



# Automate cashback campaigns with Cosmos DB & friends

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~~Thomas Dijkstra~~

Pieter Dubelaar

Triple

# Gold sponsors



# Silver sponsors



# Before 2017

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- HEINEKEN Nederland manages dozens of sites
- They host multiple campaigns in parallel

# What they want

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- Reusable campaigns, centrally managed
- Applicable in all sites (independent from CMS used)
- Out-of-the-box or fully customizable
- Enter product codes or pictures of receipts
- Raffle, direct win and locally collected



5000PRIJZEN



MAAK ELKE DAG KANS OP  
F1™ GRANDSTAND TICKETS  
OF ÉÉN VAN DE ANDERE 5000 F1™ PRIJZEN



1. MAAK EEN FOTO VAN HET HEINEKEN PRODUCT
2. UPLOAD OP WWW.5000PRIJZEN.NL
3. MAAK KANS OP F1™ PRIJZEN

DEZE ACTIE LOOPT VAN 1 APRIL T/M 30 JUNI 2019



Kies bestand...

*.gif/.jpg/.png/.pdf, max. 10MB*

VERSTUUR

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DEZE ACTIE LOOPT VAN 1 APRIL T/M 30 JUNI 2014



### Vul je gegevens in

Naam

\* Geboortedatum

DD

MM

YYYY

\* E-mail

Telefoonnummer

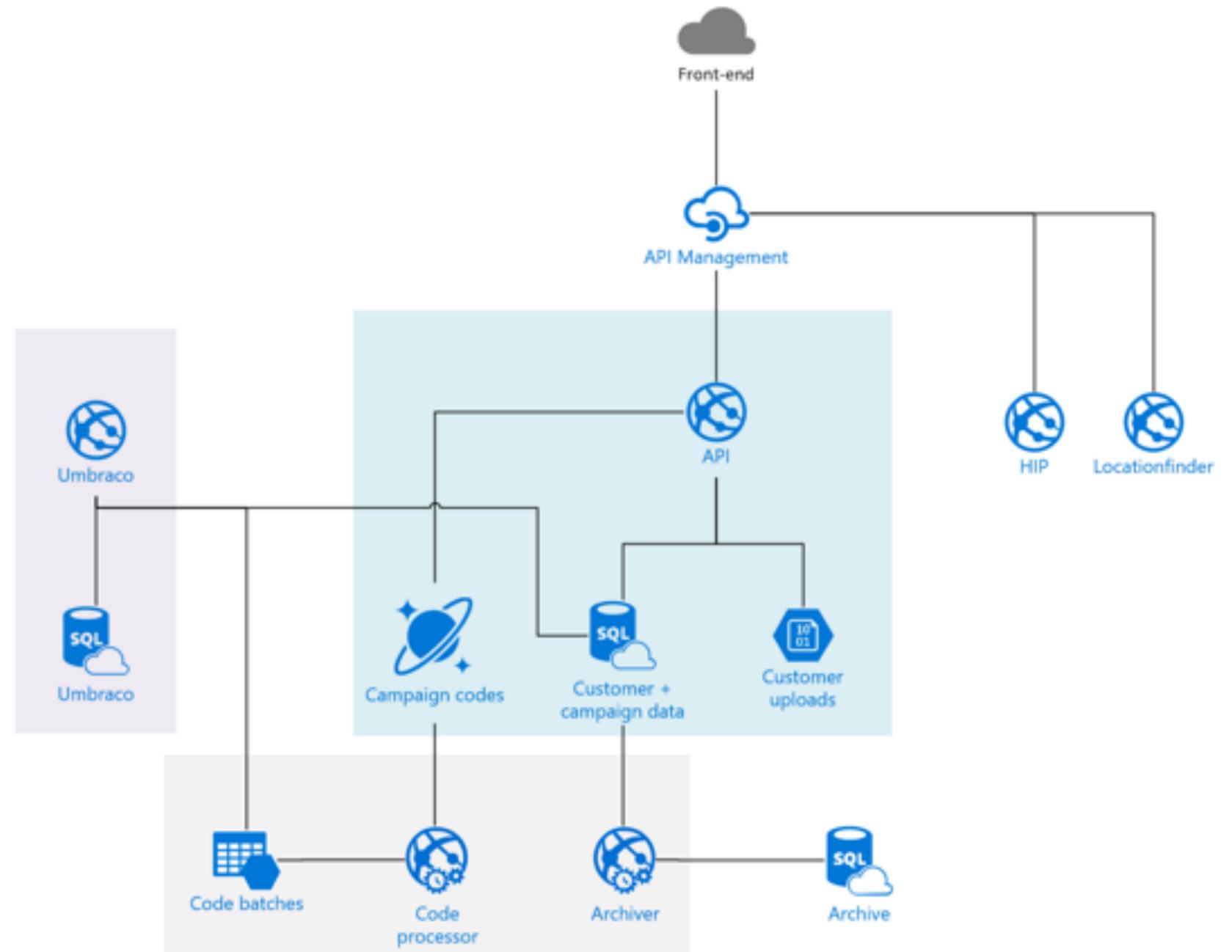
\* Postcode

1234AB



Ja, ik ga akkoord met de [Actievoorwaarden](#)

# Architecture



# Code storage requirements

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- Campaign isolation
  - Fast
  - PaaS / SaaS
- 

