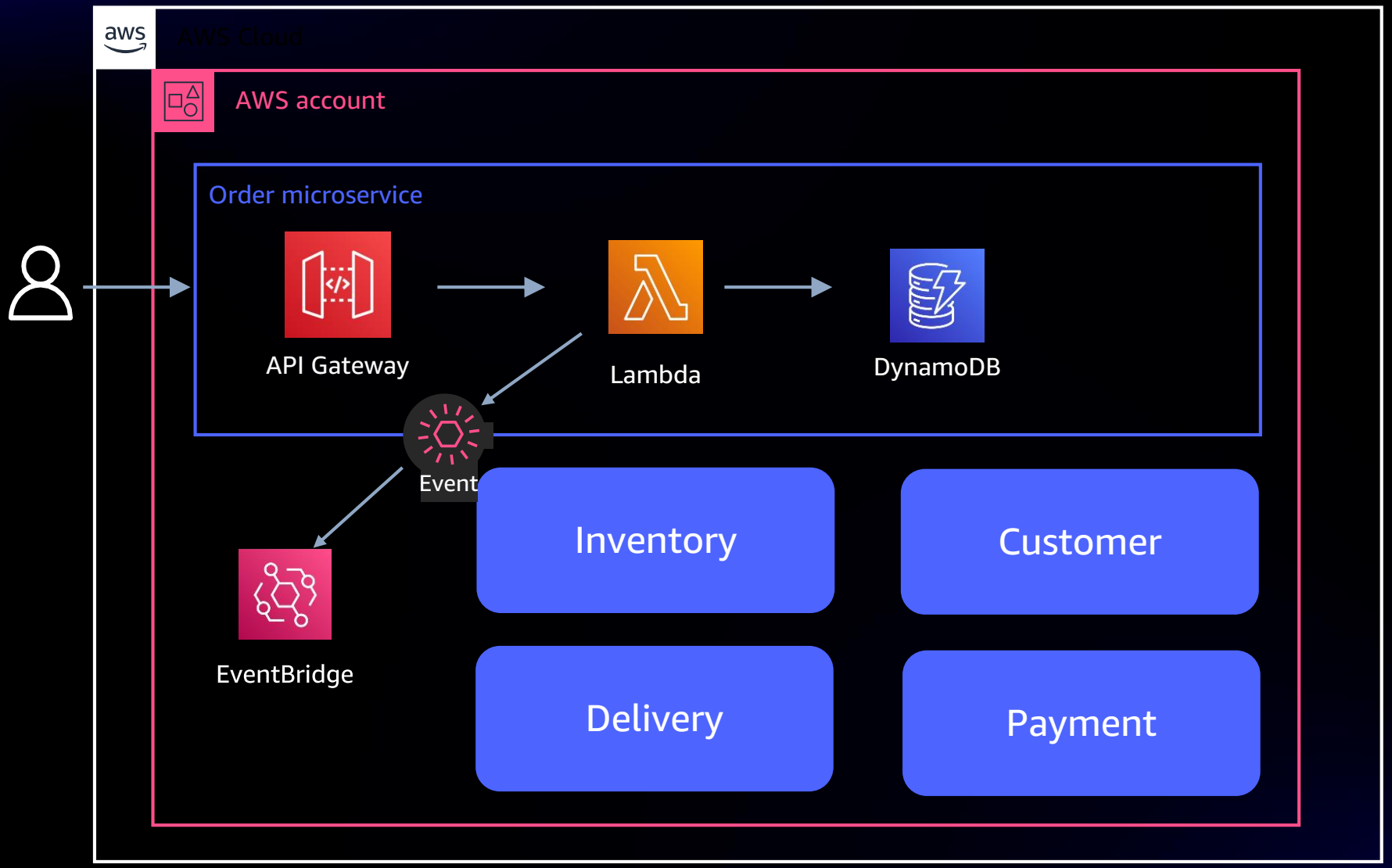
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Order microservice



