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Karta.ba – Recommender Dokumentacija

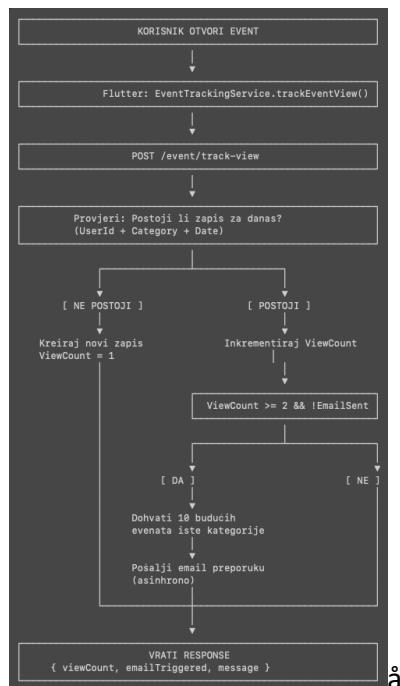
1. Opis sistema preporuke

Core Logic

Sistem analizira ponašanje korisnika prilikom pregleda događaja i koristi content-based pristup za preporuke. Umjesto složenih machine learning algoritama, sistem koristi jednostavnu rule-based logiku baziranu na kategorijama događaja.

Ključni proračuni

- Za svakog korisnika prati se broj pregleda događaja po kategoriji u jednom danu
- Kada korisnik pregleda 2 ili više događaja iste kategorije, sistem automatski šalje email sa preporukama
- Email sadrži top 10 budućih događaja iz iste kategorije



Primjena

Korisnik automatski prima personalizovane email preporuke. Organizator dobija bolju vidljivost svojih događaja.

2. Opis implementacije

Tehnologije

Backend: ASP.NET Core, EF Core, SQL Server

UI: Flutter

Email: SMTP / RabbitMQ

```
Karta.Model > Entities > C# UserDailyEventView.cs > ...
amaro67, 2 days ago | 1 author (amaro67)
1  using System;
2  namespace Karta.Model.Entities
3  {
4      0 references | amaro67, 2 days ago | 1 author (amaro67)
5      public class UserDailyEventView
6      {
7          0 references
8          public int Id { get; set; }
9          0 references
10         public string UserId { get; set; } = "";
11         0 references
12         public ApplicationUser? User { get; set; }
13         0 references
14         public string Category { get; set; } = "";
15         0 references
16         public int ViewCount { get; set; } = 0;
17         0 references
18         public DateTime Date { get; set; }
19         0 references
20         public bool EmailSentToday { get; set; } = false;
21         0 references
22         public DateTime? EmailSentAt { get; set; }
23     }
24 }
amaro67, 2 days ago * Initial commit - Karta.ba project ...
```

3. Ključni API endpointi i algoritam

Algoritam se aktivira kada korisnik pregleda 2+ događaja iste kategorije u jednom danu.

4. Sigurnost

JWT autentikacija i [Authorize] atribut.

```
[HttpGet("my-events")]
[Authorize]
[SwaggerOperation(Summary = "Dohvata sve evente koje je kreirao trenutni korisnik",
                  Description = "Vraća listu eventa koje je kreirao organizator, sortirane po datumu kreiranja (najnoviji prvi)")]
[SwaggerResponse(200, "Uspešno vraćena lista eventa", typeof(IReadOnlyList<EventDto>))]
[SwaggerResponse(401, "Korisnik nije autentifikovan")]
0 references
public async Task<ActionResult<IReadOnlyList<EventDto>> GetMyEvents()
```

5. Komunikacija

Flutter aplikacija komunicira sa backendom putem HTTP zahtjeva uz JWT token.

```
karta_UI > karta_mobile > lib > services > event_tracking_service.dart
You, now | 2 authors (amaro67 and one other)
1 import 'dart:convert';
2 import 'package:karta_shared/karta_shared.dart';
3 class EventTrackingService {
4     static Future<Map<String, dynamic>?> trackEventView(String eventId, {String? token}) async {
5         try {
6             print('Tracking event view: $eventId');
7             final data = await ApiClient.post(
8                 '/event/track-view',
9                 {'eventId': eventId},
10                token: token,
11            );
12            print('Event view tracked: $data');
13            if (data['emailTriggered'] == true) {
14                print('Email triggered! User will receive recommendations.');
15            }
16            return data;
17        } catch (e) {
18            print('Error tracking event view: $e');
19            return null;
20        }
21    }
22 }
amaro67, 2 days ago • Initial commit - Karta.ba project ...
```

