

Serving up restaurant loyalty
one dish at a time*

*5 ingredients for a happy customer

Thank you for the
introduction



1. **Tech modernisation** happens incrementally
2. **Tech stack** is important
3. **Ways of working** are more important

Apostolis (Toli) Apostolidis

Principal Engineer @ Flipdish



SCAN ME

$\frac{1}{2}$ $\frac{1}{2}$



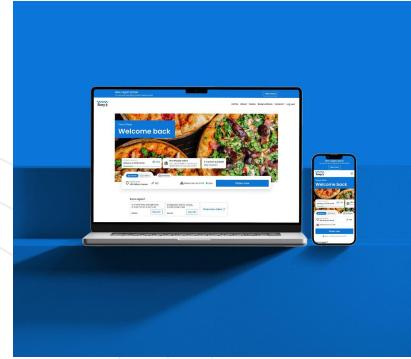
Point-of-Sale



Kiosks



Website & Apps



Managed marketing



1 Why we tackled restaurant loyalty

2 How we served restaurant loyalty

3 What we achieved, what we learnt

1 Why we tackled restaurant loyalty

2 How we served restaurant loyalty

3 What we achieved, what we learnt

Independent restaurants are
starving for time.

They like rewarding their loyal customers
online or in-person

Loyal customers generate
10x more revenue
than one-time eaters.



ORDER NOW

We **promised** loyalty for
online **and** in-person

1 Why we tackled restaurant loyalty

2 How we served restaurant loyalty

3 What we achieved, what we learnt

How do we offer
satisfyingly simple
loyalty across in-person and
online?

1 Deliver Loyalty 360

2 Demonstrate a better **way of working**

3 Pave the **way** for other teams

1 Loyalty customer problem

2 (small) teams

5 ingredients

4 months



(including Xmas )

1. Start with **events**
2. Go **serverless**
3. **Support** the team
4. Work **together**
5. Show the **thing**

1. Start with **events**
2. Go **serverless**
3. **Support** the team
4. Work **together**
5. Show the **thing**

Event Modeling: What is it?



Adam Dymitruk

Jun 23, 2019 · 17 minutes

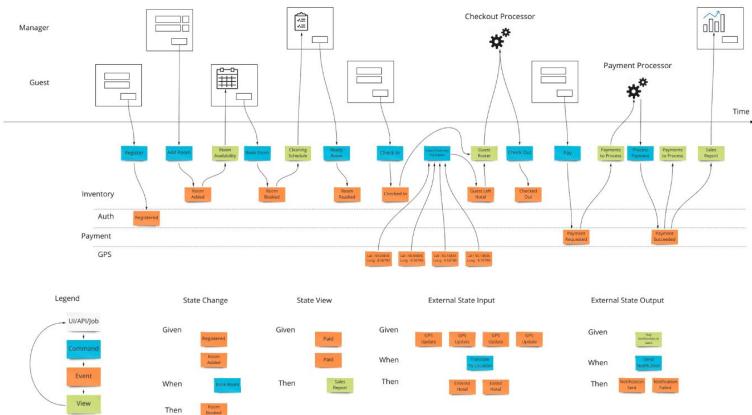
Motivation

Moore's Law

Digitized Information Systems are a relatively new concept. Humans have been working with information systems for thousands of years. Over centuries banks, insurance companies and many other large scale organizations have managed to succeed.

With the advent of the transistor, the speed and accuracy of processing information increased by orders of magnitude. What did not gain the same quantum leap is digital storage. This imbalance caused information systems to be optimized for a very small amount of online information. You can see this in the advent of RDBMS technology. What it means is that the compromise was to throw information away.

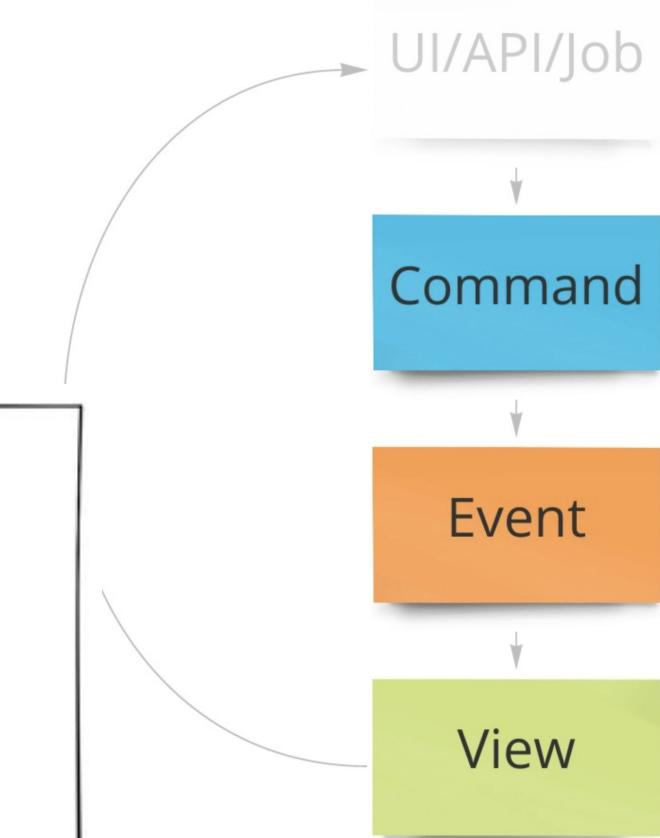
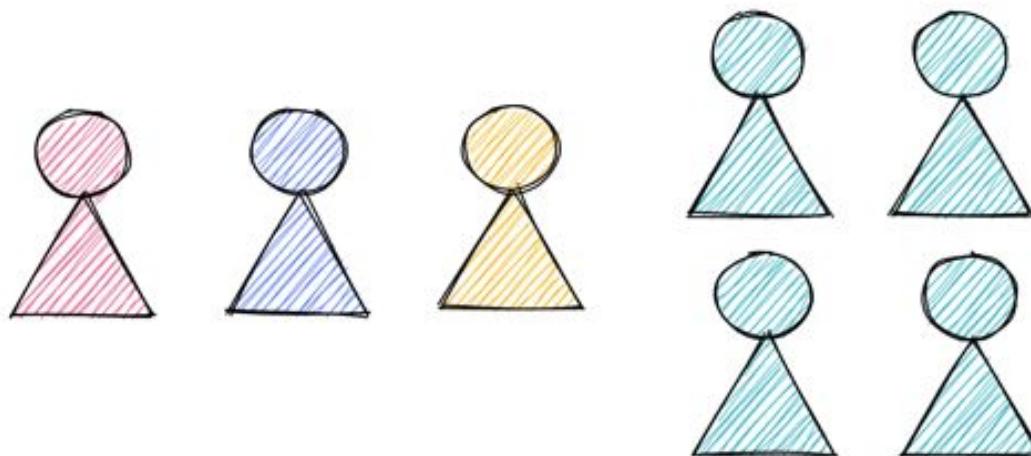
The Model That Works



[high res version](#)

Time is a concept that is now a core piece of describing a system. The components and classes that we saw in computing are not as important. We can show, by example, what a system is supposed to do from start to finish, on a time line and with no branching - again to make use of that memory aspect of our brains. This is the Event Model. It is used to follow all field values in the UI to the storage of those values to where they finally end up on a report or a screen. It's generally done with sticky notes on a wall or whiteboard - or an online version of a whiteboard. We'll see that simplicity is at the heart of the approach as we will only use 3 types of building blocks as well as traditional wireframes or mockups. Further to keep things simple, we will rely on only 4 patterns of how we structure the diagram.

