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Open source solutions for big data challenges

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2020-Mar-22, Education Architect, Elastic

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In the modern world of business, data management has become a critical challenge to overcome - in the “red sea”, companies that invested in data management could dramatically reverse their fate from Zero to Hero

Agenda

1. Differences between data collection and data management
2. What could you do with the data on hand?
3. Cost of data management
4. The process
5. Story telling on the data
6. FAQ

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who’s talking???

```
{
        “name”     : “Jason Wong”,
        “company” : {
                “name”     : “Elastic (SG)”,
                “position” : “Education Architect”,
                “roles”    : [ “run trainings”,
                               “curriculum development”,
                               “prototyping”,
                               “run meetups” ]
        },
        “toolbox” :[ “java”, “react.js”, “vue.js”,
                     “angular.js”, “node”, “golang” ]
}
```

resources

- Github
  - coronavirus demo: https://github.com/quoeamaster/bigdata_blogs/tree/master/coronavirus_COVID_19_usecase
- blog for the demo: https://medium.com/@quoeamaster/use-case-coronovirus-covid-19-investigation-and-visualisation-with-elasticsearch-598df7849e82
- social media
  - https://www.linkedin.com/in/jason-wong-391a7624/
  - https://github.com/quoeamaster
  - https://medium.com/@quoeamaster
  - https://bigdata887.wordpress.com/
  - https://twitter.com/QueMaster3

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1.

where are we now ?
data collection OR
data management ?

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definition

- ## data collection

  the collection of data from vast sources with limited or no processing

- ## data management

  consists of several steps / process including the collection of data, processing of data and data liberation

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brain teasers - data collection or data management?

- collecting logs from different internal systems and treat them as audit logs

- generating trend analysis on granted loans to SME in Singapore

- discovering the relationships between savings and occupation

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data management

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2.

what could we do with the data ?

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here are some of them…

- perform analytics
- apply AI analysis (e.g. machine learning on buying behaviour)
- story telling (visualise the data, make them live)
- guide management on decision making (e.g. trend analysis, discovering behaviour and stickiness by regression analysis)

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3.

cost of data management

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open source vs commercial products

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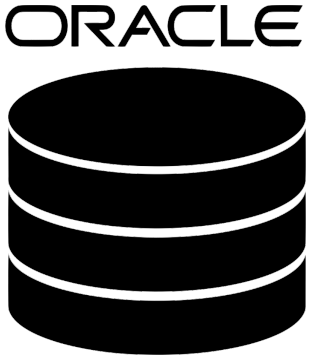
open source vs commercial products



myths

- open source is crap
- support is limited on open source products
- a team of 100 vs a collaborations of talents
- the open source company behind is not stable (before and after IPO…)

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costs on the team

- need to setup a team of talents to:
  - integrate various sources of data input (e.g. from databases, web api, csv files etc)
  - process / cleansing of data (e.g. from non-structured data to structured data)
  - apply analytics (e.g. manual or machine-learning)
  - generate visualisation on story telling
  - housekeeping of old data

PS. a good tool stack would help on reducing the above costs

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4.

the process

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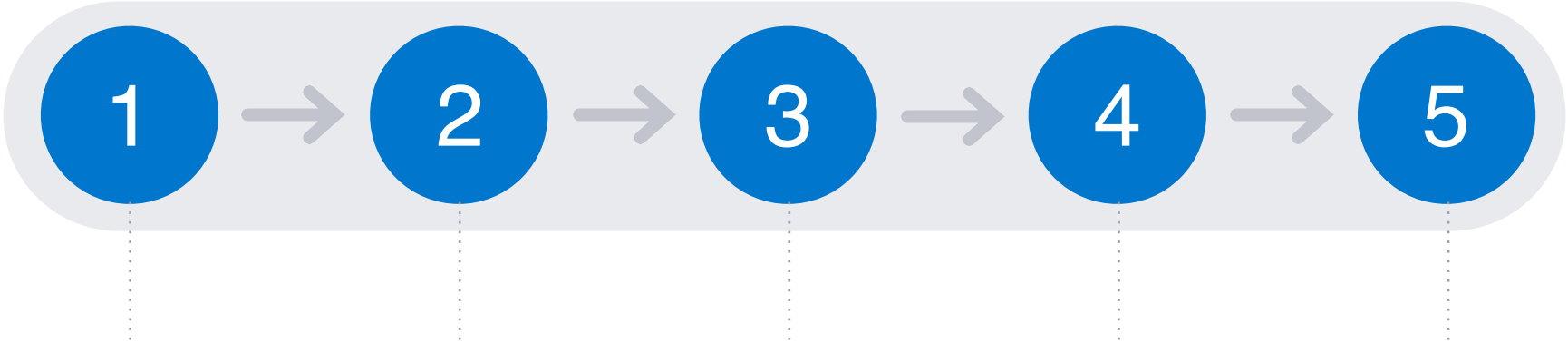
process pipeline



