The Empathy Index
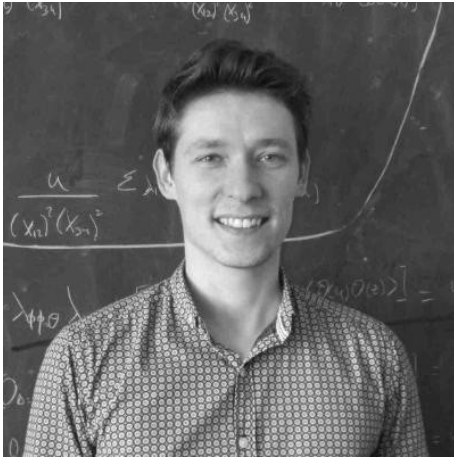## (formerly known as The Happiness Index)

Jose Maria Veganzones
Niti M K.C.
Peter Labus
Nasr Kasrin

The Team

Physicist, high performance computing guru

Musician, doesn't like the slide

Peter

multi-disciplinary quantitative social scientist

likes the slide but afraid
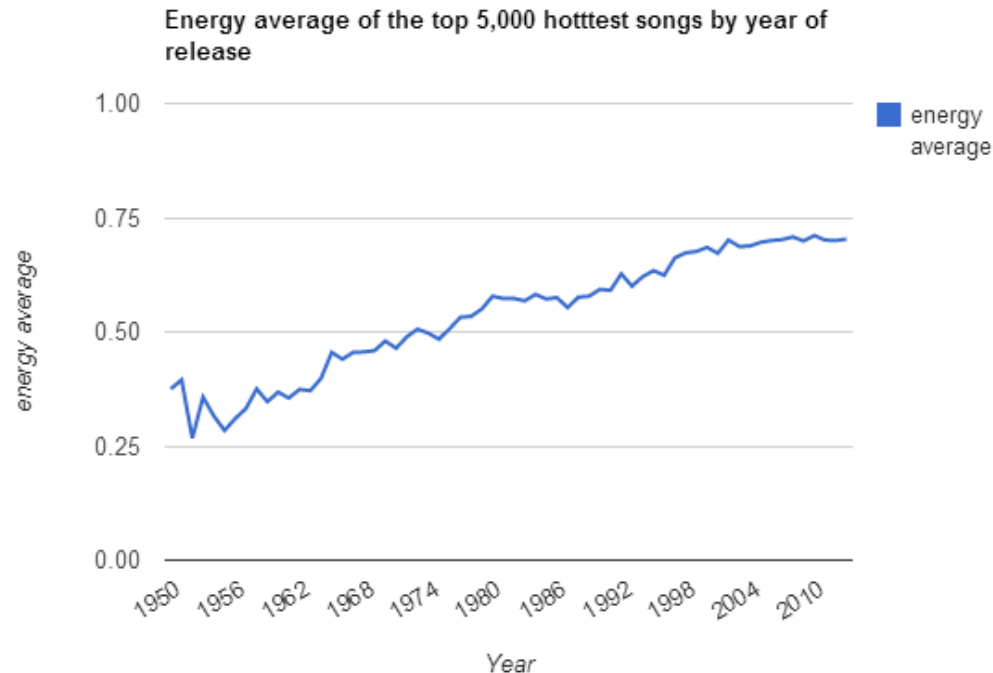
Niti

Medical Doctor / wizard

probably a spy

Jose Maria

Atypical computer scientist / Loud guy / likes the slide

Nasr

Our Initial Idea

- Patterns of music releases during post-war era

Energy average of the top 5,000 hotttest songs by year of release
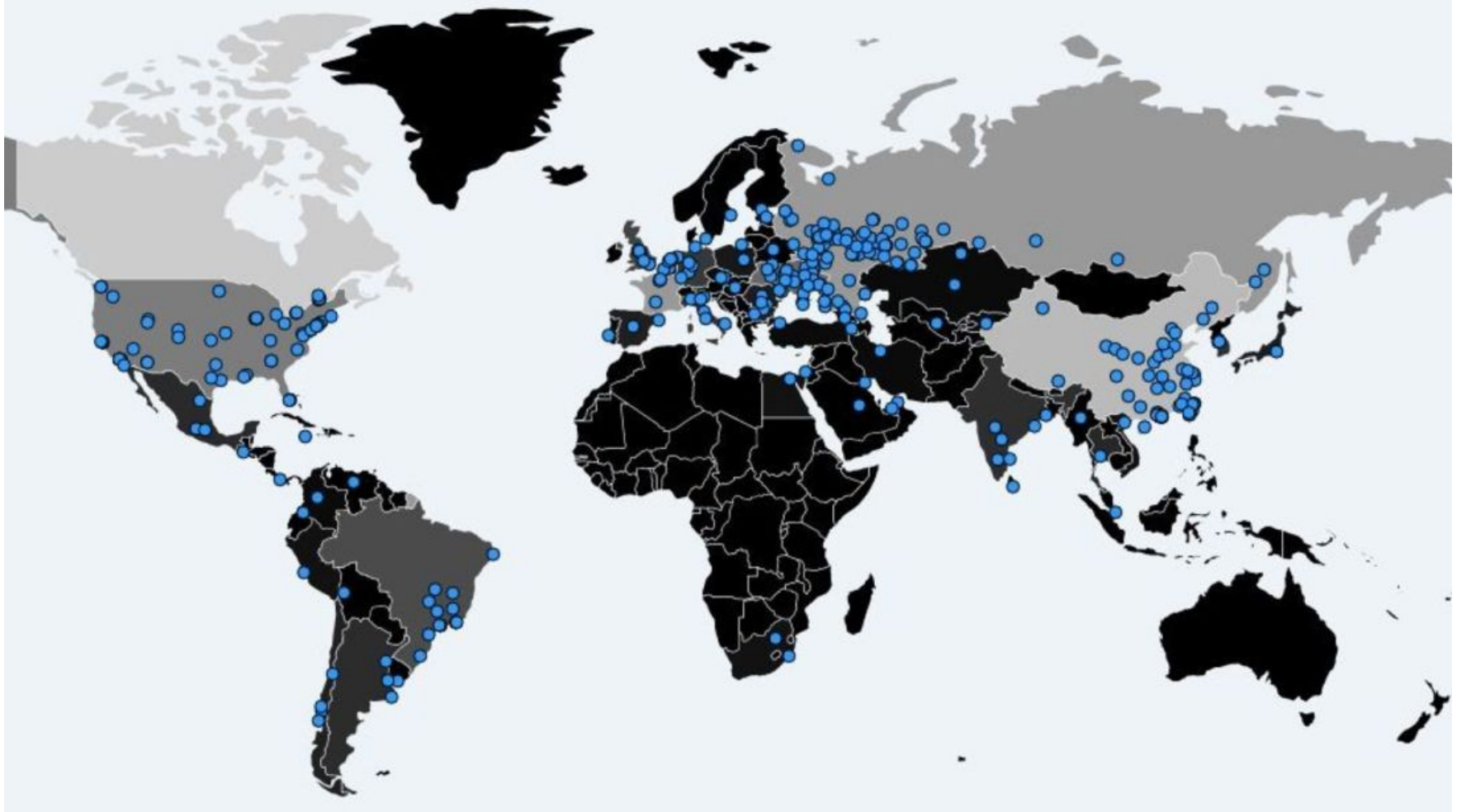