All the functions in cross-functional

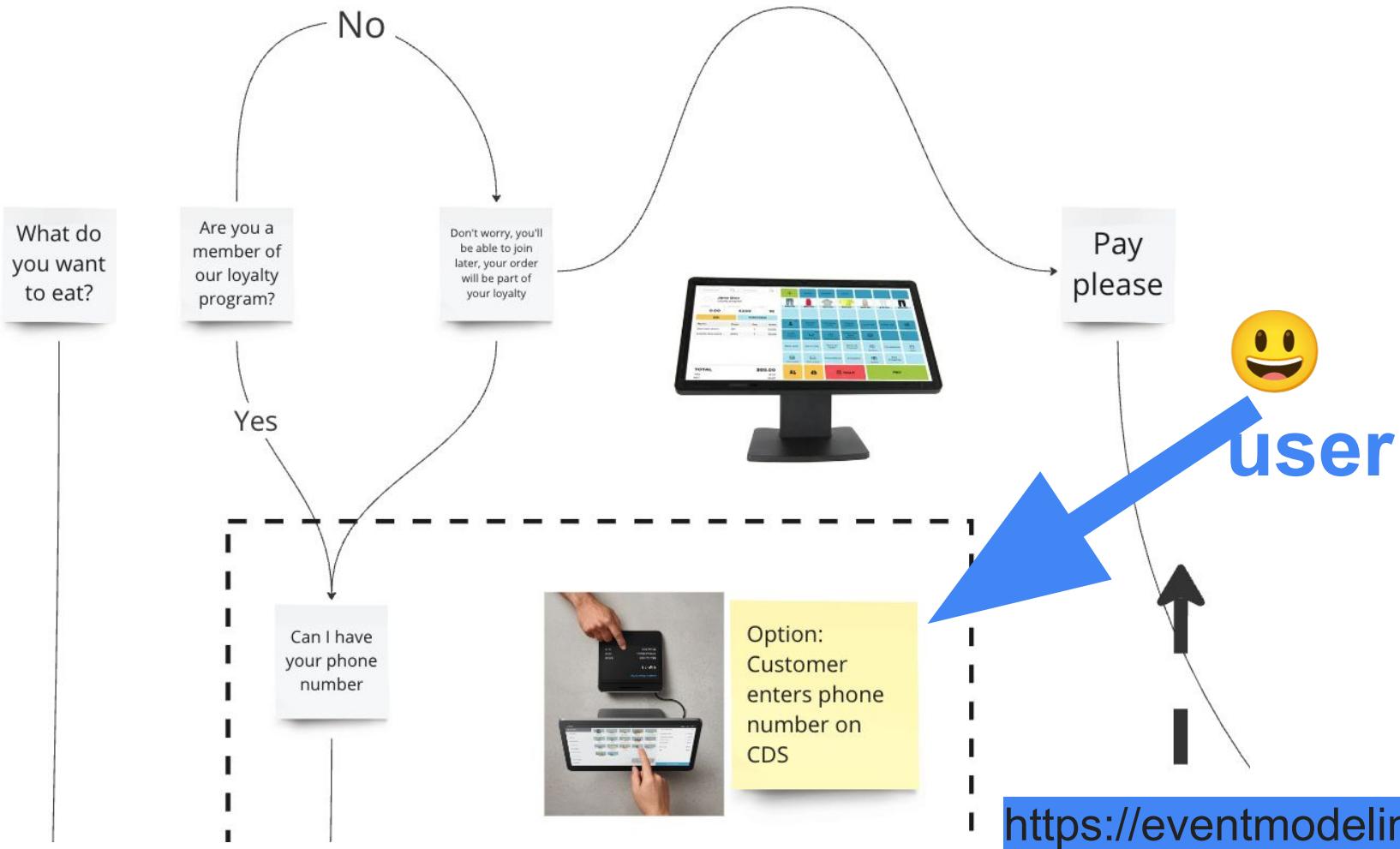


Sale
Created

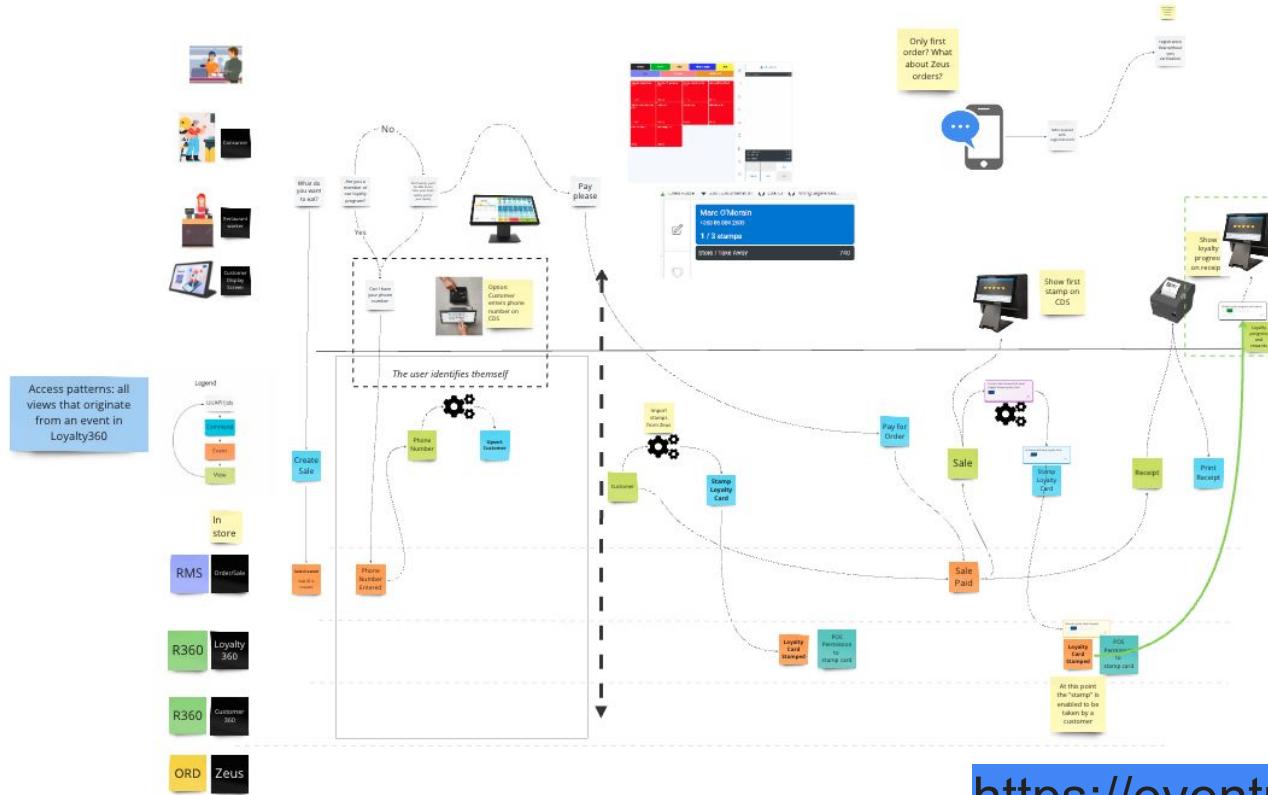
Phone
Number
Entered

