## **Problem Solving with Data**

@iniandra

### Short intro

2010 - 2014 **Mobile Apps Startups** 

2014 - 2015 **NGOs and Public Sector** 

2015 - 2017

University of Melbourne & IBM Research

2017.. now

Data Engineering @ Bukalapak

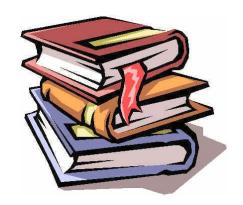


### Let's talk about problem solving

### Government



**Academia** 



### **Industry**



### Case 1: Government

### 2014, Komitmen Indonesia untuk Open Data

🛗 March 27, 2014 | 🚨 admin



Tahun 2014 merupakan tahun Open Data. Demikian diungkapkan Mardianto Jatna, Asisten Kepala Unit Kerja Presiden Bidang Pengawasan dan Pengendalian Pembangunan (UKP4) saat menjadi pembicara kunci (keynote speech) dengan membawakan presentasi bertajuk "Menuju Open Data Indonesia" dalam acara "Open Data untuk Pembangunan: Lokakarya Pembangunan Kompetensi dan Sosialisasi" di Kampus Anggrek, Binus University Jakarta, Sabtu (1/3).

# Extractive Industries Transparency Initiative







eiti.org

The Extractive Industries Transparency Initiative is a global standard for the good governance of oil, gas and mineral resources. It seeks to address the key governance issues in the extractive sectors. Wikipedia

# Problem: Inform citizens of how much money generated from extractives in a province

# Question: how much money generated from extractives in a province?

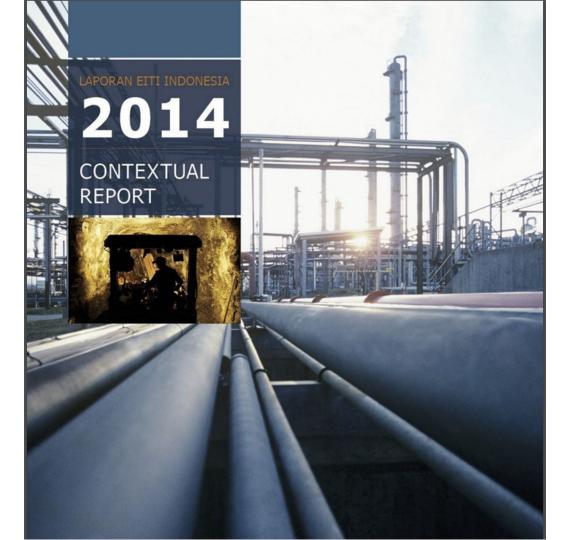


Table III-1 Brief report of oil and gas in aggregat and the unreconciled differences

Reported by

Reported by

Unreconciled

| Revenue Stream  | BPMIGAS, after<br>adjustment, in<br>IDR ('000)                                   | DGB, after<br>adjustment, in<br>IDR ('000)                           | Total<br>Adjutsments | differences, in<br>IDR ('000)                 |
|---|--|--|----------------------|---|
| Government liftings of<br>oil and gas, and DMO<br>oil | 159.290.944.800  | 159.290.903.200  | 3                    | 41.600  |
| Over/(under)lifting                                   | 8.287.583.200  | 8.287.583.200  | 8                    | -   |
| DMO fee (*)   | (7.250.890.400)  | (7.250.869.600)  |                      | (20.800)                                      |
| Sub Total   | 160.327.637.600  | 160.327.616.800  | 11                   | 20.800  |
| Revenue Stream  | Reported by PSC<br>Reporting<br>Partners, after<br>adjustment, in<br>IDR ('000)  | Reported by<br>DGB, after<br>adjustment, in<br>IDR ('000)            | Total<br>Adjutsments | Unreconciled<br>differences, in<br>IDR ('000) |
| Corporate and Dividend<br>/ Branch Profit Tax         | 46.622.534.400   | 47.625.375.200   | 25                   | (1.002.840.800)                               |
| Over/(under)lifting (**)                              | 7.975.614.400  | 8.287.583.200  | 18                   | (311.968.800)                                 |
| Production Bonus                                      | 200.200.000  | 200.200.000  | 4                    | -   |
| Signature Bonus                                       |  |  | -                    |   |
| Sub Total   | 54.798.348.800   | 56.113.158.400   | 47                   | (1.314.809.600)                               |
| Total (***)   | 215.125.986.400  | 216.440.775.200  | 58                   | (1.314.788.800)                               |
|   |  |  |                      |   |
| Revenue Stream  | Reported by PSC<br>Reporting<br>Partners, after<br>adjustment, in<br>Volume(***) | Reported by DG<br>Oil & Gas, after<br>adjustment, in<br>Volume (***) | Total<br>Adjutsments | Unreconciled<br>differences, in<br>IDR ('000) |
| Government liftings of oil - BBLS                     | 179.240.272  | 179.242.266  | 8                    | (1.994)                                       |
| DMO oil - BBLS  | 25.004.903   | 24.760.691   | 2                    | 244.212                                       |
| Government liftings of<br>gas - MSCF                  | 588.873.273  | 588.700.978  | 11                   | 172.295                                       |

(\*)The DMO fees are shown as negative, as DMO fees represent payments from the Government to the PSC participants.