# Azure Cosmos DB

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## **Dedicated resources per campaign**

- One campaign = one collection
- Usage is isolated, no influence between campaigns
- Campaign data can be destroyed effectively
- Costs are contained per campaign

# Azure Cosmos DB

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## Scaling for import

- Scaling x25 when loading millions of records
- Cosmos can be allowed to partition (shard) automatically when necessary
- We don't do multi-region

# AZURE COSMOS DB VS. OTHER DB'S





## VS. Relational databases

- One large database, or set up sharding yourself



## VS. Table Storage

- No easy way to create dedicated resources per campaign without new deployment



### VS. third-party solutions

- Pricing
- Needed custom development

### VS. third-party database providers

- Pricing
- Needed custom development

# Azure Cosmos DB - features

- Multi-API
- Global availability if so desired
- Everything is indexed

	 Java	 .NET	 Node.js	 Python	 Gremlin	 Go	 Kotlin
SQL API							
API for MongoDB							
Gremlin API							
Table API							
Cassandra API							

## Regions



# Azure Cosmos DB – pricing

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**The cost to read 1 kb item is 1 Request Unit (RU)**

- 400 RUs minimum = 20 euro / month
- Up to 10.000 RUs on a fixed storage collection

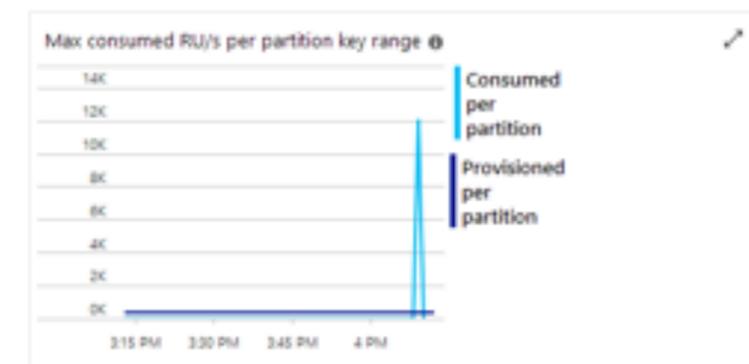
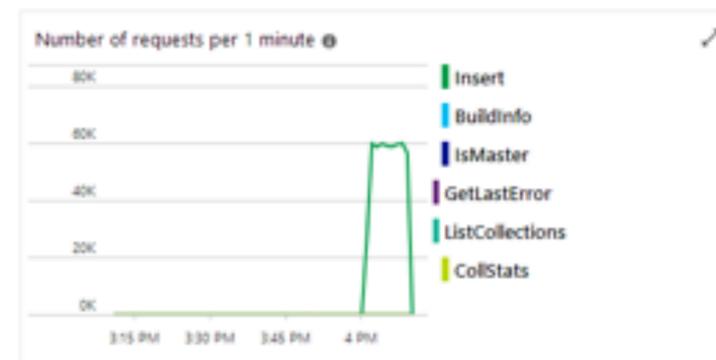
**Since recently**