1. integration with data source and collect
2. processing / cleansing of data
3. perform further analysis (e.g. manual or machine learning)
4. generate visualisations and reports
5. housekeeping (e.g. archive old data)

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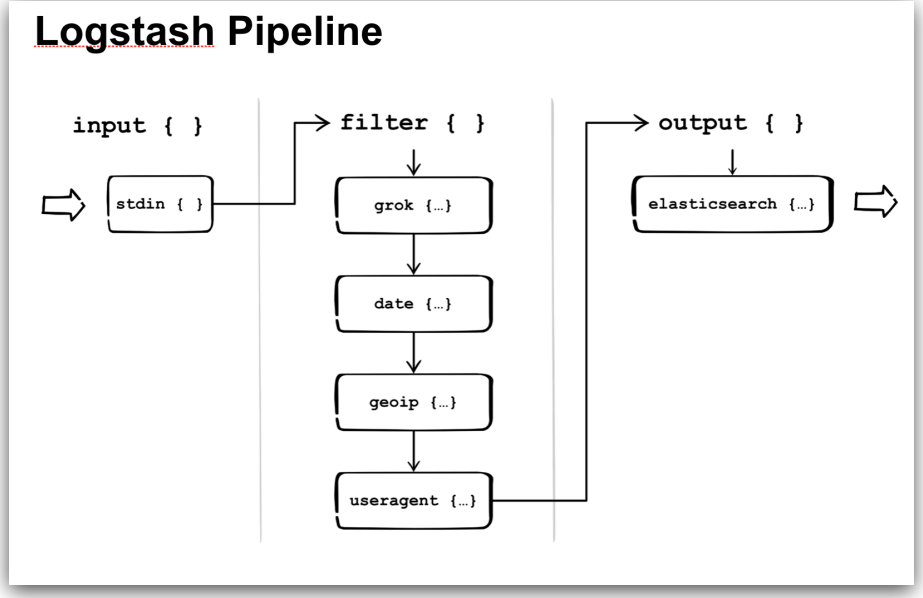
process 1: integration and collection of data from vast sources

a tool that can be configured to talk with different data sources and extract values out.

For example: logstash



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process 2: preparing and cleansing data

multiple approaches:

- coding level
- tools like logstash
- server side pipelines (e.g. elasticsearch ingest nodes)

```
PUT _ingest/pipeline/access_log
{
  "description" : "Ingest pipeline for Combined Log Format",
  "processors" : [
    {
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        "field": "message",
        "patterns": ["%{IPORHOST:clientip} %{USER:ident} %{USER:auth} \\[%
{HTTPDATE:timestamp}\\] \"%{WORD:verb} %{DATA:request} HTTP/%{NUMBER:httpversion}\" %
{NUMBER:response:int} (?:-|%{NUMBER:bytes:int}) %{QS:referrer} %{QS:agent}"]
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      }
    },
    {
      "user_agent": {
        "field": "agent"
      }
    }
  ]
}
```


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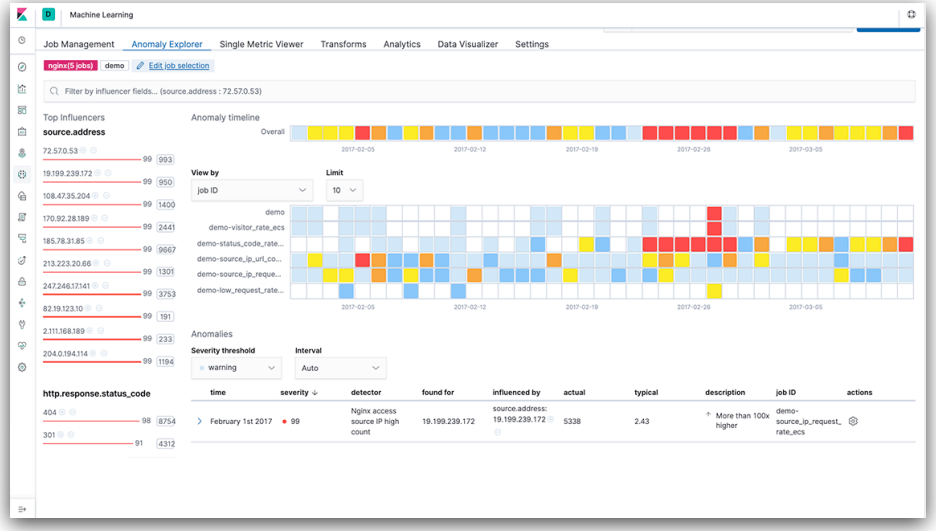
process 3: further processing

manual approach:

- analytic tools required

machine learning approach:

- talents might be required to config a model and pick the right algorithm to start “learning” (e.g. machine learning module in elasticsearch)



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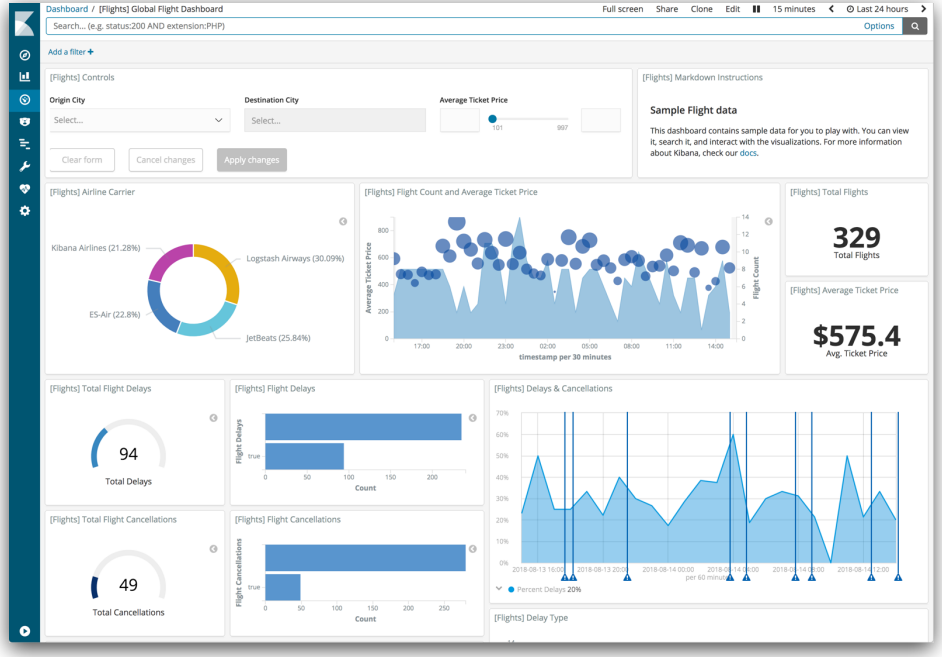
process 4: data liberation through visualisations

a Business Intelligence tool is required

open source tools are free but usually have limitations

commercial tools usually have more support on visualisation types and able to integrate with different data sources



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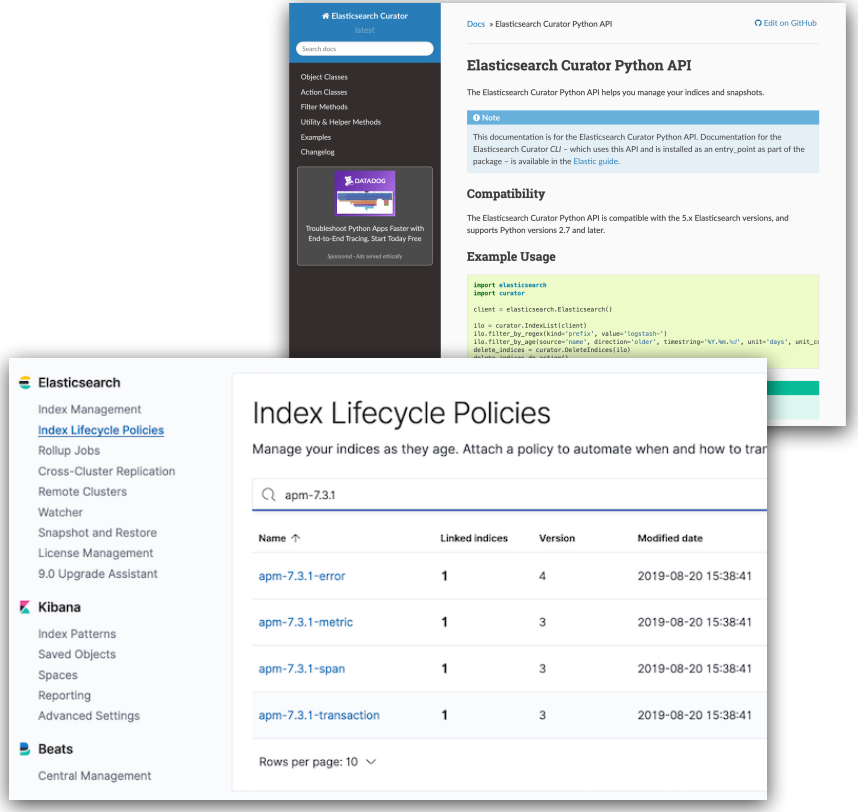
process 5: housekeep

tools are required to perform housekeep operations:

- archive old data
- re-allocate resources on active data but still have limited support to access archived data
- compacting read-only data to reduce resources consumption
- backup and restore capability of data



5.

story telling

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why is story telling important?

