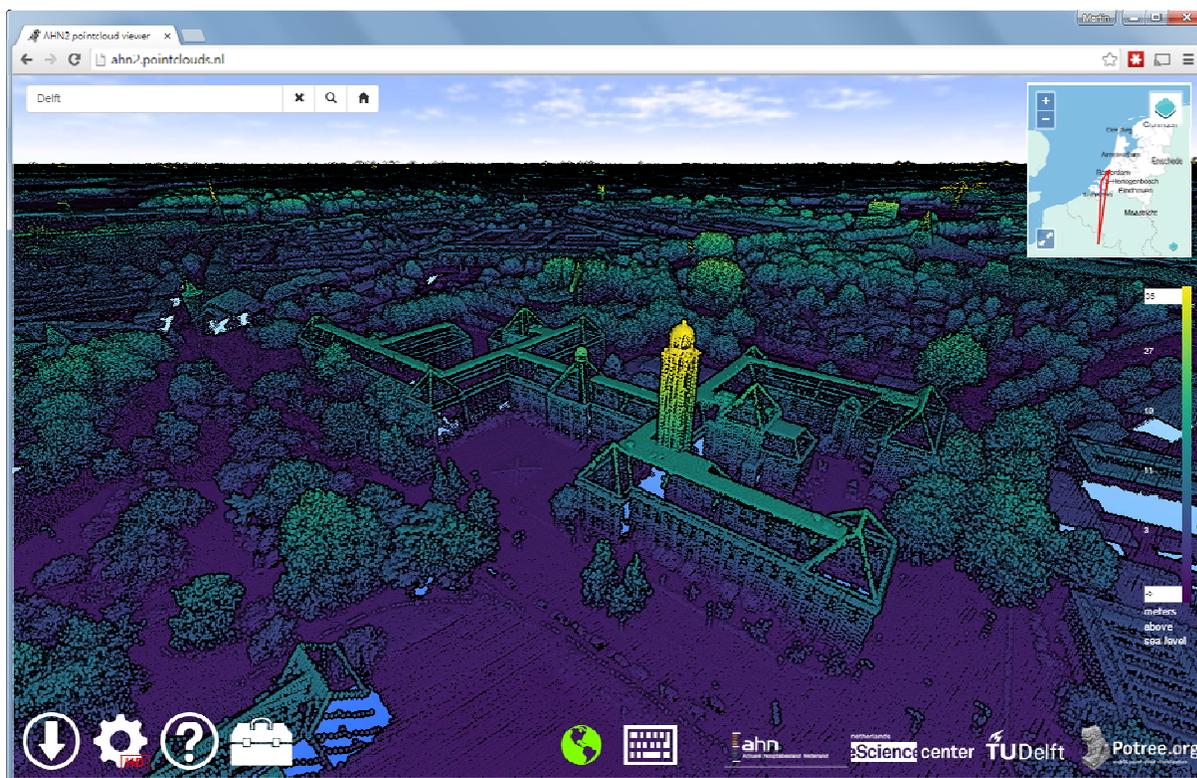




Massive point cloud processing in the cloud

Point cloud Seminar, 8 December 2015, Delft

AHN2 Viewer & Open Point Cloud Map



26 november 2009

Proposal of the Web Point Cloud Service

8 december 2015

Announcement of Open Point Cloud Map

The Primary Data Types



Point Clouds



Images



About Fugro

We create value by acquiring and interpreting earth and engineering data.

We provide associated consulting services to support clients with their design, construction, installation and maintenance of offshore and industrial installations.

**WE MAKE POINT CLOUDS
and we use them to improve the world**



Massive Data Acquisition



*Up to 50 million points per scan
Over 55,000 scans hosted by Fugro*

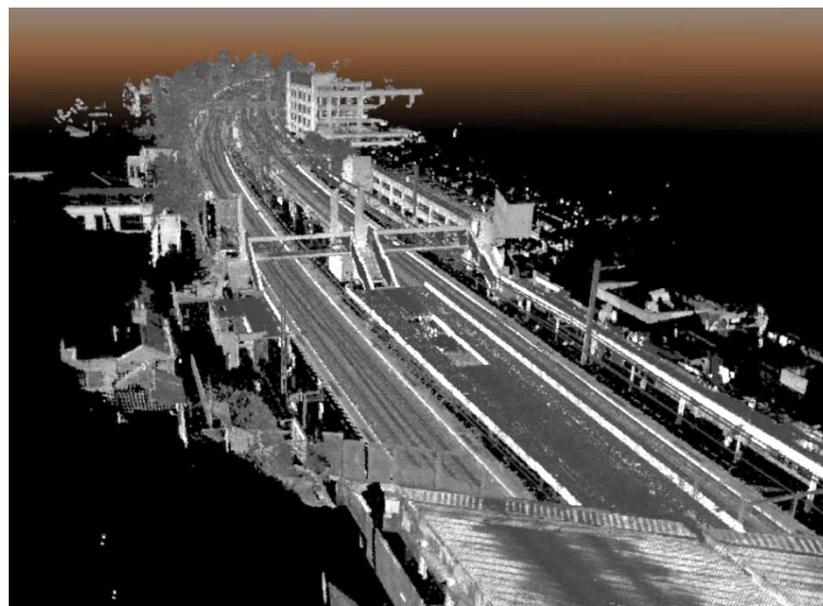


*Up to 2 million points per second
Network collection for ProRail and NetworkRail*