Gas based on cash basis.

(\*\*)In order to avoid double counting, the Grand Total excludes the contractors' overliftings/(underliftings) - net, since contractors' overliftings/(underliftings) are

included in the comparison between BPMIGAS vs DGB. (\*\*\*) Volume data from PSC contractors based on accrual basis, while DG of Oil and

## Question answered!

## Question answered!

But not the problem

Problem: Inform citizens of how much money generated from extractives in a province

# Transforming information into something that all public understands



### Case 2 : Academia

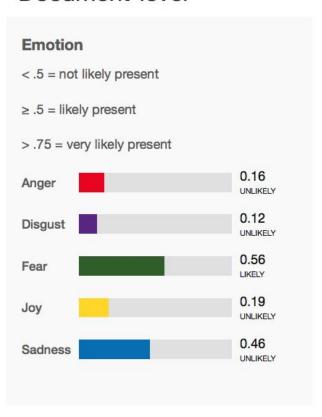


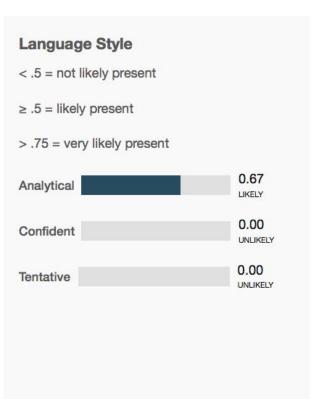
| HANSARD 1803–2005 $\rightarrow$ 1990s $\rightarrow$ 1993 $\rightarrow$ October 1993<br>$\rightarrow$ 19 October 1993 $\rightarrow$ Commons Sitting $\rightarrow$ EMPLOYMENT   |  |  |  |
|---|--|--|--|
| Unemployment, West Yorkshire  |  |  |  |
| HC Deb 19 October 1993 vol 230 cc134-5  |  |  |  |
| 6. Mr. Hinchliffe To ask the Secretary of State for Employment when he last met representatives of local authorities in West Yorkshire to discuss unemployment.   |  |  |  |
| Mr. Michael Forsyth My right hon. Friend the Secretary of State has not had a request to meet representatives of the local authorities in West Yorkshire.   |  |  |  |
| Mr. Hinchliffe Is the Minister aware of the great anger within West Yorkshire among local authorities and the public in general at the way in which the House was conned by the Government over the coal closure programme? Even before the present closure programme the Wakefield district had lost 20,000 mining-related jobs. Bearing in mind that the coalfield areas fund is based— |  |  |  |
| Madam Speaker Order. I must have a question from the hon. Gentleman. §  |  |  |  |
| Mr. Hinchliffe Bearing in mind that the coalfield areas fund was based on the assumption that 12 pits would be saved, which clearly will not happen, what steps will the Minister and the Government take to generate employment in areas such as Wakefield which have been devastated as a direct result of the Government's policies?   |  |  |  |
| Mr. Forsyth I am very sorry that the hon. Gentleman did not find time in his question §   |  |  |  |

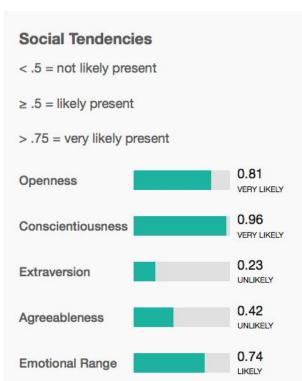
# Problem: make people able to explore a politician's view on a topic

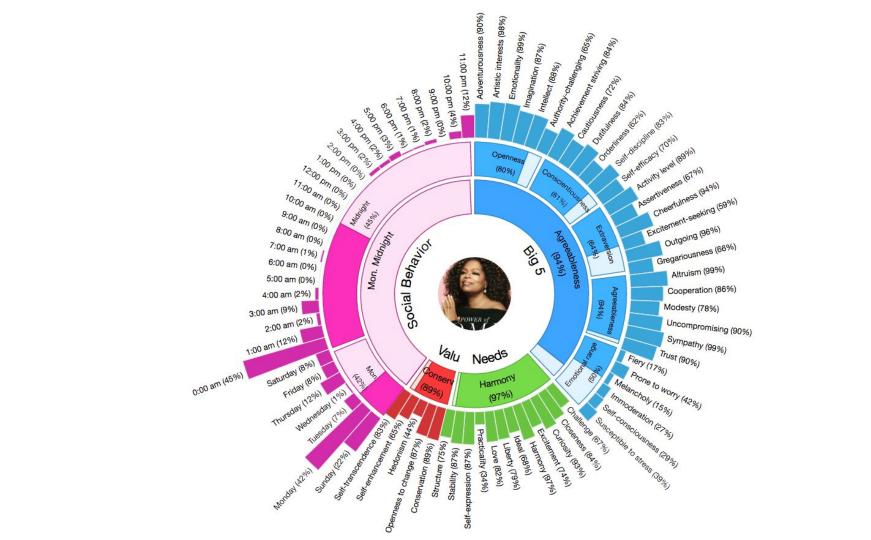
# Question: what is the prime minister sentiment on the economics issue?