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- *Million Song dataset, Music Brainz dataset*
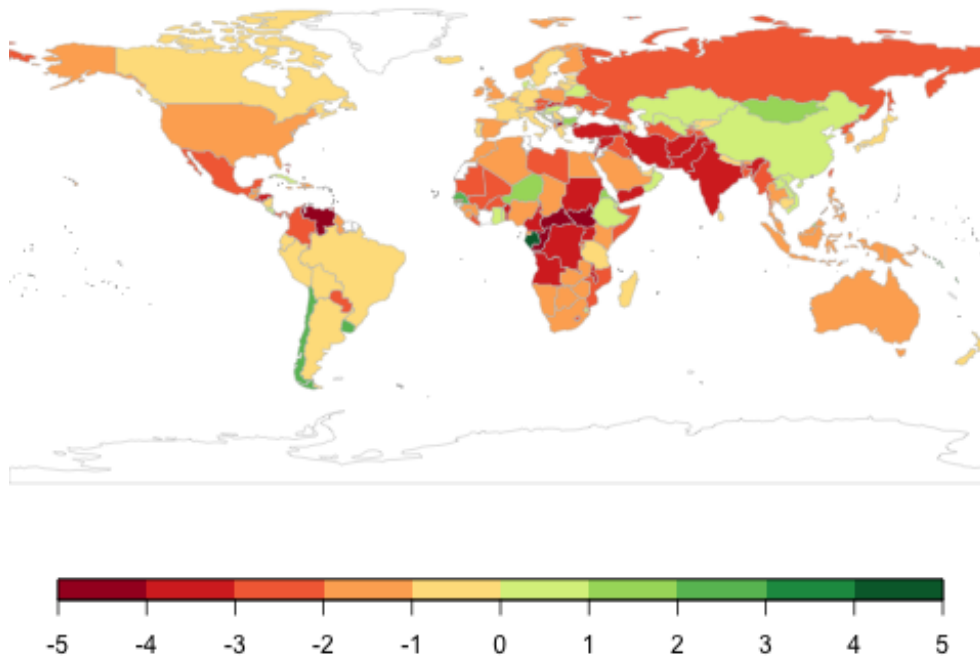
Feeling with the World

- How happy (or not) are different geographical locations of the world right now?

- How major events spread over time and space?

- Different levels of graininess
  - Spatial: Country, continent, planet
  - Temporal: day, week, month