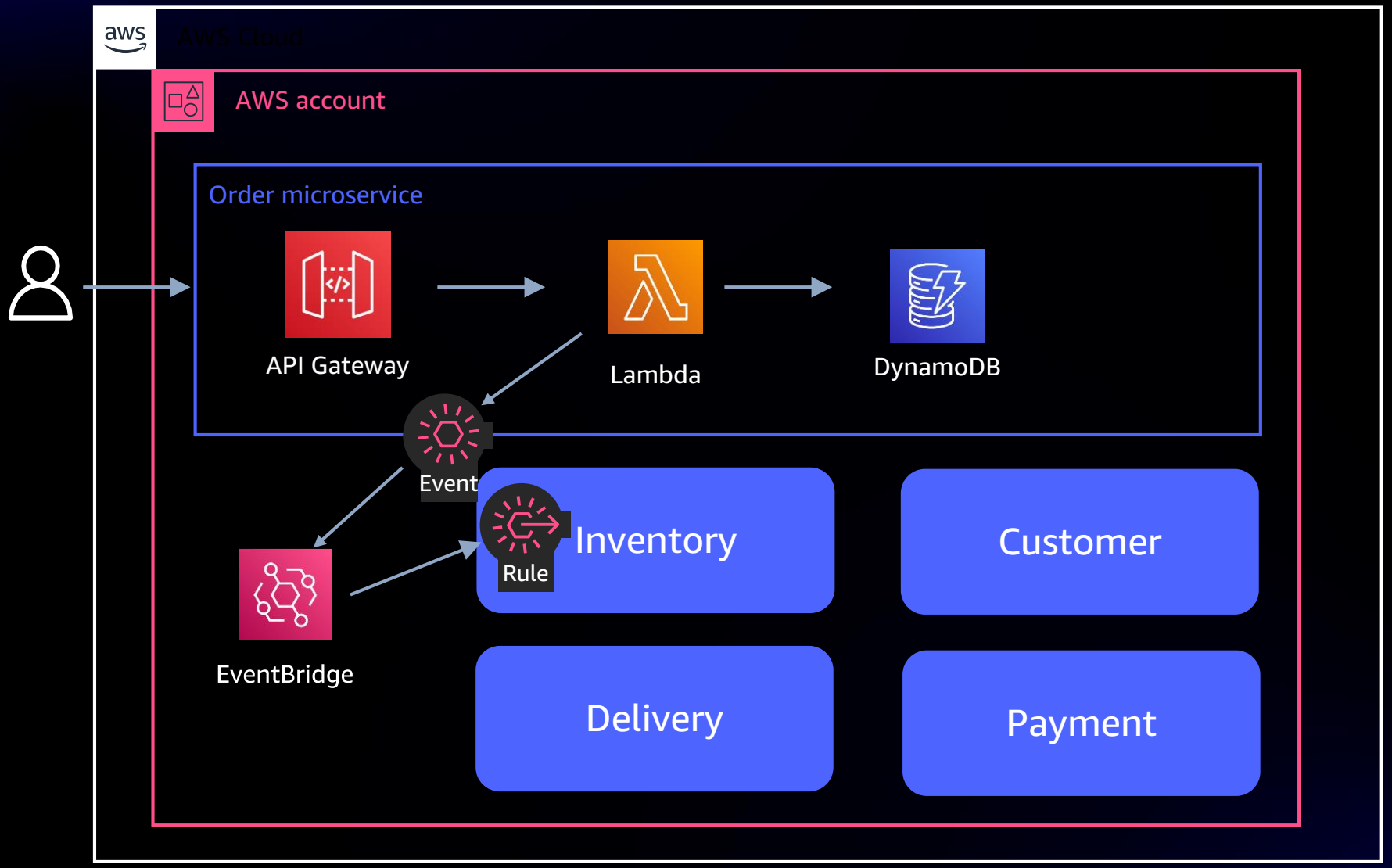
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Order microservice