Sale
Paid

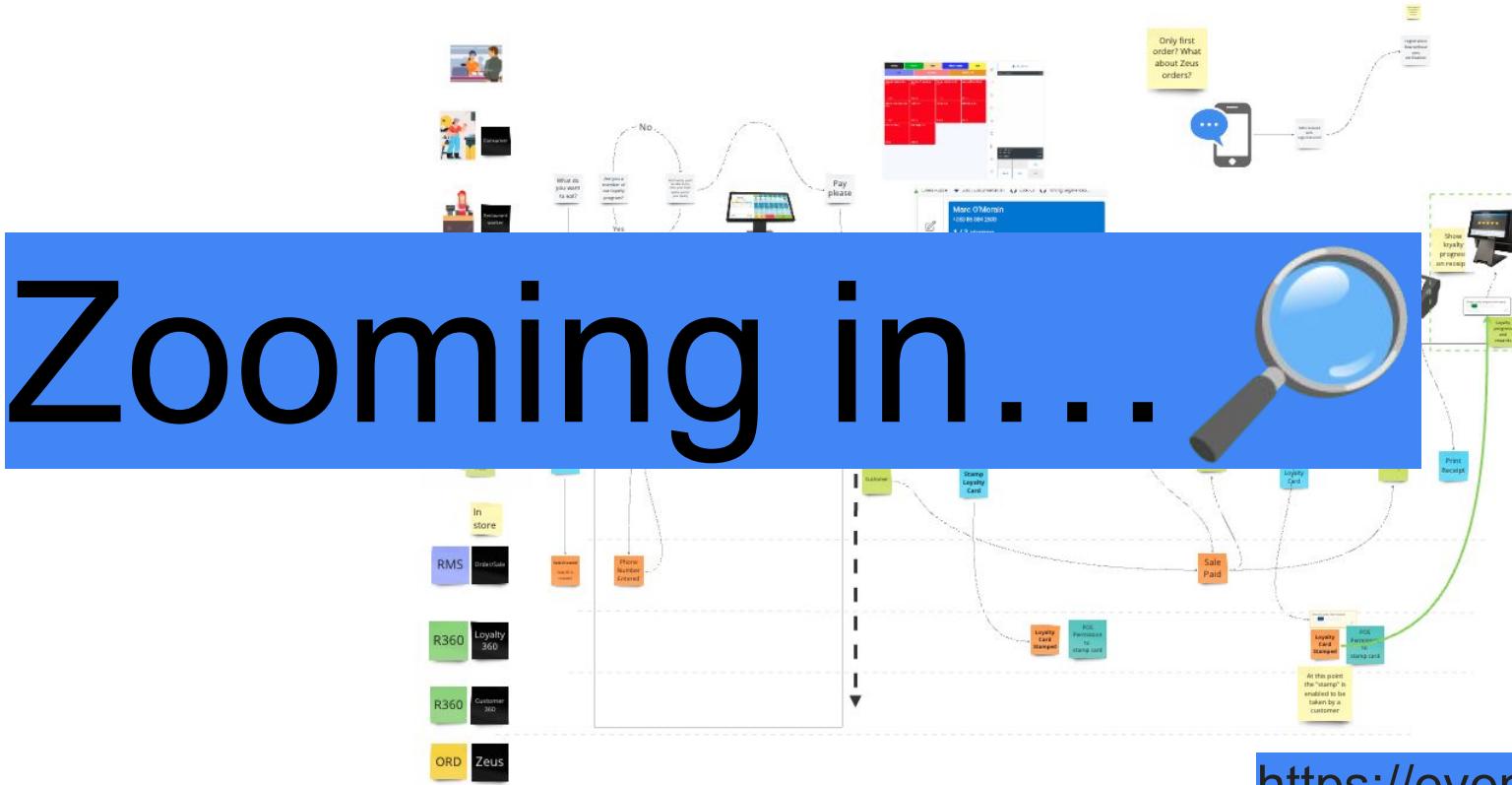
Loyalty
Card
Stamped

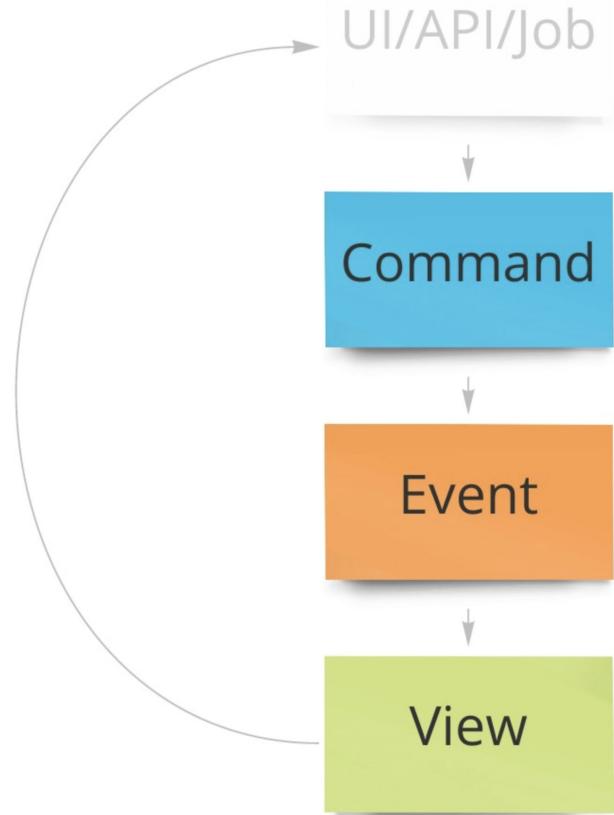
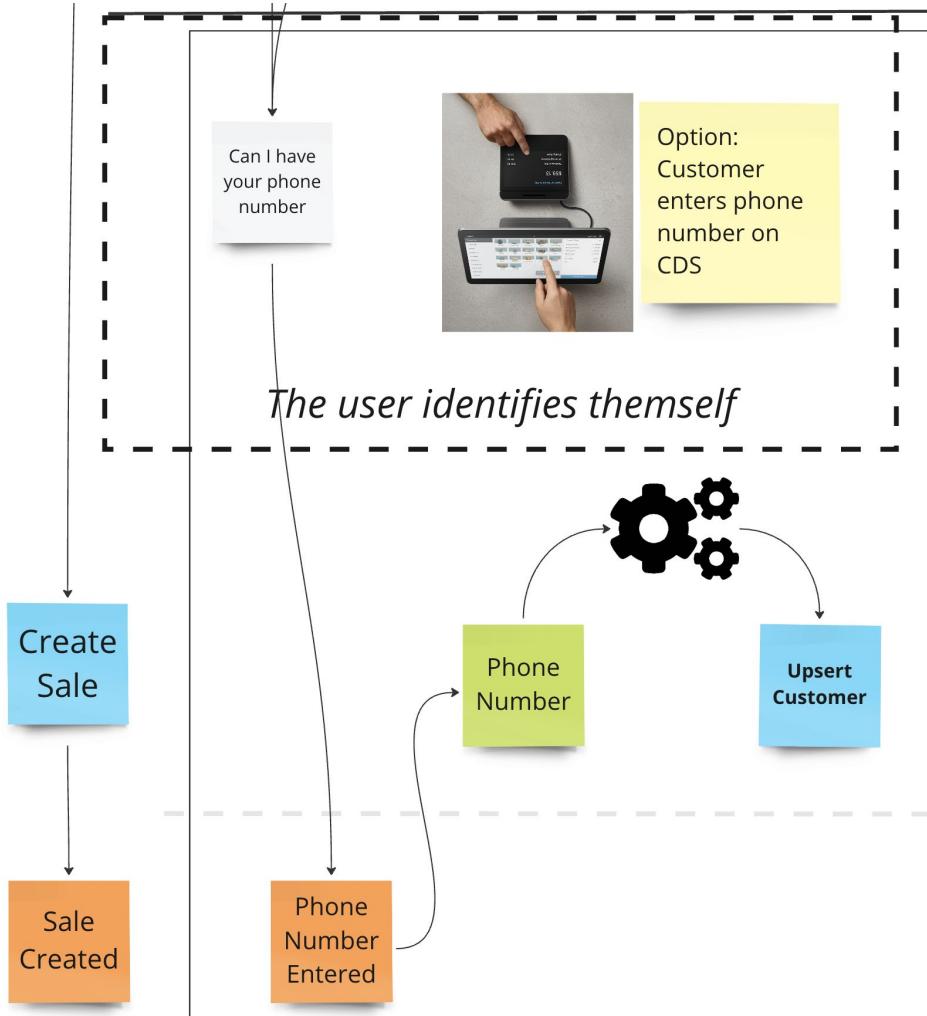