### Document-level









## Question answered!

## Question answered!

But not the problem

# Problem: make people able to explore a politician's view on a topic

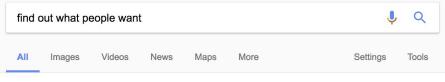
# Make a lot of information accessible in an interactive manner

### Case 3 : Industry

"Some people say, "Give the customers what they want." But that's not my approach. Our job is to figure out what they're going to want before they do. I think Henry Ford once said, "If I'd asked customers what they wanted, they would have told me, 'A faster horse!" People don't know what they want until you show it to them. That's why I never rely on market research. Our task is to read things that are not yet on the page."

# Problem: enable people to find the product they want in the site quickly

# Question: what is the thing that people want?



About 537,000,000 results (0.56 seconds)

### How to Figure Out What People Want - Scott H Young

https://www.scotthyoung.com/blog/2008/10/09/how-to-figure-out-what-people-want/ ▼ Oct 9, 2008 - The thinking process of most innovators is something like this: Get an idea for what you want to make. Create it. Find someone who wants it.

### How to Figure Out What People Want To Buy From You - Social Triggers

https://socialtriggers.com/what-people-buy/ ▼
How to Figure Out What People Want To Buy From You. One of the easiest ways to make money from a blog is to sell stuff. However, you've got to sell the RIGHT ...

### How can someone figure out what other people want? | Human ...

https://www.quora.com/How-can-someone-figure-out-what-other-people-want

Dale Carnegie has a suggestion for anyone who wants to influence anyone: connect with the core
desires of the other person. ... How do I find out what people want? ... How do I use psychological
principles to figure out the unmet needs of other people?

### Google reveals the top things people want to find out 'How to' do ...

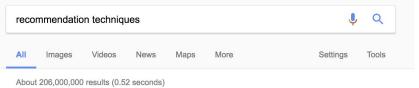
https://techcrunch.com/.../google-reveals-the-top-things-people-want-to-find-out-how... ▼
Sep 1, 2017 - Google has a new website compiled using search data and built by its News Lab, working together with Xaquin G.V., an interactive visual data ...

### 9 Ways To Find Out What Your Prospects Want to Buy - Kim Garst

https://kimgarst.com/9-ways-to-find-out-what-your-prospects-want-to-buy ▼
Here are 9 ways you can find out what your prospects REALLY want to buy! .... I like your suggestion about seeing what search terms bring people to my site.

### 5 Sneaky Ways to Find Out What Customers Really Want

https://menwithpens.ca/what-customers-really-want/ ▼
Find out what your customers really want (so you can develop and sell it to ... Show the same niche of people that your idea is sooooooo much better than the ...



The model building process can be done using machine learning or data mining techniques. These techniques can quickly recommend a set of items for the fact that they use pre-computed model and they have proved to produce recommendation results that are similar to neighborhood-based recommender techniques.

Recommendation systems: Principles, methods and evaluation ... www.sciencedirect.com/science/article/pii/S1110866515000341

About this result
Feedback

#### Recommendation techniques - SlideShare https://www.slideshare.net/sun9413/recommendation-techniques •

Nov 21, 2010 - Recommender techniques are information agents that attempt to predict which items out of a large pool a user may be interested in and recommend the best ones to the target user. 6.

Techniques category. The techniques can be classified based on the information sources they use .

Recommendation systems: Principles, methods and evaluation ... www.sciencedirect.com/science/article/pii/S1110866515000341 ▼

The model building process can be done using machine learning or data mining techniques. These techniques can quickly recommend a set of items for the fact that they use pre-computed model and they have proved to produce recommendation results that are similar to neighborhood-based recommender techniques.

#### 10 Product Recommendation Techniques to Improve UX and ...

https://conversionxl.com/blog/product-recommendations/ > Aug 11, 2017 - Product recommendation techniques are gaining popularity, but do you really understand your options and how best to use them? Here's all ...

### Review of personalized recommendation techniques for learners in e ... ieeexplore.ieee.org/document/5995802/

by S Shishehchi - 2011 - Cited by 26 - Related articles

This paper discusses about the personalized recommendation systems in e-learning and compares their recommendation techniques. Two concepts are the

## Question answered!

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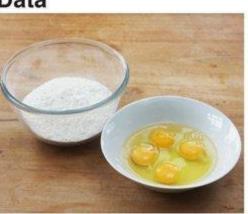
Problem: enable people to find the product they want in the site quickly

# Give information in a quick, timely manner



## Trained by billions of data point Gives you fresh recommendations

## Data



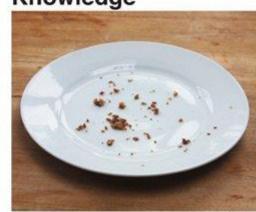
### Information



Presentation



Knowledge



EpicGraphic.com

## TL;DR

See data as a part of something bigger:)

### Also...

Data is a team sport

## Btw, we're hiring!:)

Data scientist, Data Engineers, Al Engineers, and more

Check: https://careers.bukalapak.com