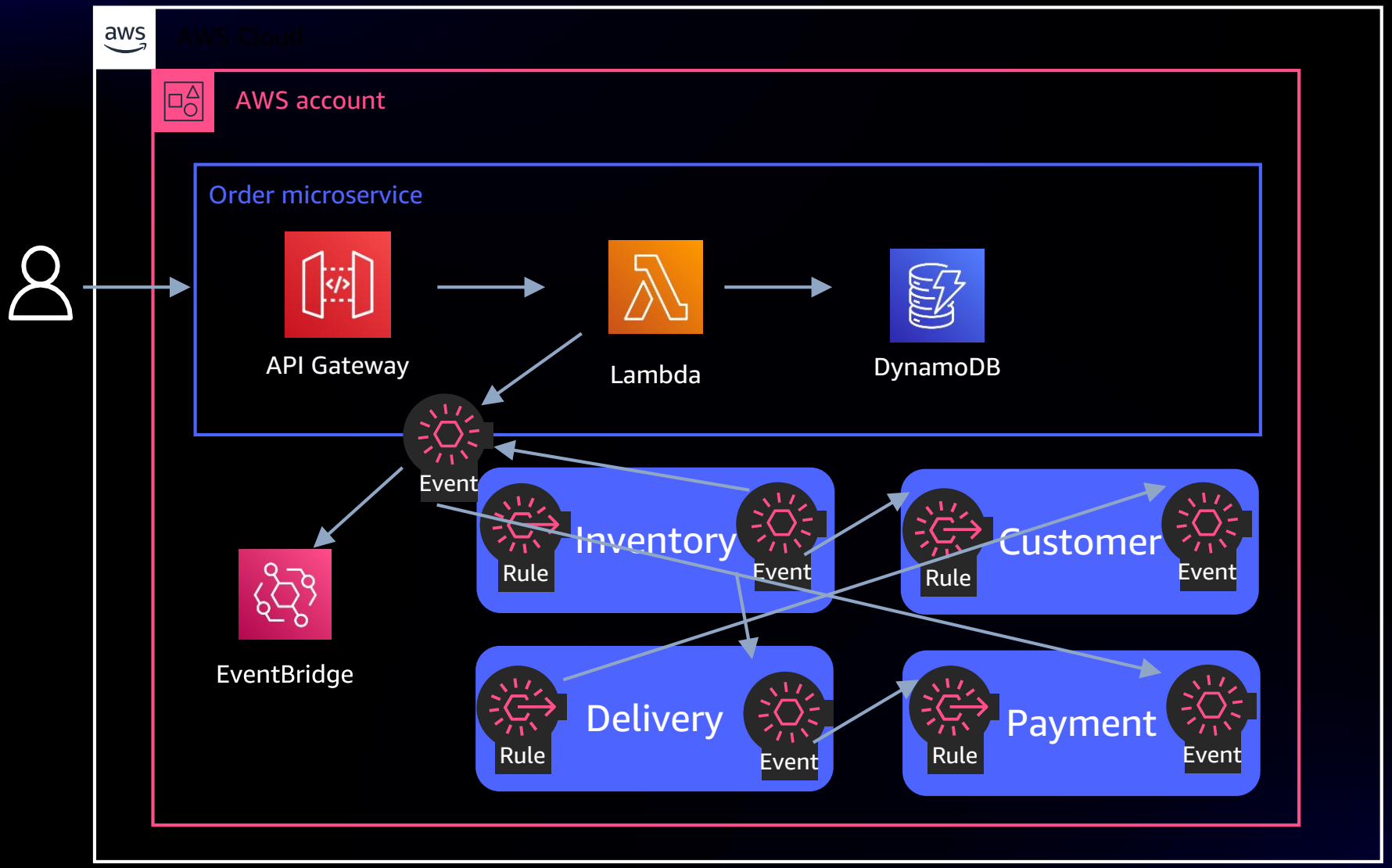
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Order microservice