- finding the values hidden in the data
- data collected from customers revealed their behaviour truth (no way to lie) and hence a more accurate way to predict sales OR to tailor make campaigns that sells
- a less boring way to present static data

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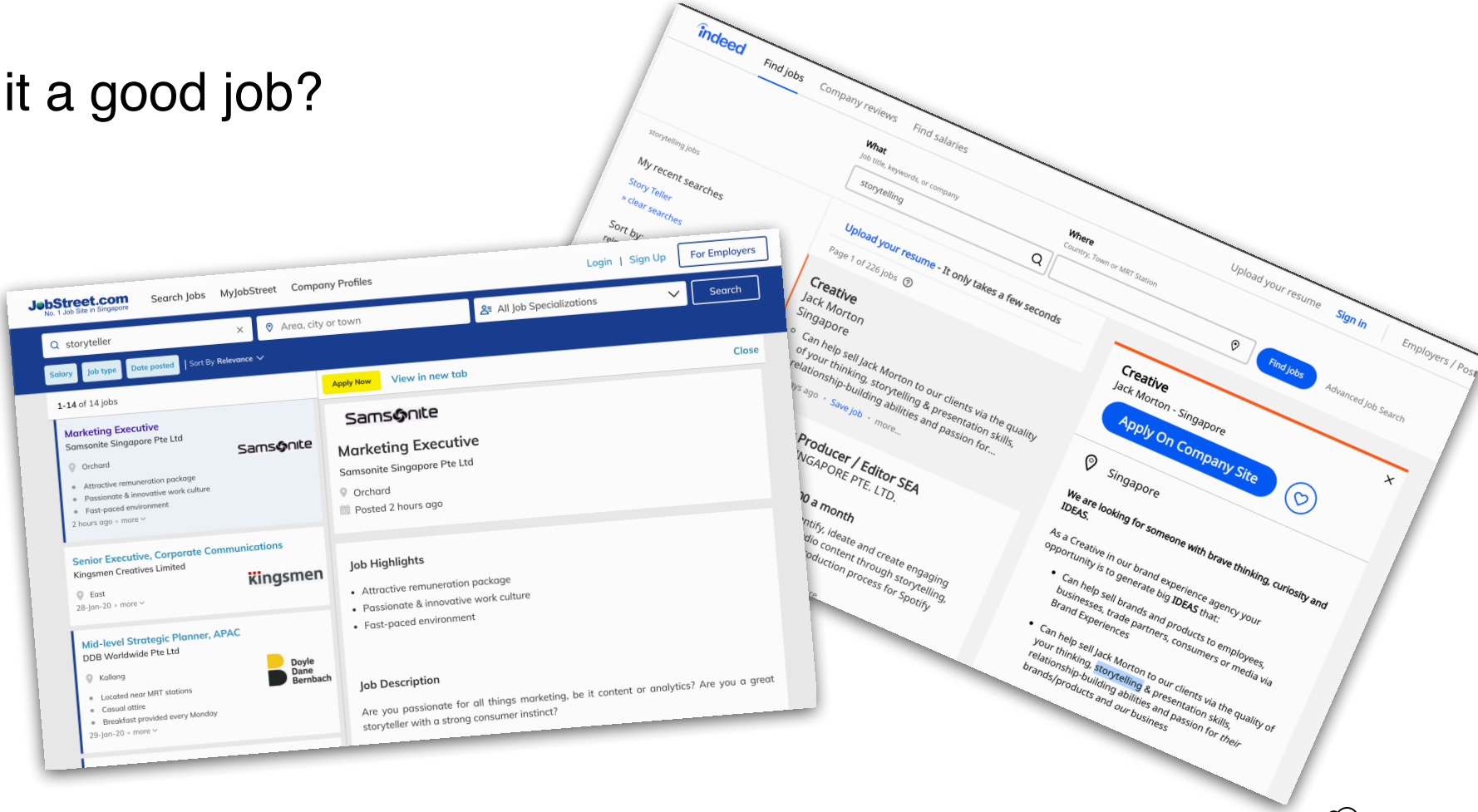
is it a good job?



