

Build What's Next

A Google Cloud Perspective

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Google



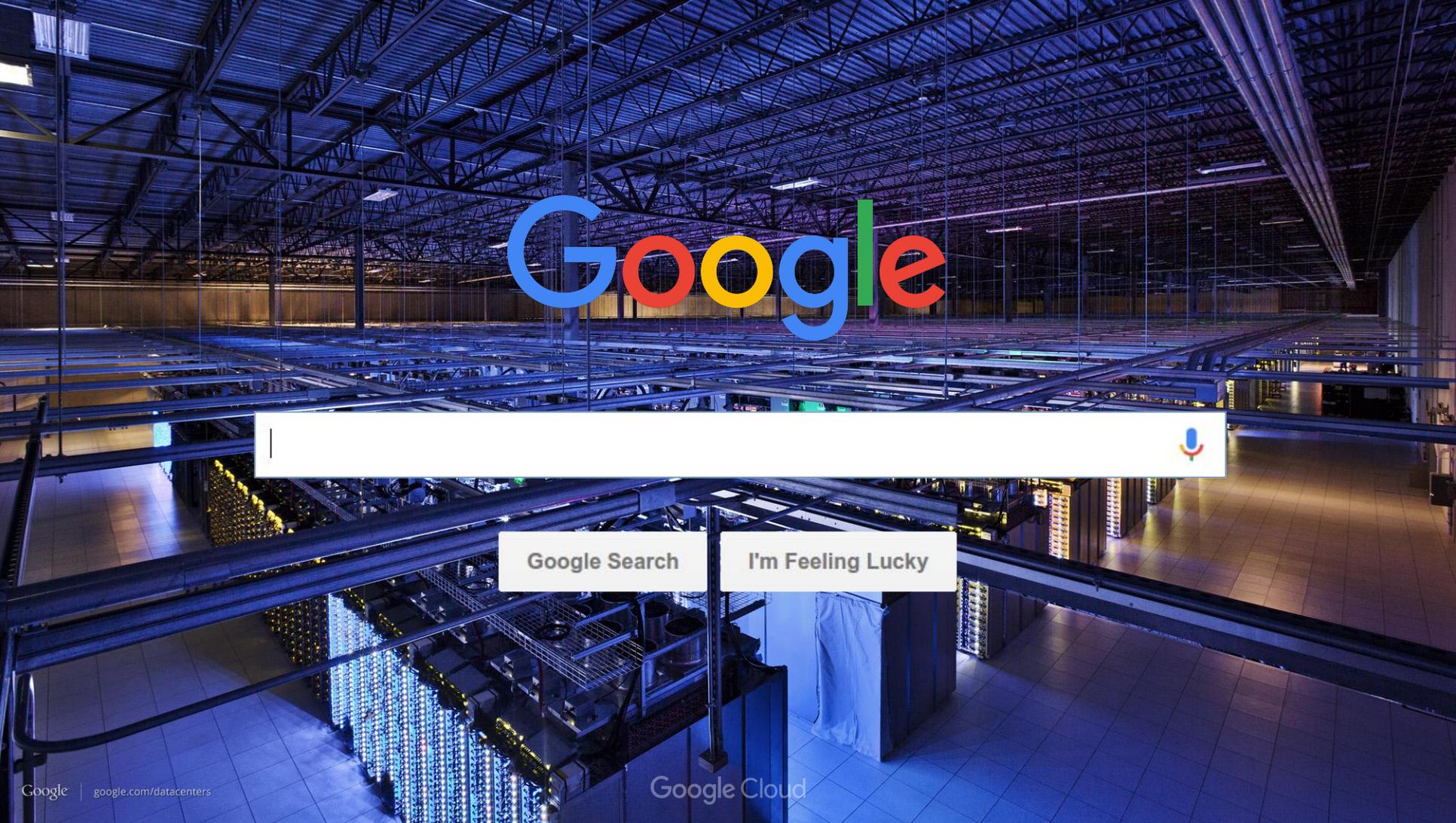
7 Cloud products with 1 billion users

Google

Google Search

I'm Feeling Lucky

The background of the image is a wide-angle shot of a data center aisle. The aisle is filled with rows of server racks on both sides, illuminated by blue and white lights. The ceiling is a complex network of metal beams and pipes, with numerous lights hanging from it. The overall atmosphere is industrial and high-tech.

