Developing the Open Days mobile app

ITLT - December 13, 2019
Alex Iribarren, Harris Tzovanakis
Goals

- Help visitors make the most of their visit
  - What to see & do
  - How to move around
  - How to get here
- Offline first, but allow updates when online
  - Waiting times, point status
  - Organizer messages, emergency notifications
- Cross-platform & bilingual
**Events Agenda**

**Saturday**

09:15
Meet our scientists
45 minutes · International village, a meeting place
Discussions

09:30
The singing tesla coil show
10 minutes · Power converters lab
Concerts

10:00
Theatre: “The adventure of building the LHC”
30 minutes · Préveissin auditorium
Performances

Future Questions, a talk by CERN’s Director-General
30 minutes · Cultural programme in the Main Auditorium
Presentations

Clownitics by Big Van Ciencia (Kids)
30 minutes · International village, a meeting place
Performances

10:15
The singing tesla coil show
10 minutes · Power converters lab
Concerts

**Sunday**

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**CMS experiment**

P5.30 · Point 5 · CMS · Detectors

<table>
<thead>
<tr>
<th>Activity duration</th>
<th>Wait time</th>
<th>Distance</th>
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<tbody>
<tr>
<td>30 mins</td>
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<td>8.9 km</td>
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Age: 12+

Activity type: Visit LHC

Access restrictions

Descend 100 metres underground and take a walk in the cathedral-sized cavern that houses the 14 000-tonne CMS detector - one of the two experiments that discovered the Higgs boson! The detector is located in the 27-km subterranean tunnel that contains the LHC - the world’s largest scientific instrument!
App Stats

- Total number of users: **26,000** (1 out of 3 visitors)
- Total number of favourites: **50,000**
- Total app interactions: **6,300,000**
- Total data updates (waiting times & messages): **5,300**
- Ratings: **4.8/5** (Android, 42 ratings), **4.4/5** (iOS, 21 ratings)
Basic Building Blocks

• React Native
  – Cross-platform framework for developing mobile apps with React (JavaScript)

• Mapbox
  – Mapping library with RN bindings

• PouchDB
  – Data storage and synchronization
Server Architecture

OD Flow
- ORACLE (Internal)

FastAPI
- CouchDB

CouchDB Cluster

Google Firebase
- Notifications

CodePush

CERN Open Days 2019 | 14-15 September

ITLT - Developing the Open Days mobile app
(Some) Lessons Learnt

- No plan survives first contact with the enemy
  - Really difficult to create realistic load
  - CouchDB Cluster created more problems than it solved
  - OpenShift/Kubernetes created an additional level of uncertainty

- Optimizing React Native performance is really hard

- There may be a RN component, but it may not be a good one
  - Mapbox component old and buggy, had to fork many others
Repos

- OpenShift templates: [https://gitlab.cern.ch/opendays/openshift-appds](https://gitlab.cern.ch/opendays/openshift-appds)
- API Server: [https://gitlab.cern.ch/opendays/openshift-appds/tree/master/ingestion](https://gitlab.cern.ch/opendays/openshift-appds/tree/master/ingestion)
- Web page scrape: [https://github.com/alexiri/about_pages](https://github.com/alexiri/about_pages)
- Various forked components:
  - [https://github.com/alexiri/react-native-mapbox-gl](https://github.com/alexiri/react-native-mapbox-gl)
  - [https://github.com/alexiri/react-native-image-viewer](https://github.com/alexiri/react-native-image-viewer)
  - [https://github.com/alexiri/react-native-immutable-list-view](https://github.com/alexiri/react-native-immutable-list-view)
  - [https://github.com/alexiri/react-native-modal-dropdown](https://github.com/alexiri/react-native-modal-dropdown)
Explore the future with us
Explorez le futur avec nous
New users acquisition

- First social media push for the app: 6th
- Email to all ticket holders: 11th, 12th
Unique active users over time
Users by Country
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<th>Day</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
<th>Day 8</th>
<th>Day 9</th>
<th>Day 10</th>
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People did their homework before the visit
OpenShift Metrics

CPU

RAM