1ST VISIT TO STORE
HAVE ORDERED ONLINE BEFORE
PHONE NUMBER FLOW



1ST VISIT TO STORE
HAVE ORDERED ONLINE BEFORE
PHONE NUMBER FLOW

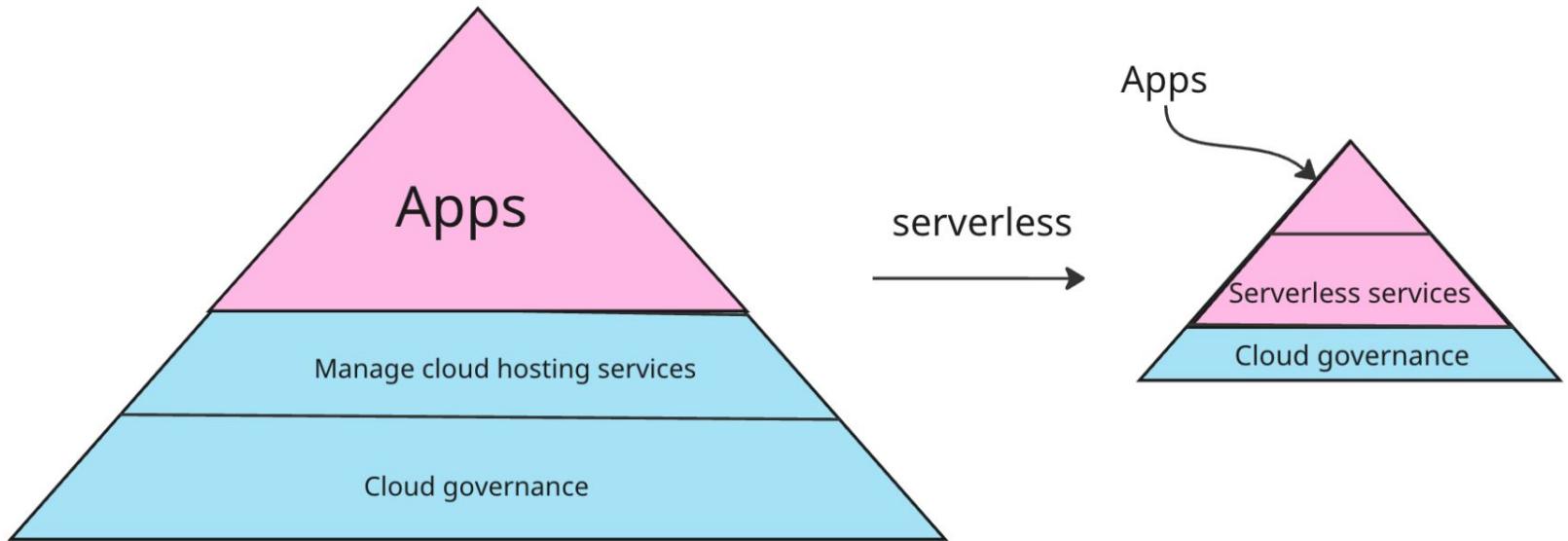




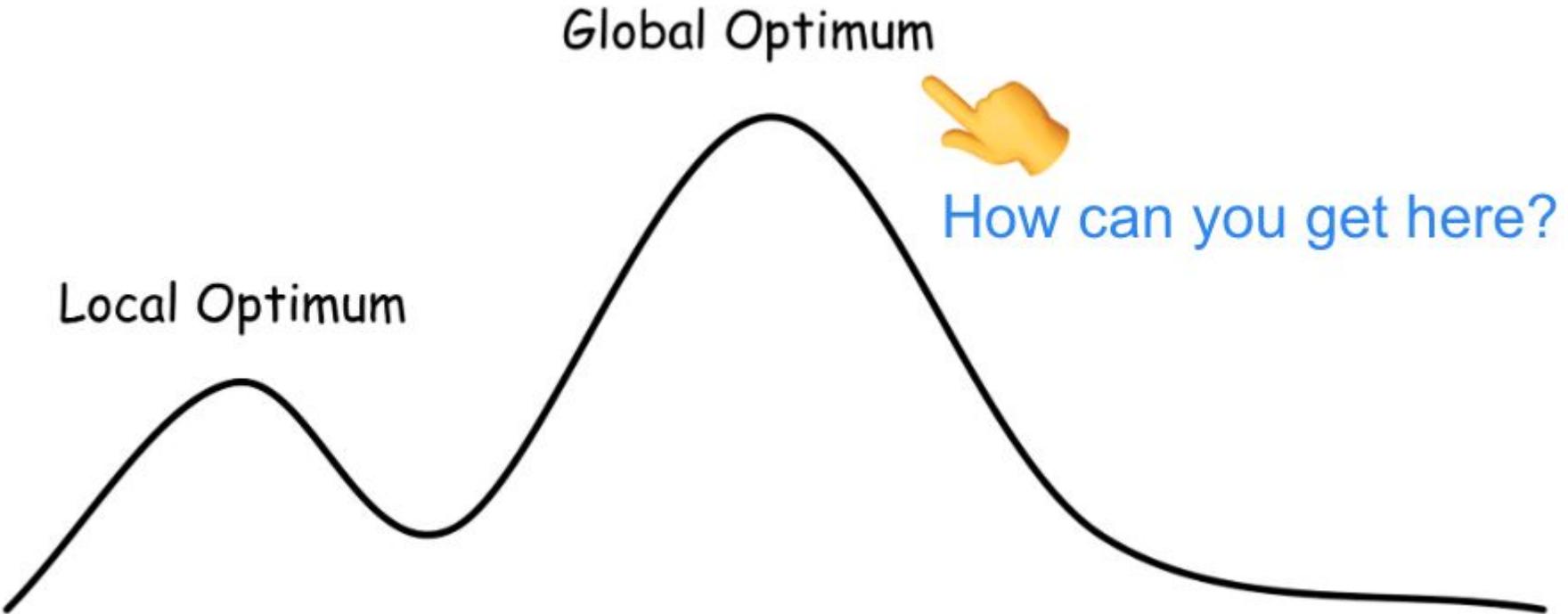
1. Start with **events**
2. Go **serverless**
3. **Support** the team
4. Work **together**
5. Show the **thing**