Massive Point Cloud Data



Scan of piping network in petrochemical industry



Scan of railway network at Saint Albans Station

A change in data collection

Traditionally

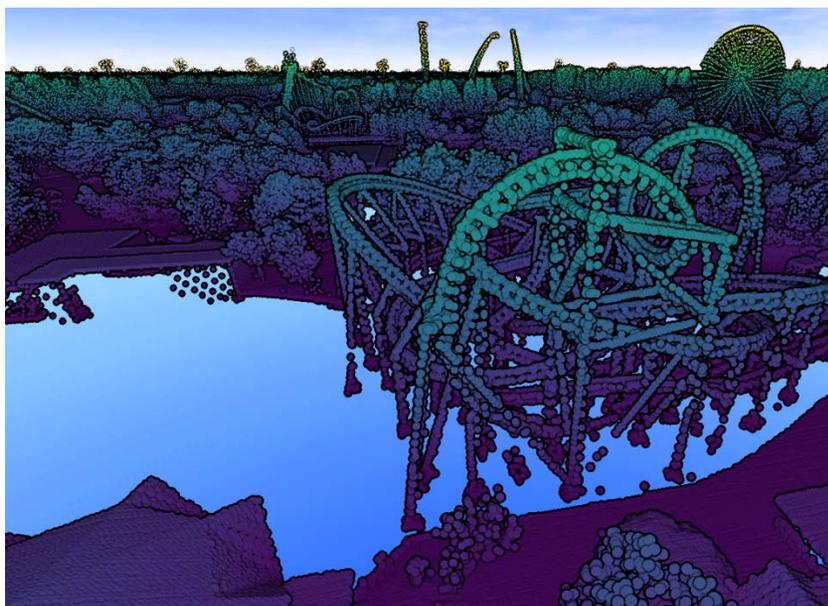
- Data collection is slow and expensive
- Data collection is local
- Data is very closely linked to the use case
- Involves a lot of manual work

Nowadays (point clouds)

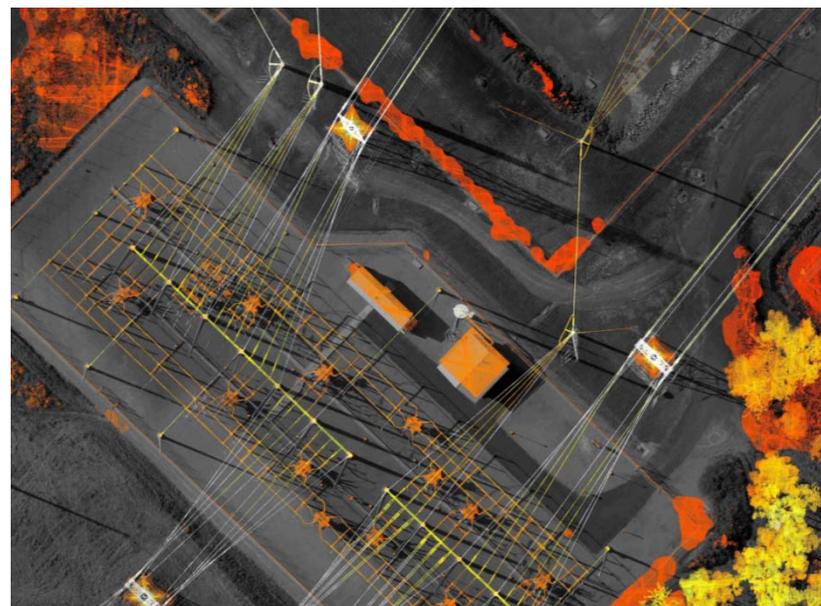
- Data collection is fast and cheap
- Data collection covers great extents
- Data can be used for many different purposes
- High degree of automation is possible