Google



Google Search

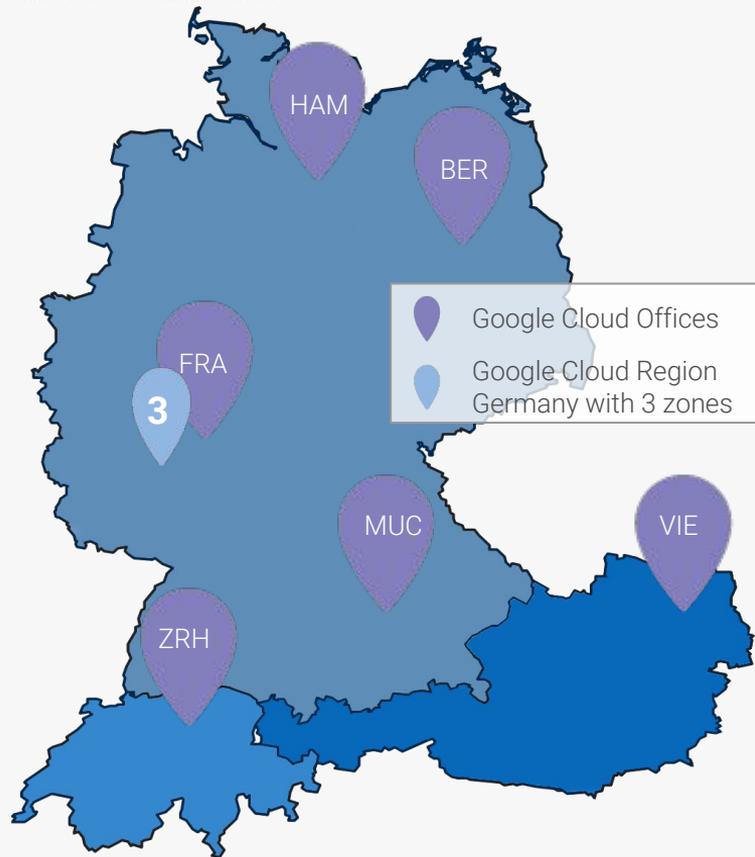
I'm Feeling Lucky



Google Cloud in DACH

- New cloud region Germany (> 50% latency reduction)
- Commitment to GDPR compliance
- Partnership with

MUC





"We found that Google Ads has the best system for precisely targeting customer segments in both the B2B and B2C spaces. It used to be hard to gain the right insights to accurately measure our marketing spend and impacts. With Google Analytics, we can better connect the omnichannel customer journey."

Aleš Drábek, Chief Digital and Disruption Officer, Conrad Electronic

Solution

As Conrad transitions from a B2C retailer to an advanced B2B and B2C platform for electronic products, it is using Google solutions to grow its customer base, develop on a reliable cloud infrastructure, and digitize its workplaces and retail stores.

Products Used

G Suite, Google Ads, Google Analytics, Google Chrome Enterprise, Google Chromebooks, Google Cloud Translation API, Google Cloud Vision API, Google Home, Apigee

IoT platform **connects** nearly
50 brands
with **thousands of smart products**

Manages
250M+
data sets per week and **3.5M searches per month** via IoT platform

Conrad is disrupting online retail with new services for mobility and IoT-enabled devices.