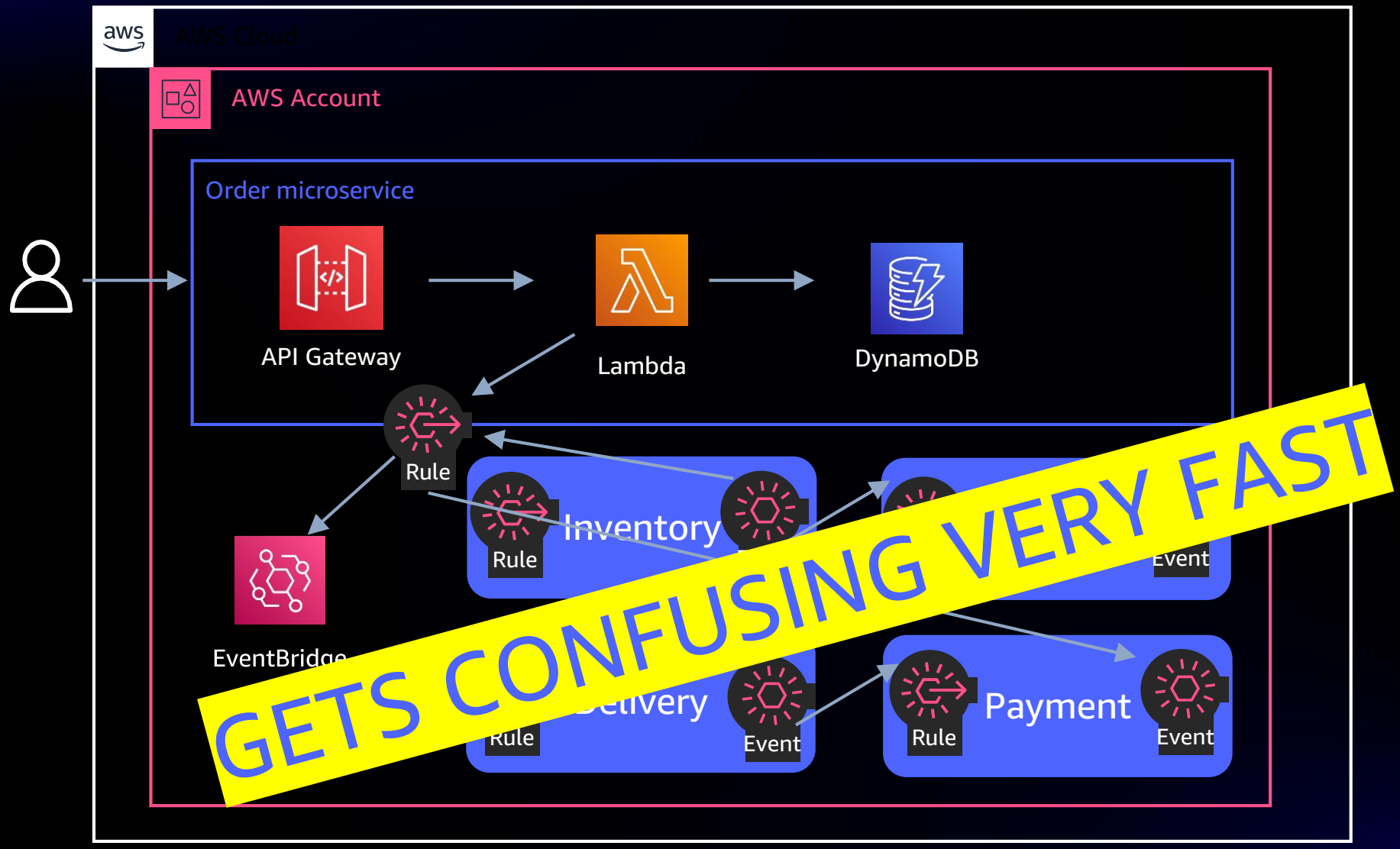
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Order microservice