Amazon DynamoDB



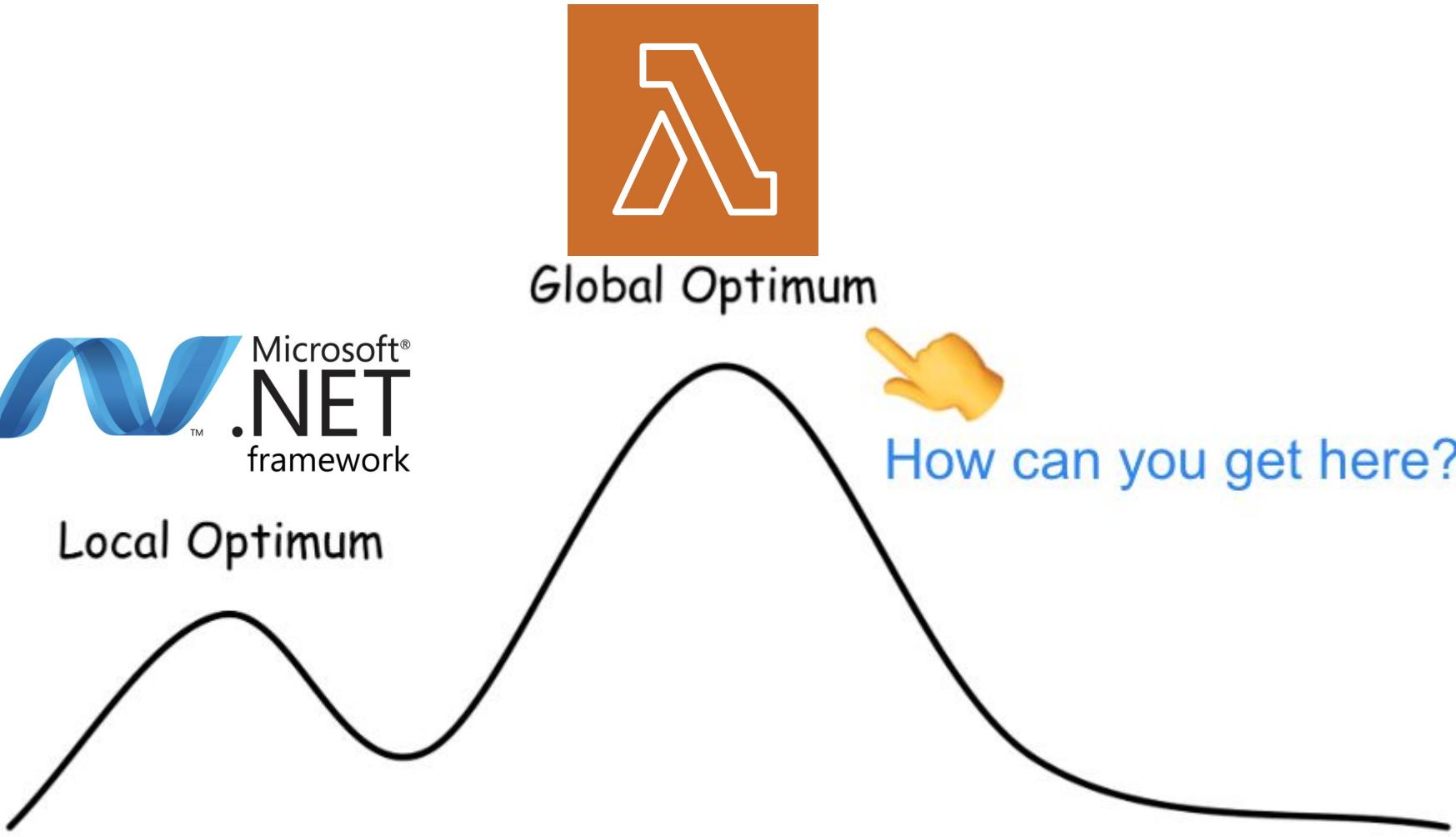
Lifting out of local optima





Local Optimum

Global Optimum

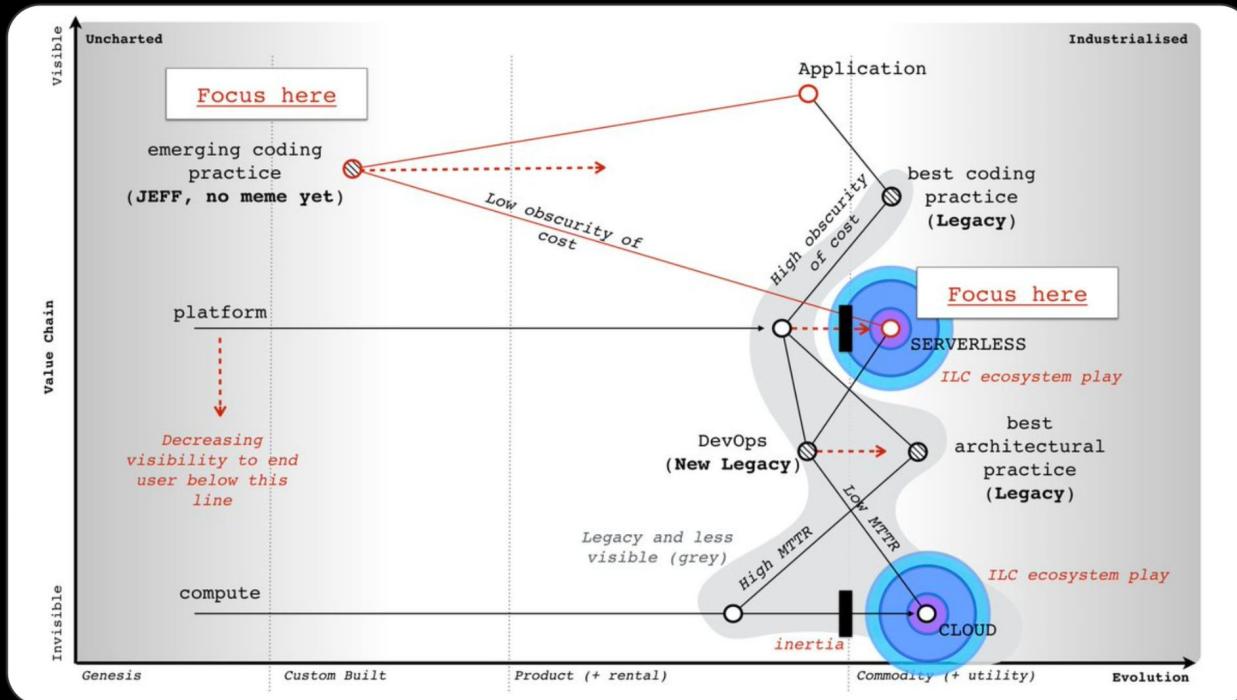


Simon Wardley ✅

@swardley

...

Asked to describe serverless and the changes happening? As simply as I can, in a single map ...



Step improvement of DX



Tamás 📅 14:22

everything you'll see on this demo was done today after 11am, so only a couple of hours of coding took us to be able to demo *something*. This makes me sooo sooo happy 😊