Supports
5x
the IoT **connections vs. competitors**

Supports
Mobile-First
strategy

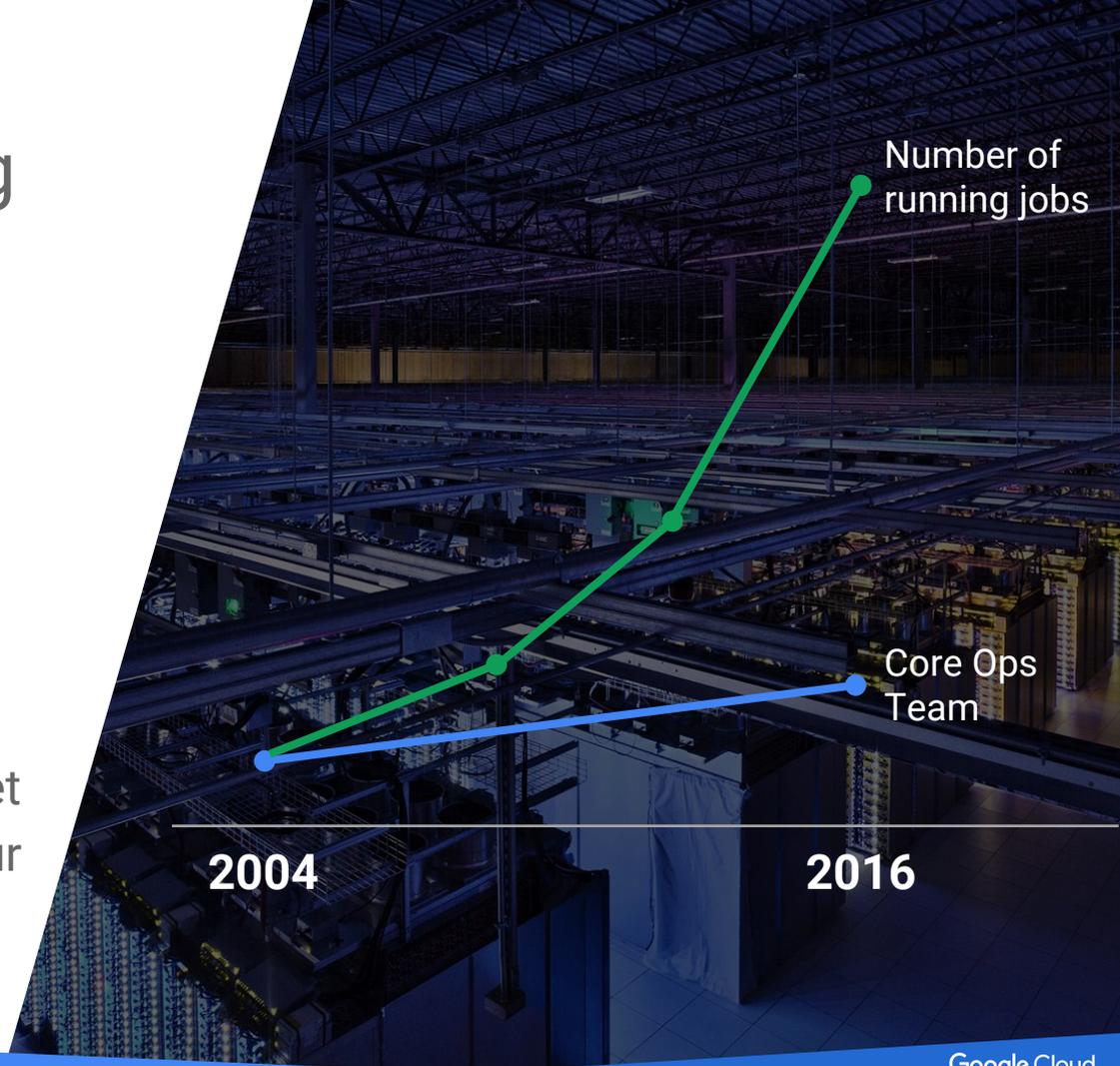
Automate Everything

Containers at Google

Cluster management used internally at Google for over 10 years

Key to efficiently managing systems

Enabled Google to grow our fleet over 10x faster than we grew our ops team





Kubernetes

- “Open-source Borg”
- Written (from scratch) in Go, like Docker and many other OSS systems and tools in this space
- Provides “container orchestration”
- Schedules and runs Docker containers (and a lot more)
- Supports multiple cloud and bare-metal environments



Google Container Engine (GKE)