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Order microservice



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Create an order

DESIGN TABLE

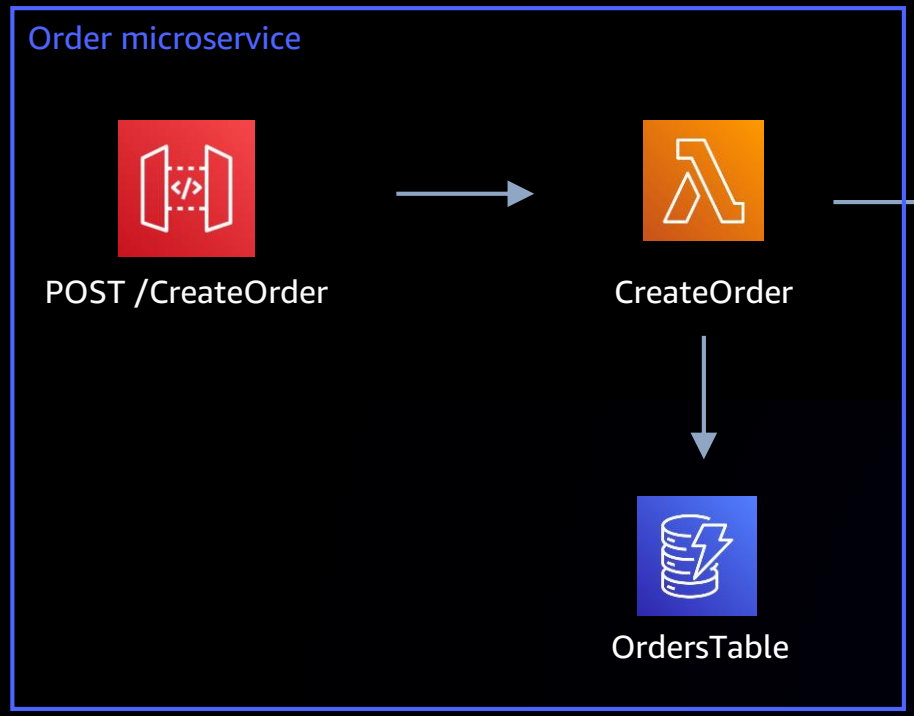
API (sync)	Input Events	Service	Action	Output Events

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Create an order

DESIGN TABLE

API (sync)	Input events	Service	Action	Output events
CreateOrder	CreateOrder	Order	CreateOrder	OrderCreated