Point Cloud as the Key Data Set

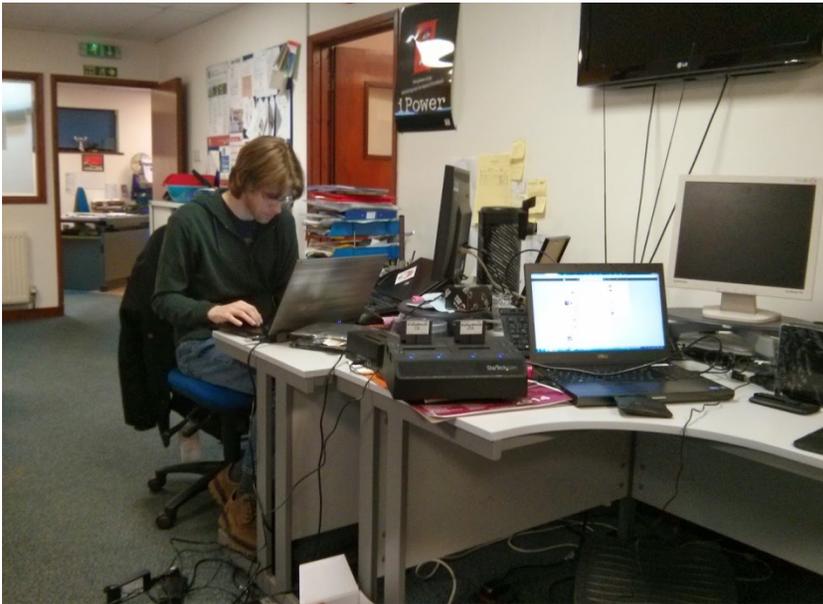


Visualisation



Automated Processing & Interpretation

Point Cloud Processing



Amazon Web Services

Amazon S3

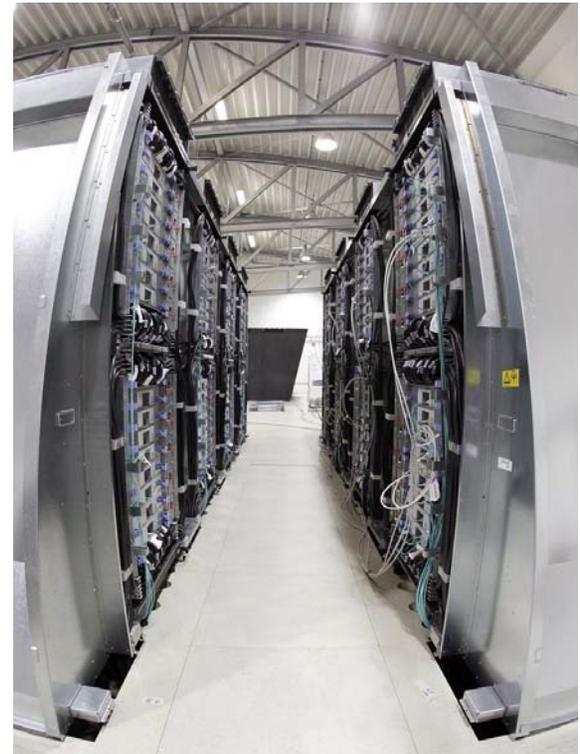
- Amazon Simple Storage Service
- Store large amounts of data in “the cloud”
- Available for viewing, downloading or processing

Amazon EC2

- Amazon Elastic Compute Cloud
- Basically “virtual servers” in the data center of Amazon
- Use it as a web server or processing server

Amazon EC2 Spot Instances

- Like regular EC2 servers, but much cheaper
- Downside: they can be terminated at any time