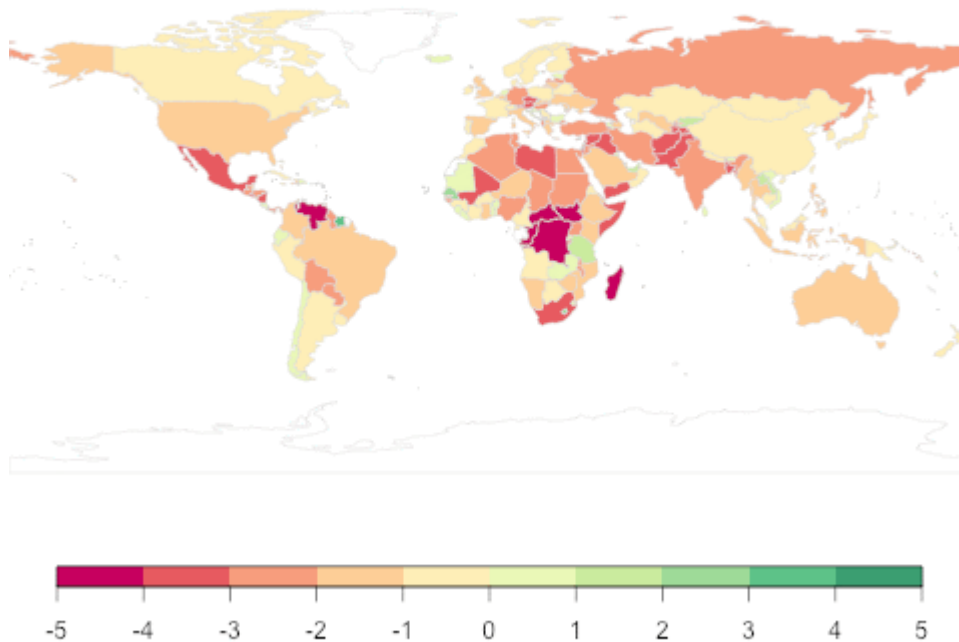# Use-case: WannaCry ransomware attack

12 – 15 May. 2017
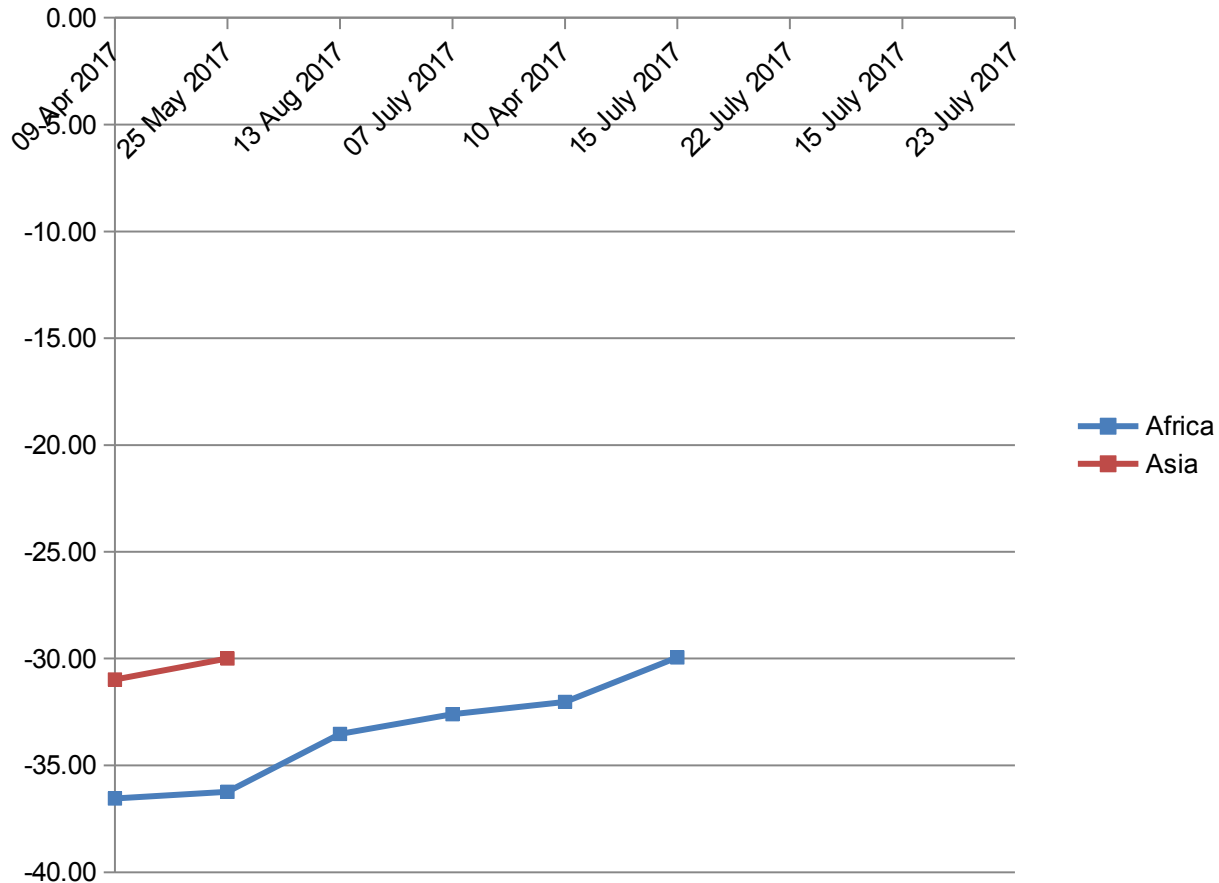
Day of attack

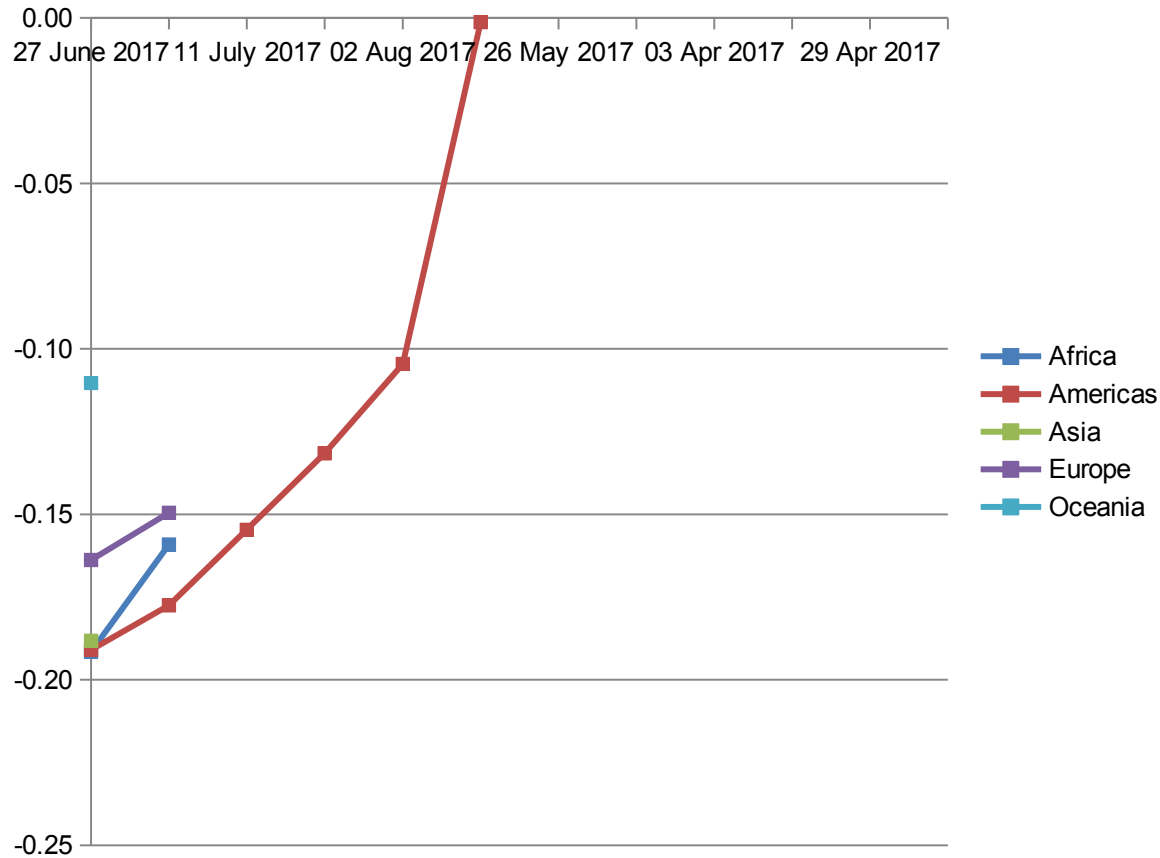# Days around attack

May 10

Most Empathy by Continent in 2017

Best Index by Continent in 2017

The Empathy Function

- 1st attempt: logic in **window** function
  - Pros: was easier to implement
  - Cons: memory heavy

- 2nd attempt: logic in the **fold** function for better performance
  - Pros: was harder to conceive
  - Cons: better performance

Spatial Graininess

- Achieved simply by a helper function that is called from within the **getKey**
  - On a country level we key by country code
  - On a continental level the helper *maps the* country code to the continent code
  - On a world level we map everything all keys to **earth**

```java
public String getKey(GDELTEvent gdeltEvent) throws Exception {
    return graininessHelper(gdeltEvent.actor1Code_countryCode, graininessCode);
}
```

Temporal Graininess

```
.window(TumblingEventTimeWindows.of(Time.days(1)))

.window(TumblingEventTimeWindows.of(Time.days(7)))

.window(TumblingEventTimeWindows.of(Time.days(30)))
```

Future Work

- Integrating social media feeds

- More levels of graininess
  - by continent, by country, by city
  - By day, week, month

- Filter by type of events