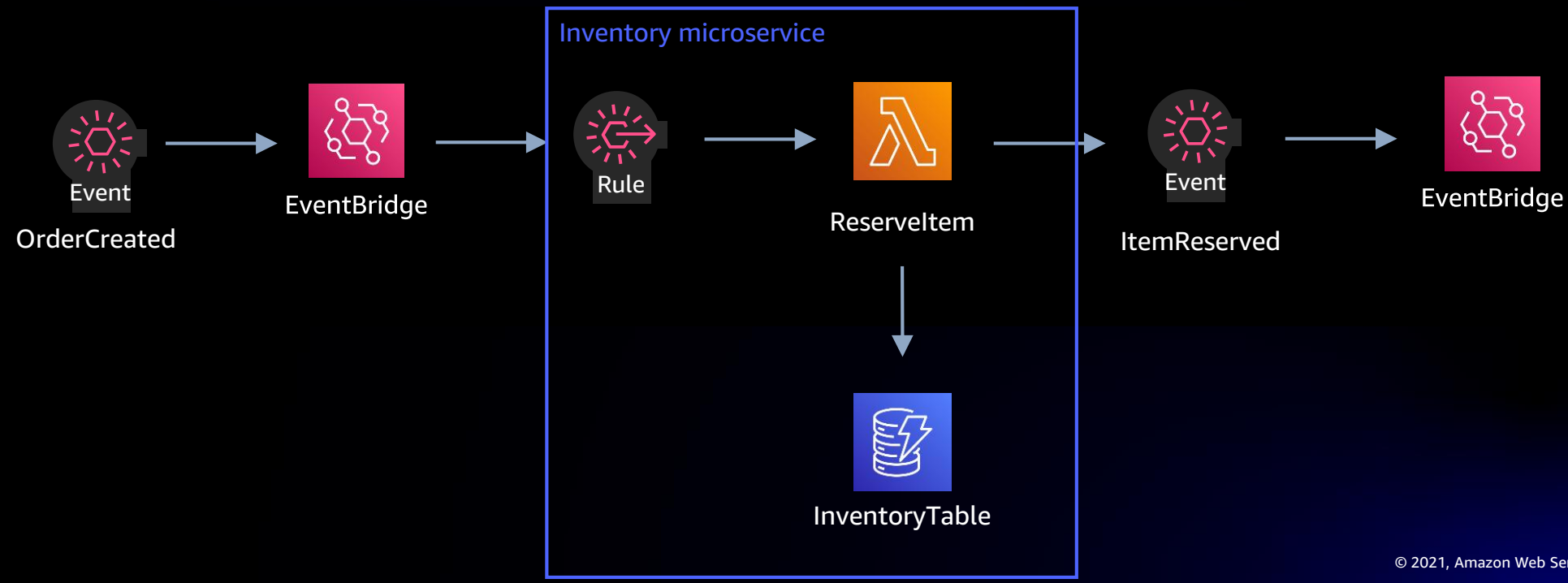


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Create an order

DESIGN TABLE

API (sync)	Input events	Service	Action	Output events
CreateOrder	CreateOrder	Order	CreateOrder	OrderCreated
	OrderCreated	Inventory	ReserveItem	ItemReserved ItemNotAvailable