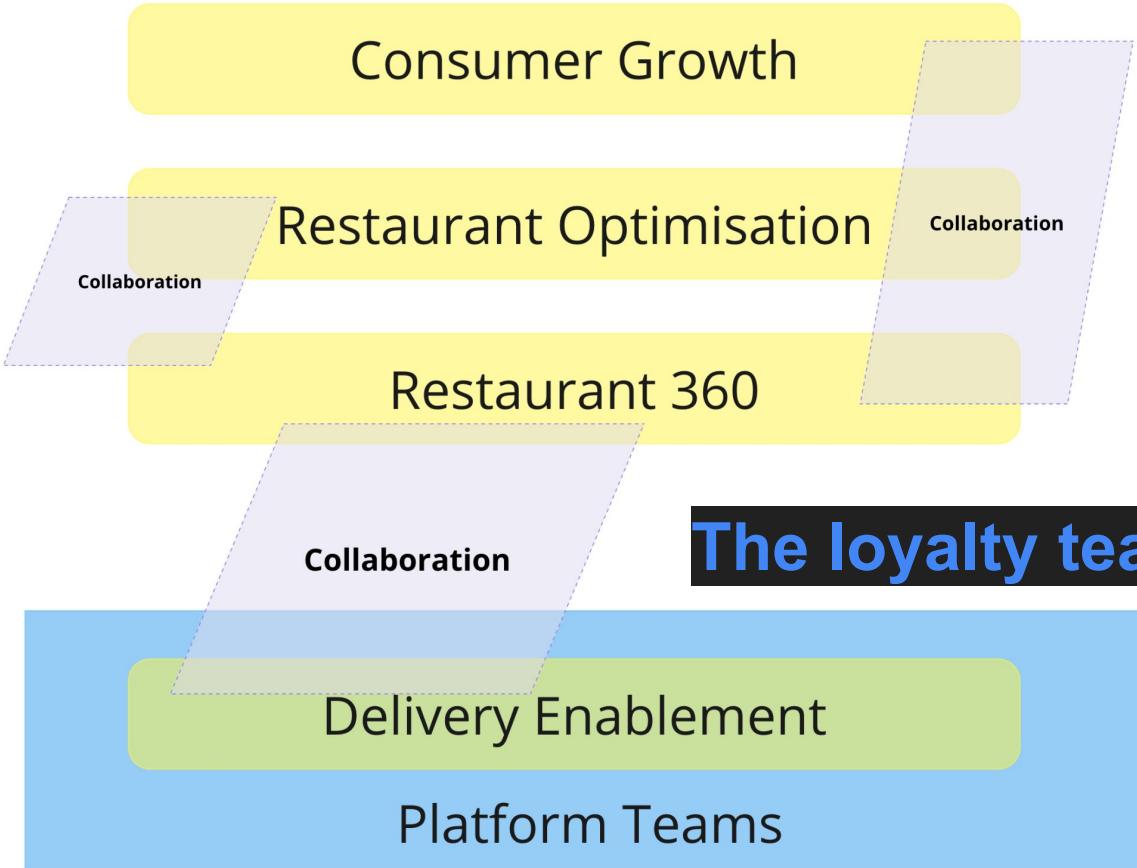
1. Start with **events**
2. Go **serverless**
3. **Support** the team
4. Work **together**
5. Show the **thing**

We want to build a "loyalty 360" service
that integrates with existing systems

A “Stream-Aligned” team

Restaurant 360

<https://teamtopologies.com/>



 **Innovation**

 **Fast flow**

Consumer Growth

Restaurant Optimisation

Restaurant 360

Delivery Enablement

Platform Teams

XaaS



Fast flow



Cog load

Restaurant 360

XaaS

Delivery Enablement

App + Infra

AWS + New
Capabilities

1. Start with **events**
2. Go **serverless**
3. **Support** the team
4. Work **together**
5. Show the **thing**

Working together can be liberating



Learning sessions



Mobbing



Design with other
teams

Take time to learn together



Tamás Kovács (Presenting)

The slide title is "Modeled ‘joins’ in NoSQL". It displays a SQL query: "SELECT * WHERE PK='Book Title'" and a screenshot of a database table. The table has two primary keys: "PK" and "SK". The "PK" column lists book titles like "Frankenstein", "Dine Straits", etc., and the "SK" column lists authors like "Mary Shelley", "John...". The table includes columns for Type, Price, Publisher, and Producer. A note indicates "Big" data. The slide also shows a complexity analysis: "Time Complexity O(log(N))". The bottom right of the slide says "Okay, that one-to-one join." The AWS logo is at the bottom left.

Primary Key

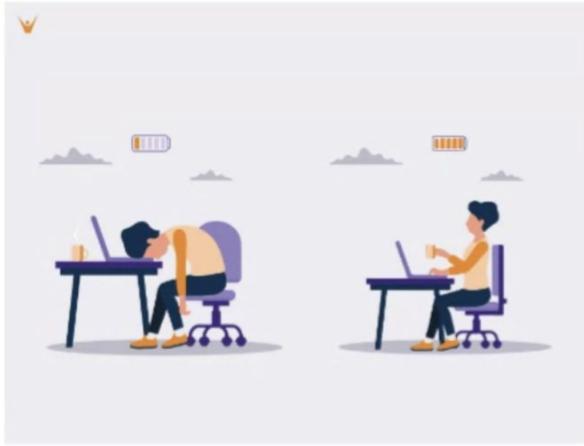
PK	SK	Type	Price	Publisher	ISBN
Frankenstein	Mary Shelley	book	11.89	Bantam	055212478
Dine Straits	John...	audiobook	17.99	Muff Winwood	1507778
Down to the Waterline		Duration	TrackNo		
Water of Love		9:55	1		
Setting Me Up		5:53	2		
Six Blade Knife		3:18	3		
Southbound Again		4:10	4		
Sultans of Swing		2:58	5		
In the Gallery		6:16	6		
Wild West End		4:12	7		
Lions		Duration	TrackNo		
Penny Marshall		5:05	8		
Tom Hanks		video	14.99	Writer	ReleasedDate
Elizabeth Perkins		Character	Gender	Ann Sculberg	6/5/88
Robert Loggia		Join	Male		
Tom Hanks	Tom Hanks	Character	Gender		
		Male	BirthDate		
			Bio		

Time Complexity
 $O(\log(N))$

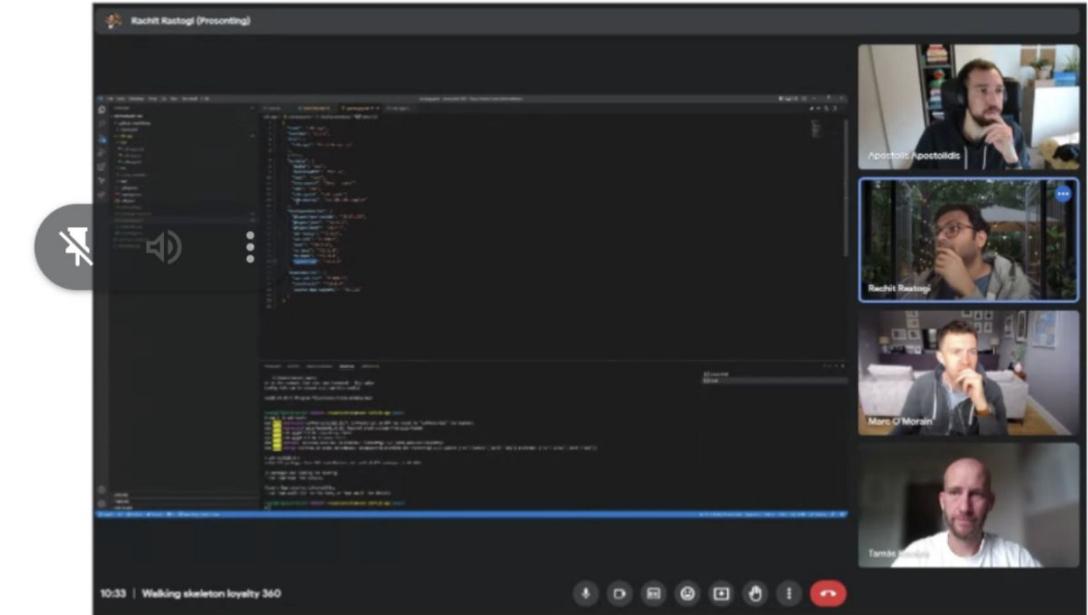
Okay, that one-to-one join.

© 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved.

Rachit Rastogi, Jaz Chana, Tamas Kovacs, Bob Scott, Marc O'Morain, Apostolis Apostolidis



VS



Writing code together is
less stressful 

Designing across teams **is possible**



miro Omni channel Loyalty Service

Tamás Kovács (Presenting)

1. Start with **events**
2. Go **serverless**
3. **Support** the team
4. Work **together**
5. Show the **thing**

Show the thing.

Every week.