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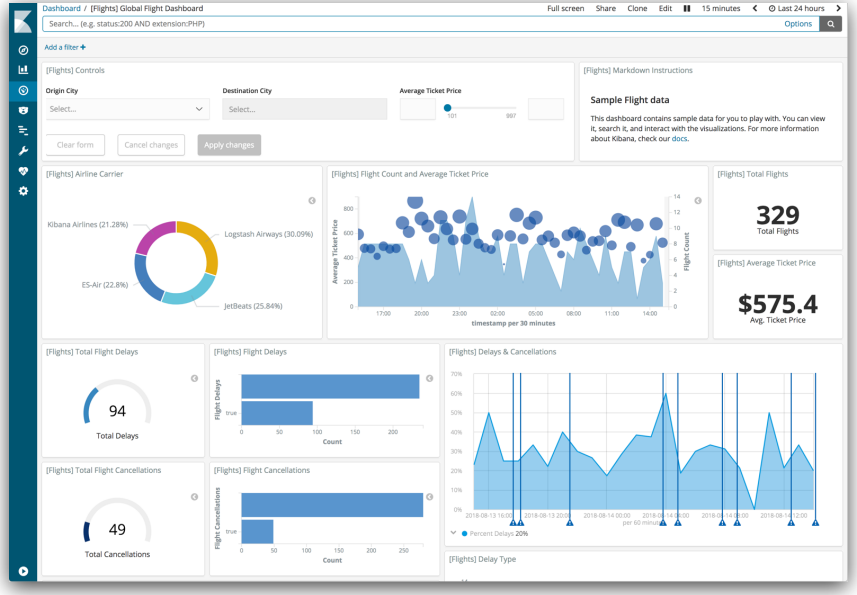
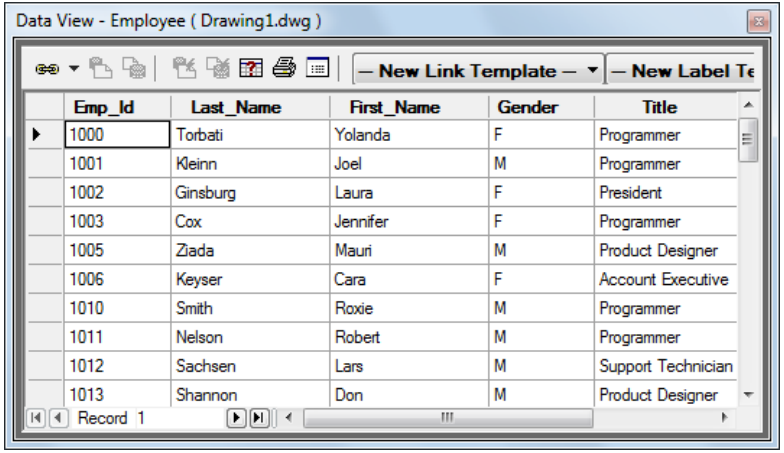
visualisation helps on storytelling and data liberation



vs



Emp_Id	Last_Name	First_Name	Gender	Title
1000	Torbati	Yolanda	F	Programmer
1001	Kleinn	Joel	M	Programmer
1002	Ginsburg	Laura	F	President
1003	Cox	Jennifer	F	Programmer
1005	Ziada	Mauri	M	Product Designer
1006	Keyser	Cara	F	Account Executive
1010	Smith	Roxie	M	Programmer
1011	Nelson	Robert	M	Programmer
1012	Sachsen	Lars	M	Support Technician
1013	Shannon	Don	M	Product Designer

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Learn more?

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Elastic Stack

SOLUTIONS

Kibana — Visualize & Manage

Elasticsearch — Store, Search, & Analyze

Beats, Logstash — Ingest

SaaS

Elastic cloud

On-Prem

Elastic cloud Enterprise

Elastic cloud On Kubernetes

Standalone

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official trainings

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ELASTIC CERTIFIED · IDEST IN · NOTITIA · OPS ANALYST

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resources

- Github
  - coronavirus demo: https://github.com/quoeamaster/bigdata_blogs/tree/master/coronavirus_COVID_19_usecase
- blog for the demo: https://medium.com/@quoeamaster/use-case-coronovirus-covid-19-investigation-and-visualisation-with-elasticsearch-598df7849e82
- social media
  - https://www.linkedin.com/in/jason-wong-391a7624/
  - https://github.com/quoeamaster
  - https://medium.com/@quoeamaster
  - https://bigdata887.wordpress.com/
  - https://twitter.com/QueMaster3

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6.

FAQ

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Thank you !

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