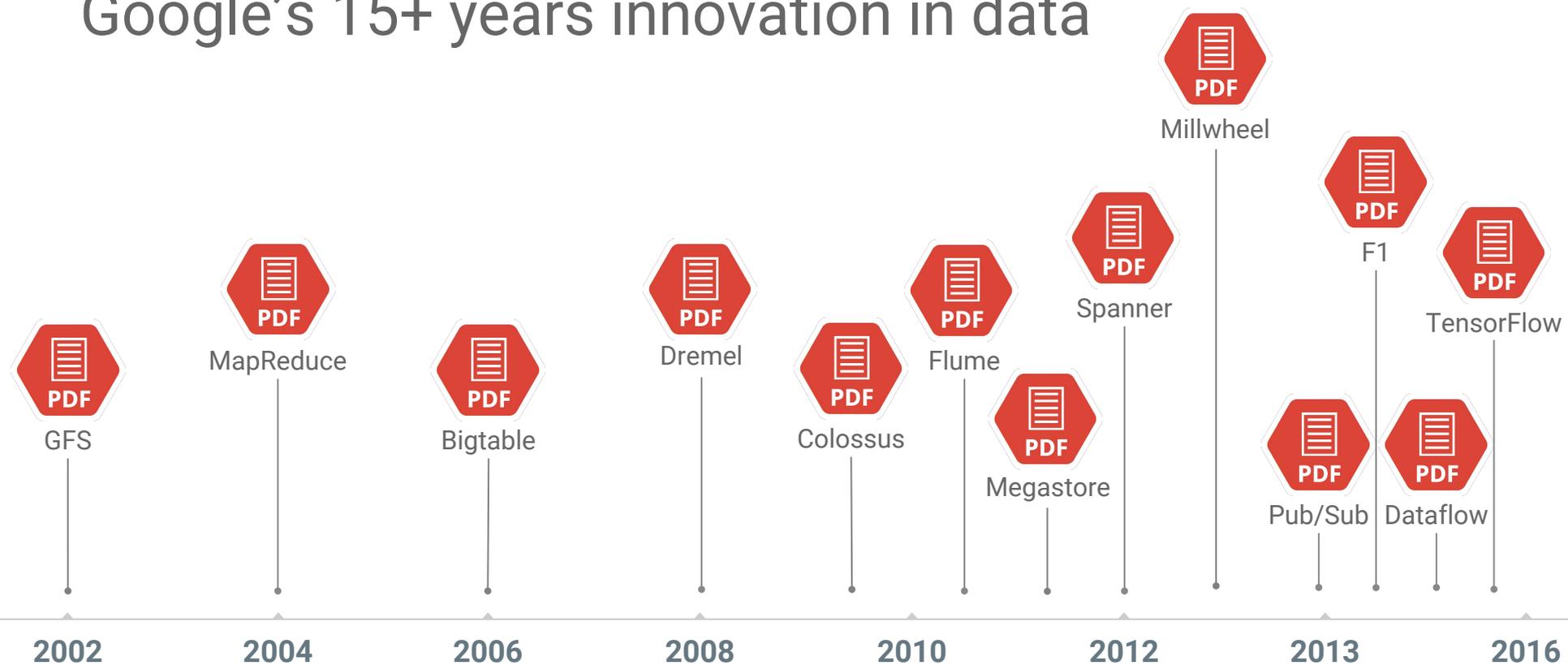
- Kubernetes clusters as a service
- Runs Kubernetes on GCE
- Integrated with GCP
- Supports heterogeneous and multi-zone clusters
- Manages the infrastructure and Kubernetes
- auto-upgrades, scaling, healing, monitoring, backup, ...

Data makes software great.

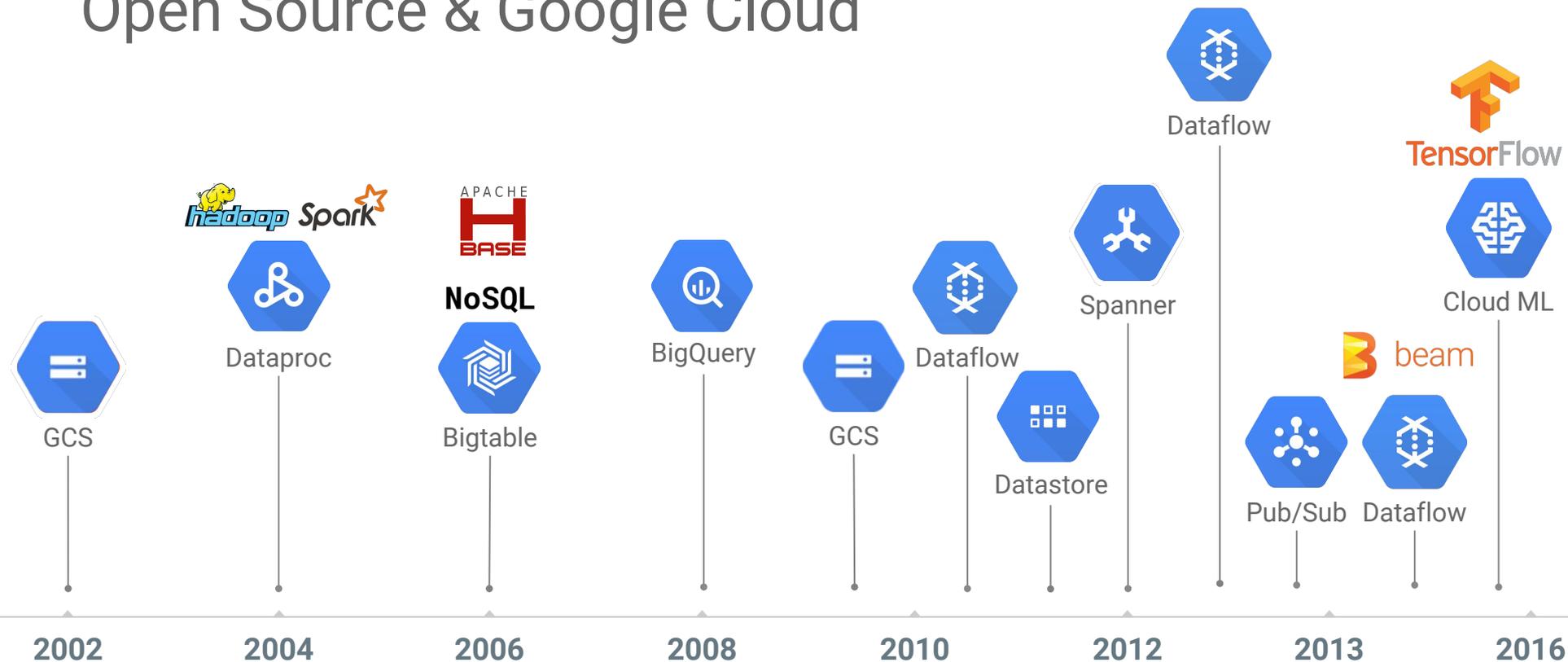
Apps (and companies) win or lose based on how they use it.