- RUs per collection or RUs per database

# Cosmos DB - Findings

- Tests on imports
  - 0.5 M codes from blob storage to database

Database type	
Azure SQL DB	53 seconds
Cosmos DB (400 RU, Mongo DB driver)	28 minutes
Cosmos DB (10000 RU, Mongo DB driver)	5 minutes
Cosmos DB (10000 RU, Mongo DB driver + partition support)	8 minutes



# API Management

## User portal

- Separate access keys
- Throttling, logging per user account
- Documentation in the portal itself

The screenshot displays the Azure API Management user portal interface. At the top, the title 'Azure Api Management API' is visible, along with navigation links for HOME, APIs, PRODUCTS, and ISSUES, and a user profile dropdown for ADMINISTRATOR. The main content area is titled 'RewardsMPA' and shows the 'Code - 1a. Check code' endpoint. The endpoint description states: 'Checks if a code is valid. Returns true when it is valid, returns false when it has been used already / invalid / unknown. NOTE: Only one code can be checked per request, even if the campaign requires more codes, so more requests are required.' Below the description is a 'Try it' button. The 'Request' section shows the 'Request URL' as 'https://fogicapi.helsinki.fi/rewards/api/codes/v1/check'. The 'Request headers' section lists 'Content-Type (optional)' as a string and 'Ocp-Apim-Subscription-Key' as a string. The 'Request body' section shows a text area with a sample body of an empty object '{}'. The 'Responses' section shows a '200 OK' response.

Search [input] [icon] [icon]

ADMINISTRATOR

GET ApiTest

POST Checks if an upload is approved by HP.

**POST Code - 1a. Check code**

POST Code - 1b. Pre-claim code(s)

POST Code - 2. Confirm and claim code(s)

GET Data - Get location finder

GET Endpoint for campaign data.

GET Endpoint for location finder data.

POST Endpoint for updating verification results of images.

GET File - Get prize blob

GET Page - 1. Get workflow for campaign

POST Page - 2a. Save data of workflow page

POST Page - 2b. Save file of workflow page

API definition

### RewardsMPA

API change history

#### Code - 1a. Check code

Checks if a code is valid. Returns true when it is valid, returns false when it has been used already / invalid / unknown. NOTE: Only one code can be checked per request, even if the campaign requires more codes, so more requests are required.

Try it

#### Request

Request URL

https://fogicapi.helsinki.fi/rewards/api/codes/v1/check

#### Request headers

Content-Type (optional)	string	Media type of the body sent to the API.
Ocp-Apim-Subscription-Key	string	Subscription key which provides access to this API. Found in your Profile.

#### Request body

Data for making the validation.

application/json | **text/json** | application/xml | text/xml | application/x-www-form-urlencoded

Sample Schema

```
{}
```

#### Responses

200 OK

OK

# API Management

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Often set up as a shared service for many projects

# UMBRACO AS MODULAR CMS



# Umbraco as modular CMS

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- Customized UI and logic
- Using Umbraco for framework, authentication

# Umbraco as modular CMS

Type to search...