Seek feedback.

Show
the thing,
take a lean
approach ⭐

Rachit Rastogi (Presenting)

Loyalty Card = card3267260

Campaign 16799
[★][★][★][★][][][][][]
Voucher valid for 10 days, auto-apply true

Campaign 16850
[★][★][][]
Voucher valid for 2 days, auto-apply true

Campaign 16853
Stephanie Murphy [★][][][][][][][][][]
Voucher valid for 10 days, auto-apply false

James McCarthy

Conor McCarthy James Macdonald Fauz Faraj Colm O'Hare Fiona Low Xiaoli Zeng Rachit Rastogi 99 others Apostolis Apost...

15:54 | All Hands

Question 4 - Multiple Choice

Would you be willing to share your phone number to join a loyalty program?

83 out of 100 answered

Yes

40% (33) responses

No

18% (15) responses

Maybe

42% (35) responses

Collect some evidence, start with a **survey**



Marc O'Morain 22:17

Quick update on my work placement last night: It went really well, and I had no need to be nervous.

I'd encourage everyone to look forward to their placement.

I consider myself an expert in chips now. I can make a bag of chips, salt and vinegar chips, taco chips, taco cheese chips, curry chips, curry cheese chips, curry cheese garlic chips. Any kind of chips, I'm your man.

I shadowed Sarah, who runs the front-of-house, helping her fulfil walk-in, phone and Flipdish online orders. I got some great insight into my area of interest - their POS, phone, caller ID, payment terminal, online orders, lead times, delivery schedule, etc. (edited)



12



6



7



The restaurant **Gemba walk**

1 Why we tackled restaurant loyalty

2 How we served restaurant loyalty

3 What we achieved, what we learnt

We built the **right** thing



In-store Loyalty



Combos

Burgers

Wraps

Wings & Tenders

Sides

Dips

Soft Drinks

BEER & CIDER



Hadouken Burger Combo Meal
Choose a burger, any side, any soft drink
(Upgrade to Piggie Smalls for +£2).

€15.00



Shoryuken Wings Combo Meal
Choose any regular sized chicken wings, any side, any soft drink.

€13.50



Hurricane Tenders Combo Meal
Any regular sized tenders, any side, any soft drink.

€14.50



Boss Level Combo Meal
Choose from any burger, any wings/tenders/vegan tenders, any side and drink.

€22.50



Hundred Hand Wrap Combo Meal
Choose from any wrap, any side, any soft drink.

€14.00

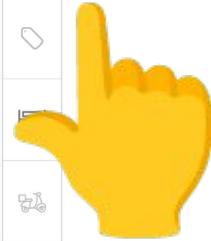


Family Deal 1
2 x Burgers, 1 x Large OG Tenders, 2 x Fries, 2 x Dips + FREE 1.5Ltr Bottle soft drink.

€29.99

Andy
+353 87 983 9546
1 / 3 stamps

Store / Dine In 2 / 226



Total Order Price €0.00
Total Sale Price €0.00
Total Payable €0.00

—	+	
Cancel	Pay	Exit

Online Loyalty

← BACK

Oak Fire Pizza – Princes St

 Collect at 29, Princes Street, Cork, T12 YE64

Min order: €1.00 • Open till 9:44pm

SMS no longer sent confirming order time, please make sure to check this after the checkout page.



EVERY 11TH ORDER FREE.

← BACK

Oak Fire Pizza Douglas

 Collect at 1, Unit 1 Village House, East Village, Douglas, Cork, T12 WF69

Min order: €1.00

 Oak Fire Pizza Douglas is Closed – Preorder only. Closed until 15:00

SMS no longer sent confirming order time, please check the checkout page.



EVERY 11TH ORDER FREE.

Search menu

Receive every 11 order free and receive other offers?

By opting in you acknowledge our [Privacy Policy](#).

Yes – opt in 😊

No – opt out 😕

WOOD FIRED PIZZA

Margherita
tomato sauce, Toon's Bridge mozzarella, shredded West Cork...

FROM
€13.00 >



Italiano
Tomato sauce, fresh basil, parmesan, buffalo mozzarella...

FROM
€15.00 >



Carnivore
tomato sauce, Toon's Bridge mozzarella, salami piccante...



BBQ Chicken
sweet & smoky BBQ souce, Toon's Bridge mozzarella, Shannonvale...



Search menu

Profile
0879839546



Andrew Dunne 🚗 15:50

I met with the store manager of Oak Fire - Prince Street today. She spoke very highly of loyalty, saying that it's amazing ! Well done everyone 🎉



2013

Loyalty profiles
created

2345

Loyalty stamps
given

105

Loyalty rewards
earned



We built the thing **right** 



AWS Serverless & sst.dev



Testing & Observability baked in



Based on customer insights, flexible



Loosely coupled (EDA)



Event Sourced



Amazon DynamoDB

AWS Serverless
supercharged
by sst.dev

```
✓ packages/core/test/loyalty/rounding.test.ts (21)
✓ packages/dynamodb/test/DynamoDbRecordVoucherUsage.test.ts (2) 1074ms
✓ packages/dynamodb/test/DynamoDbCampaignStorage.test.ts (2) 1036ms
✓ packages/functions/test/loyalty/handlers.test.ts (1)
✓ packages/core/test/core.test.ts (5)
✓ packages/core/test/instrumentation/send-metric.test.ts (2)
↳ packages/functions/test/loyalty/queues.test.ts (1) [skipped]
✓ packages/zeus/test/adapters/ZeusCustomerId.test.ts (2)
✓ packages/dynamodb/test/DynamoDbLookupCustomer.test.ts (2) 433ms
✓ packages/zeus/test/adapters/AccountDetailsProvider.test.ts (2)
✓ packages/core/test/loyalty/adapters/GenerateRandomVoucherCodes.test.ts (2)
✓ packages/dynamodb/test/DynamoDbCustomerProfileProvider.test.ts (1) 331ms
✓ packages/core/test/loyalty/adapters/CustomerProvideProfileId.test.ts (1)
✓ packages/core/src/instrumentation/set-tag.test.ts (1)
✓ utils/versioning.test.ts (1)
✓ packages/dynamodb/test/DynamoDbStoreRewards.test.ts (2) 313ms
✓ packages/core/test/loyalty/contract/queue.test.ts (1)
```

Test Files 27 passed | 1 skipped (28)

Tests 79 passed | 1 skipped (80)

Start at 00:42:38

Duration 14.85s (transform 829ms, setup 1ms, collect 31.30s, tests 19.80s, environment 3ms, prepare 3.05s)

PASS Waiting for file changes...

press h to show help, press q to quit

```
52   expect(profileId).to.eq(secondProfileId);
53   // Assertions
54   expect(setTag).toHaveBeenCalledWith(tagNames.customerId, 12);
55   expect(setTag).toHaveBeenCalledWith(tagNames.appId, 'mexicancafe');
56   expect(setTag).toHaveBeenCalledWith(tagNames.loyaltyProfileId, profileId);
57   expect(sendDistributionMetric).toHaveBeenCalledWith(
58     'customers.customer_created',
59     1,      Apostolos Daniel Apostolidis, 3 weeks ago • Send customers.customer_created metric (#42) ...
60     'env:test-env',
61     'service:foo',
62     'version:test-version',
63     'team:restaurant-360',
64   );
65 );
```