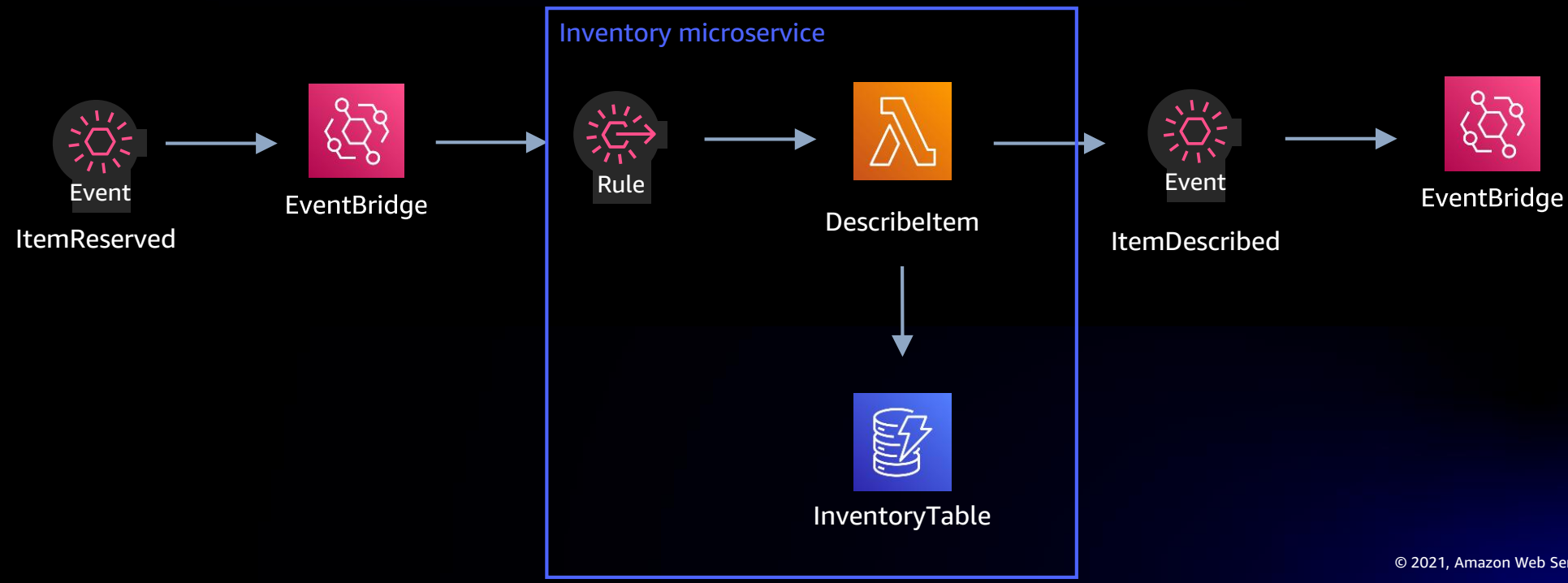


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Create an order

DESIGN TABLE

API (sync)	Input events	Service	Action	Output events
CreateOrder	CreateOrder	Order	CreateOrder	OrderCreated
	OrderCreated	Inventory	ReserveItem	ItemReserved ItemNotAvailable
	ItemReserved	Inventory	DescribeItem	ItemDescribed



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Create an order

DESIGN TABLE

API (sync)	Input events	Service	Action	Output events
CreateOrder	CreateOrder	Order	CreateOrder	OrderCreated
	OrderCreated	Inventory	ReserveItem	ItemReserved ItemNotAvailable
	ItemReserved	Inventory	DescribeItem	ItemDescribed
	ItemDescribed	Customer	DescribeCustomer	CustomerDescribed ErrorCustomerDescribed

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Create an order

DESIGN TABLE

API (sync)	Input events	Service	Action	Output events
CreateOrder	CreateOrder	Order	CreateOrder	OrderCreated
	OrderCreated	Inventory	ReserveItem	ItemReserved ItemNotAvailable
	ItemReserved	Inventory	DescribeItem	ItemDescribed
	ItemDescribed	Customer	DescribeCustomer	CustomerDescribed ErrorCustomerDescribed
	CustomerDescribed	Delivery	EstimateDelivery	DeliveryEstimated

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Create an order

DESIGN TABLE

API (sync)	Input events	Service	Action	Output events
CreateOrder	CreateOrder	Order	CreateOrder	OrderCreated
	OrderCreated	Inventory	ReserveItem	ItemReserved ItemNotAvailable
	ItemReserved	Inventory	DescribeItem	ItemDescribed
	ItemDescribed	Customer	DescribeCustomer	CustomerDescribed ErrorCustomerDescribed
	CustomerDescribed	Delivery	EstimateDelivery	DeliveryEstimated
	DeliveryEstimated	Payment	MakePayment	PaymentMade PaymentFailed