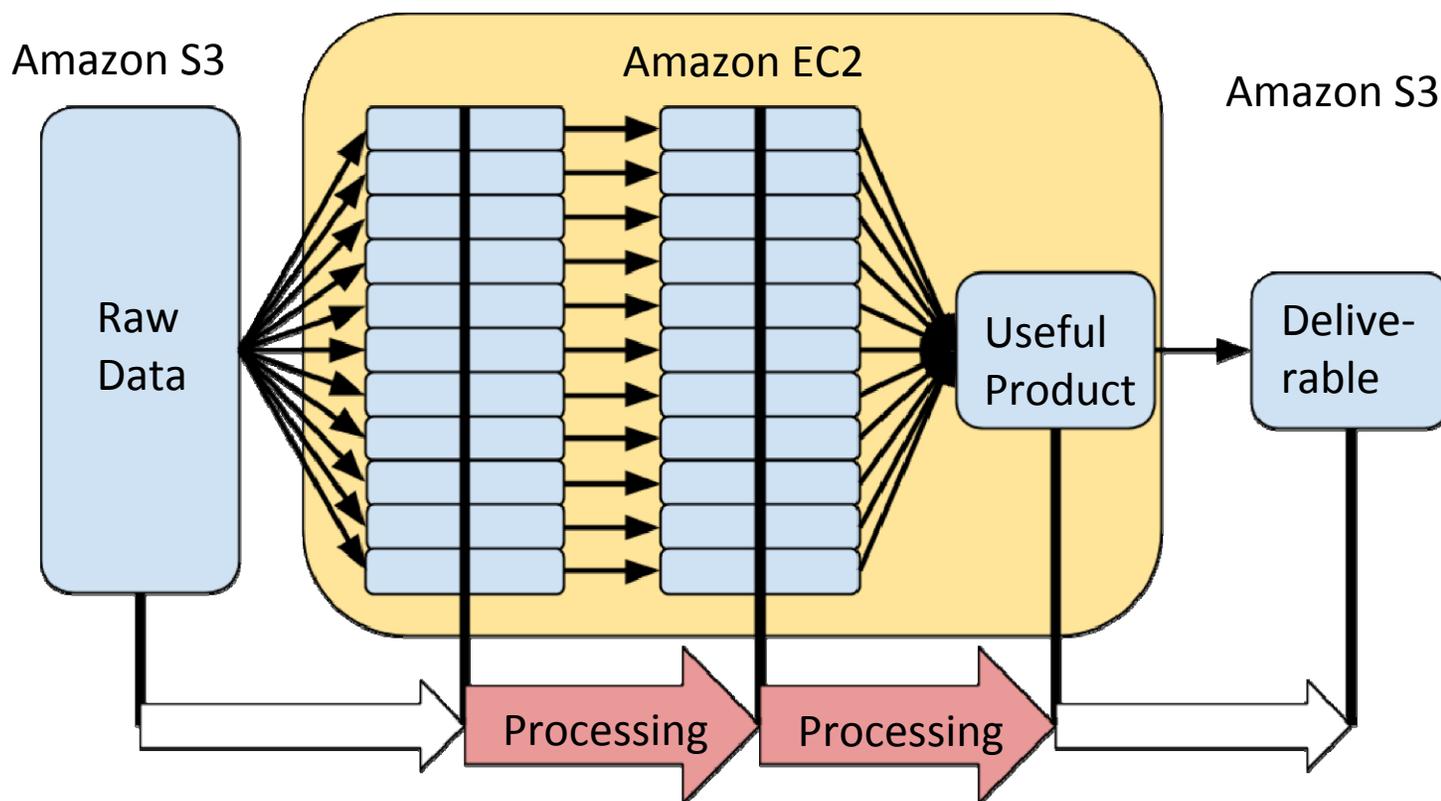
Amazon EC2 Spot Instances



Image © AWS

www.fugro.com

Parallel Processing in the Cloud



Application

Requirements on code

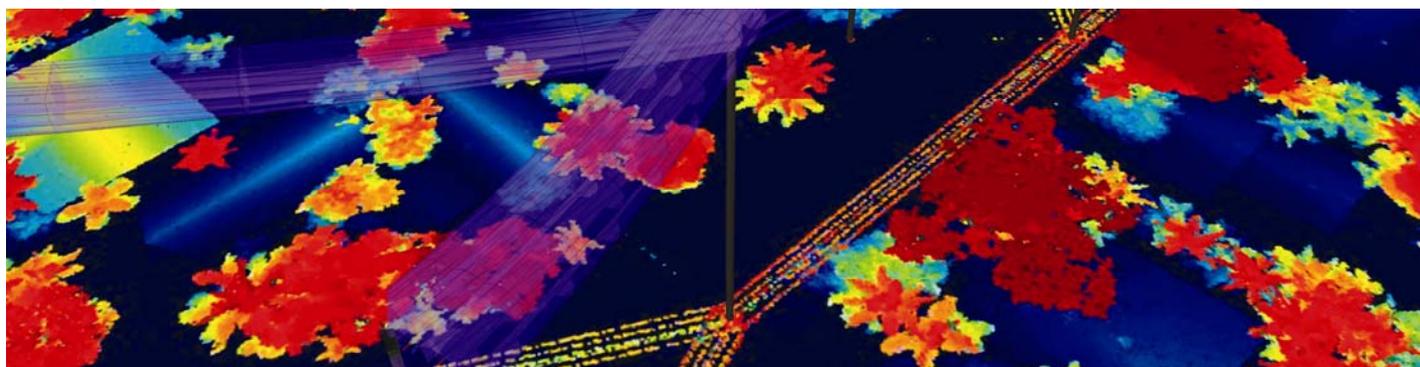
- Should be possible to divide work in parallel parts
- Resistant against sudden shutdown of the server
- Work without any user intervention



A case: Fugro Roames in Australia



Regular flights over Queensland to collect high density point clouds of power lines



Automatic extraction of key parameters such as:

- Vegetation management
- Road clearance
- Damages



If **Point Clouds** are Key Data Sets

Then the value is in the **algorithms** that make something useful out of it

How do we make sure that data sets and algorithms **work together** in a distributed cloud?



Thank you for the attention