6. Email preporuke

```
var categoryEvents = await _context.Events
    .Include(e => e.PriceTiers)
    .Where(e =>
        e.Category == eventItem.Category &&
        e.Status == "Published" &&
        e.StartsAt > DateTimeOffset.UtcNow)
    .OrderBy(e => e.StartsAt)
    .Take(10)
    .ToListAsync();
if (categoryEvents.Any())
{
    dailyView.EmailSentToday = true;
    dailyView.EmailSentAt = DateTime.UtcNow;
    await _context.SaveChangesAsync();
    var userEmail = user.Email;
    var userName = user.FirstName ?? userEmail.Split('@')[0];
    var category = eventItem.Category;
    _ = Task.Run(async () =>
    {
        try
        {
            var emailBody = GenerateCategoryRecommendationEmailBody(userName, category, categoryEvents);
            await _emailService.SendEmailDirectAsync(
                userEmail,
                $"{category} Events You'll Love!",
                emailBody
            );
            amaro67, 2 days ago • Initial commit - Karta.ba project
            _logger.LogInformation($"Email sent directly to {userEmail} - Category: {category}, Events: {categoryEvents.Count}");
        }
        catch (Exception ex)
        {
            _logger.LogError(ex, $"Error sending category recommendation email for user {userId}");
        }
    });
}
```

8. UI orkestracija (mobile)

```
  @override
  void didChangeDependencies() {
    super.didChangeDependencies();
    if (!_hasRecordedView) {
      final event = ModalRoute.of(context)!.settings.arguments as EventDto;
      print('EventDetailScreen: Recording view for event: ${event.id} - ${event.title}');
      ViewedEventsService.addViewedEvent(event.id);
      final authProvider = Provider.of<AuthProvider>(context, listen: false);
      if (authProvider.isAuthenticated && authProvider.accessToken != null) {
        EventTrackingService.trackEventView(
          event.id,
          token: authProvider.accessToken,
        );
      } else {
        print('User not authenticated - skipping backend tracking');
      }
      _hasRecordedView = true;
      print('EventDetailScreen: View recorded successfully');
    }
  }
```

9. Vizuelne preporuke

The image shows an email preview with a green header bar containing the text "We Found Events You'll Love!" and a small red icon. The main content is on a dark background. It starts with a greeting "Hej Amar," followed by a message "Primjetili smo da te zanima Muzika! 🎵" and a statement "Evo svih dostupnih Muzika evenata:". Below this, there are two event cards. The first card is for "Rock Koncert 2024" on 07.01.2026 at 14:54 in Dvorana 1, Sarajevo, starting from 20.00 KM. The second card is for "Kulinarski Festival" on 04.03.2026 at 14:54 in Dvorana 9, Sarajevo, starting from 20.00 KM. Each card has a "View Event" button. At the bottom, a note says "You're receiving this because you viewed multiple Muzika events today. This is a one-time daily recommendation per category." and a link "Visit karta.ba".

We Found Events You'll Love!

Hej Amar,

Primjetili smo da te zanima Muzika! 🎵

Evo svih dostupnih Muzika evenata:

Rock Koncert 2024

17 07.01.2026 14:54 | Dvorana 1, Sarajevo

From 20.00 KM

[View Event](#)

Kulinarski Festival

17 04.03.2026 14:54 | Dvorana 9, Sarajevo

From 20.00 KM

[View Event](#)

You're receiving this because you viewed multiple Muzika events today.
This is a one-time daily recommendation per category.

[Visit karta.ba](#)

10. Struktura fajlova

Komponenta	Putanja
Database Model	Karta.Model/Entities/UserDailyEventView.cs
DB Context Config	Karta.Model/ApplicationDbContext.cs
API Endpoint	Karta.WebAPI/Controllers/EventController.cs
Email Service	Karta.Service/Services/EmailService.cs
Email DTO	Karta.Service/DTO/EmailMessage.cs

Komponenta	Putanja
Daily Reset Service	Karta.WebAPI/Services/DailyResetService.cs
Flutter Tracking	karta_mobile/lib/services/event_tracking_service.dart
Flutter Screen	karta_mobile/lib/screens/user/event_detail_screen.dart
Migration	Karta.WebAPI/Migrations/20251208175317_AddUserDailyEventView.cs

11. Ključne metrike

Metrika	Vrijednost
Vremenski prozor	24 sata (UTC dan)
Trigger prag	2+ pregleda iste kategorije
Max preporuka po emailu	10 događaja
Email frekvencija	Max 1 po kategoriji po danu
Čišćenje starih zapisa	Automatski u ponoć UTC

12. Primjer scenarija

Scenario 1: Korisnik zainteresovan za muziku

1. **10:00** - Korisnik otvori koncert "Rock Festival" (kategorija: Music)
 - o ViewCount = 1, emailTriggered = false
2. **14:00** - Korisnik otvori "Jazz Night" (kategorija: Music)
 - o ViewCount = 2, emailTriggered = true
 - o Sistem šalje email sa 10 budućih Music događaja
3. **18:00** - Korisnik otvori "Classical Concert" (kategorija: Music)
 - o ViewCount = 3, emailTriggered = false
 - o Poruka: "Email already sent today"

Scenario 2: Više kategorija

1. Korisnik pregleda 2 Music događaja → dobije Music preporuke
2. Isti dan pregleda 2 Sports događaja → dobije Sports preporuke
3. Svaka kategorija ima nezavisan brojač i email limit

Sistem predstavlja jednostavan i efikasan content-based recommender koji automatski šalje personalizovane email preporuke.