Testability

backed in

Loyalty 360

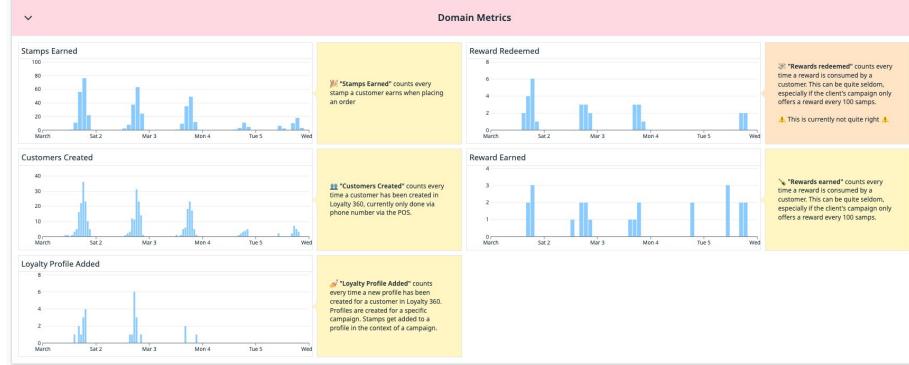
Saved Views

production

Share Show Overlays Configure + Add Widgets

Sd Month to Date

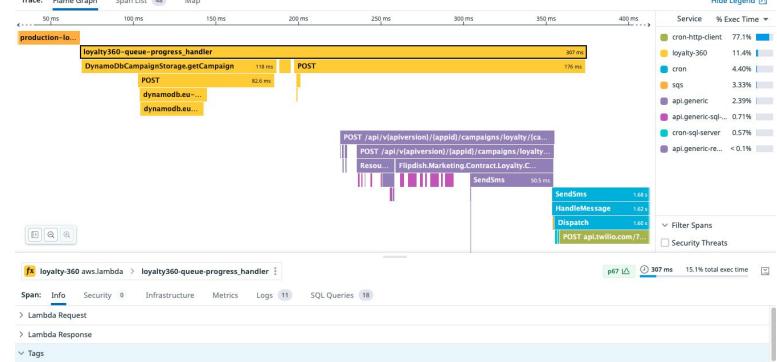
|||



sq 2.03s | Mar 05 21:25:36.589 (3h ago)

production > production-loyalty-ProgressQueue > trace_id 65e78dd00000000000000000000000000

Trace Flame Graph Span List Map



Pipelines

P95 of deployments to production

6 min

5.22 min

3s

P95 deployments per pipeline

28.0 Deploy

13.1 Pull Request

Failed deployments per pipeline

Total 21.58 %

Pull Request

Failed prod deployments

0%

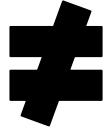
P95 of deployments to production

5.55 test / test

5.23 deploy_sandbox

Observability baked in

Orders



Loyalty

Decoupled system



Marc O'Morain 09:39



moment

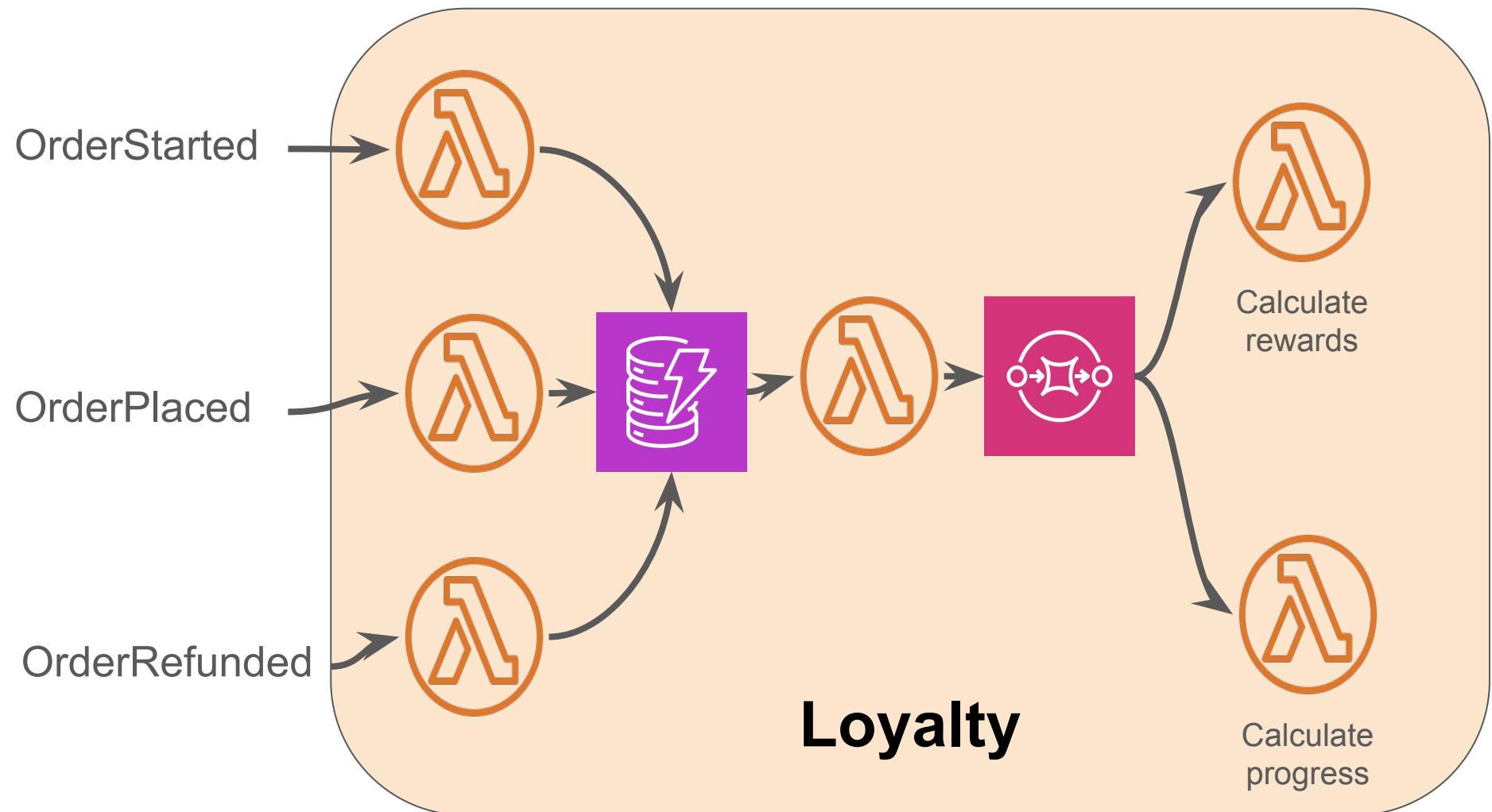
We've had a couple of requests to import loyalty from a previous system.

This is something that is possible with L360 and wasn't possible with the Zeus-specific system, because we built the system to not be coupled to Zeus online orders.



3





Partition Key	Sort Key Primary Key	Attributes quantity
view#Campaign1#CardA	progress	3 of 10
view#Campaign1#CardA	rewards	1 voucher for 10% off
event#Campaign1#CardA	2023-11-13T12:52:32 E tamp	quantity

Event Sourced design gives you
options

What worked like a charm?



Tech stack a **joy to work with**



Team was **not a black box**



Event modelling gave us options



Mob programming was **liberating**



UX was discussed **from the beginning**

What **didn't** go so well?



We **didn't revisit** the Event Model



Subsequent designs were **not as future proof**



Integration testing “fell behind”



Getting **historical data** can be difficult



Serverless for patchy traffic can be **slow**

Wrapping up



How do we offer
satisfyingly simple
loyalty*?

*across in-person and online

1. Start with **events**
2. Go **serverless**
3. **Support** the team
4. Work **together**
5. Show the **thing**

It's possible.

It was not perfect.

It paved the way.

Thank you.

Feel free to speak to me
after this talk or online.