Rewards

Rewards Dashboard

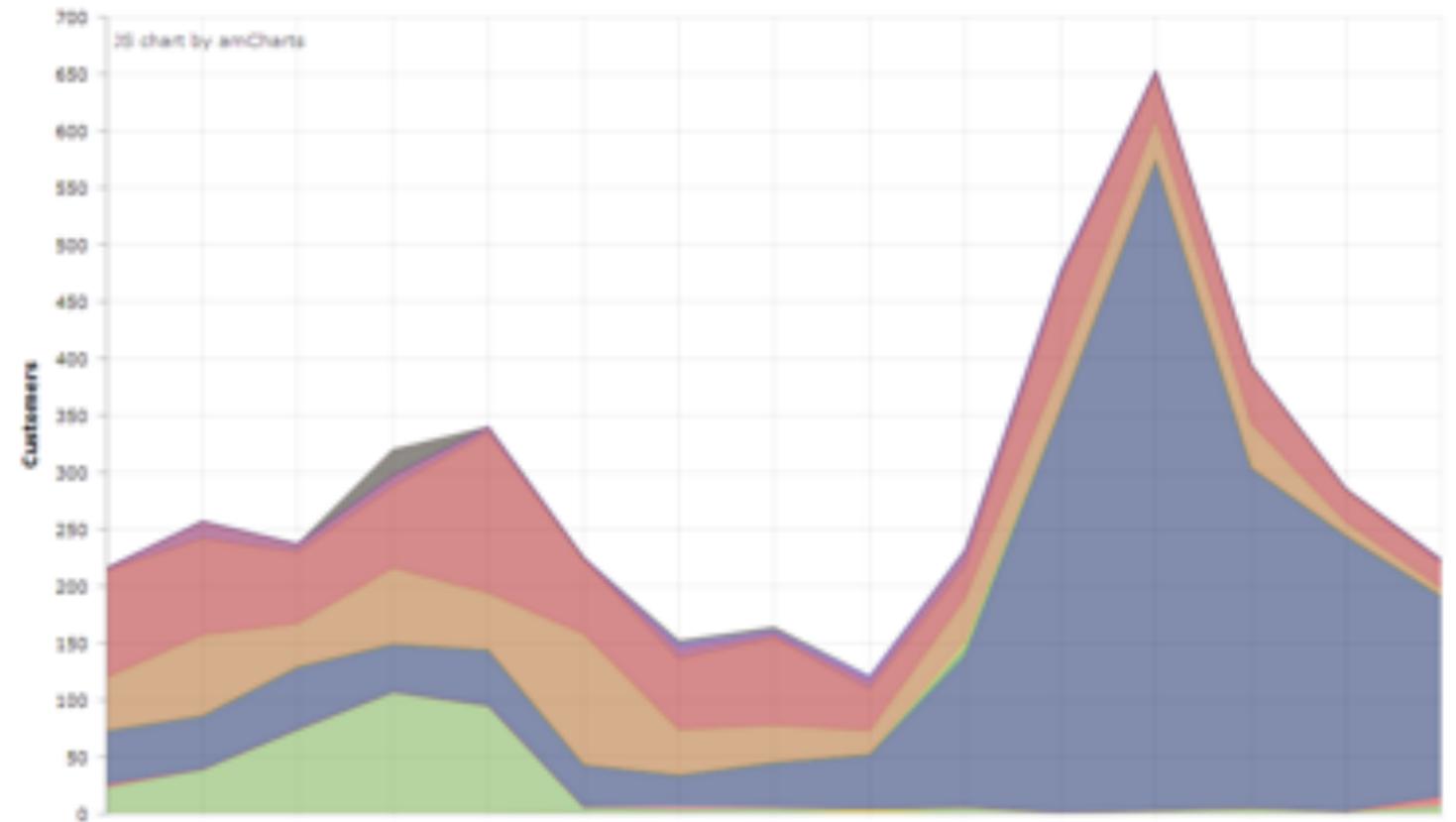
Heineken Rewards

- 🌐 Netherlands
  - 📁 Sourcy
  - 📁 Amstel
  - 📁 Heineken00
  - 📁 CrystalClear
  - 📁 DesperadosBE
  - 📁 Desperados
  - 📁 GrimbergenBE
  - 📁 AppleBandit
  - 📁 Brand
  - 📁 HeinekenHoreca
  - 📁 MaesBE
  - 📁 Affligem
  - 📁 Rivella
  - 📁 RoyalClub
  - 📁 Heineken
- 📁 Block Definitions
- 📁 Form Fields
- 📁 Field Sets
- 👤 Users

13 active campaigns

The API is online.

[Put API offline](#)





# Umbraco as modular CMS – findings

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- ASP.NET Framework
- Angular 1.1.5



# Ticking all the boxes

- No more manual checks thanks to AI!
- Easily integrated in all sites in minutes
- Power of the cloud: use resources when needed, delete when not
- GDPR compliant by design