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Create an order

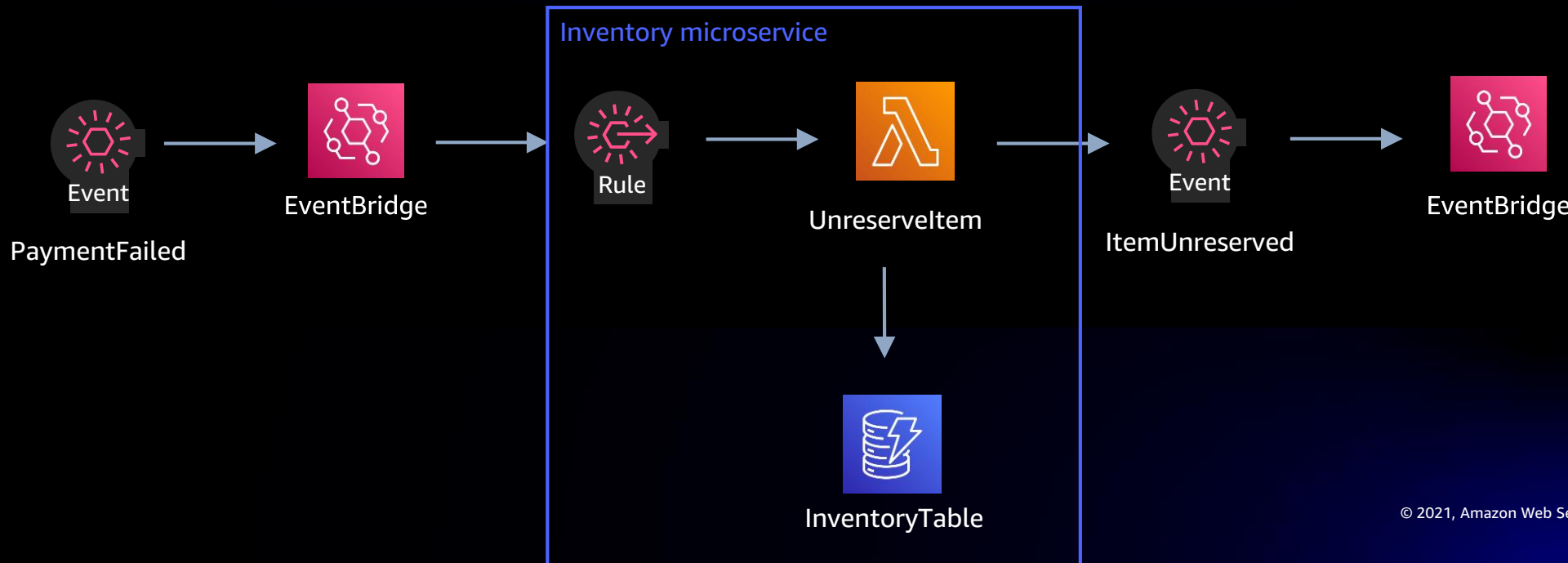
DESIGN TABLE

API (sync)	Input events	Service	Action	Output events
CreateOrder	CreateOrder	Order	CreateOrder	OrderCreated
	OrderCreated	Inventory	ReserveItem	ItemReserved ItemNotAvailable
	ItemReserved	Inventory	DescribeItem	ItemDescribed
	ItemDescribed	Customer	DescribeCustomer	CustomerDescribed ErrorCustomerDescribed
	CustomerDescribed	Delivery	EstimateDelivery	DeliveryEstimated
	DeliveryEstimated	Payment	MakePayment	PaymentMade PaymentFailed
	PaymentMade	Inventory	RemoveItem	ItemRemoved ErrorItemUnreserved
	ItemRemoved	Delivery	StartDelivery	DeliveryStarted
…				

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Error handling with events

API (sync)	Input events	Service	Action	Output events
	…			
	DeliveryEstimated	Payment	MakePayment	PaymentMade PaymentFailed
	PaymentFailed	Inventory	UnreserveItem	ItemUnreserved (END) ErrorItemUnreserved
…				



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Create an order

DESIGN TABLE

API (sync)	Input events	Service	Action	Output events
CreateOrder	CreateOrder	Order	CreateOrder	OrderCreated
	OrderCreated	Inventory	ReserveItem	ItemReserved ItemNotAvailable
	ItemReserved	Inventory	DescribeItem	ItemDescribed
	ItemDescribed	Customer	DescribeCustomer	CustomerDescribed ErrorCustomerDescribed
	CustomerDescribed	Delivery	EstimateDelivery	DeliveryEstimated
	DeliveryEstimated	Payment	MakePayment	PaymentMade PaymentFailed
	PaymentMade	Inventory	RemoveItem	ItemRemoved ErrorItemUnreserved
	ItemRemoved	Delivery	StartDelivery	DeliveryStarted
…				

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Adding a new microservice

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Thank you!

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