Google's 15+ years innovation in data

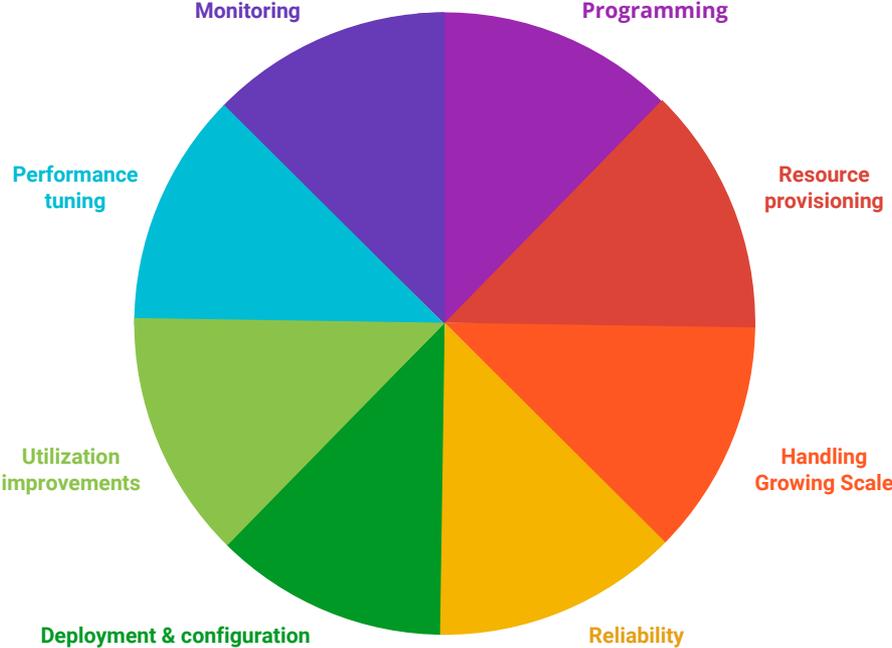


Open Source & Google Cloud

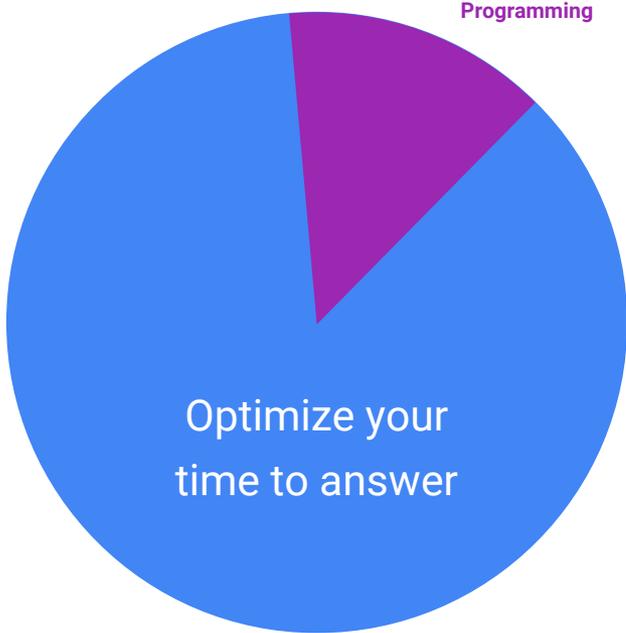


Automating (Big) Data

Typical Big Data Solution



No-Ops (Big) Data @Google



Retail | Win with Data Analytics & ML

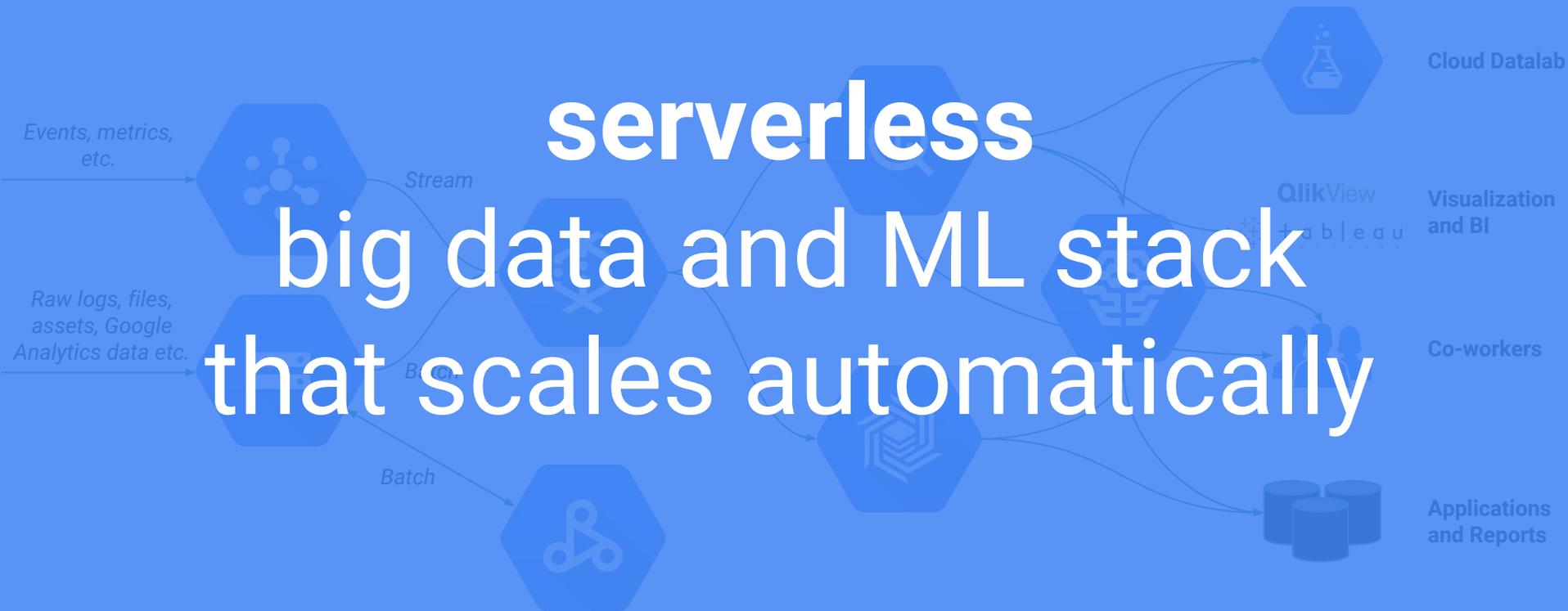
- **Simplify shopping experience for users** - uses data and analytics to connect 4.9 million active customers with the most relevant products
- **Improve business workflow** - manages complex supply with thousands of vendors
- **Make best marketing decisions in real-time** - consolidates data from all marketing channels to assess which programs deliver the best ROI

“Business users now have visibility into data at the item-level, which was impossible with the previous legacy solution. Now we can better understand the effects of marketing campaigns, and adjust them quickly to improve ROI.”

Sudhir Hasbe, Director of Software Engineering, zulily



serverless big data and ML stack that scales automatically



Superior performance and AI to enhance customer experience

- **Ensure performance, scalability and security:** will migrate their ecommerce platform to avoid costly outages, and to comply with strict security requirements
- **Enhance customer experience:** building industry leading ML/AI applications, such as predictive shopping lists
- **Help digitise hospitality ecosystem:** through HoReCa, Metro plans to leverage GCP to create the largest hospitality platform to help digitize independent SMEs

“With Google Machine Learning and AI, we've found the perfect partner for the future..”

Timo Salzsieder, CIO and CSO METRO AG



METRO

BigQuery @Google

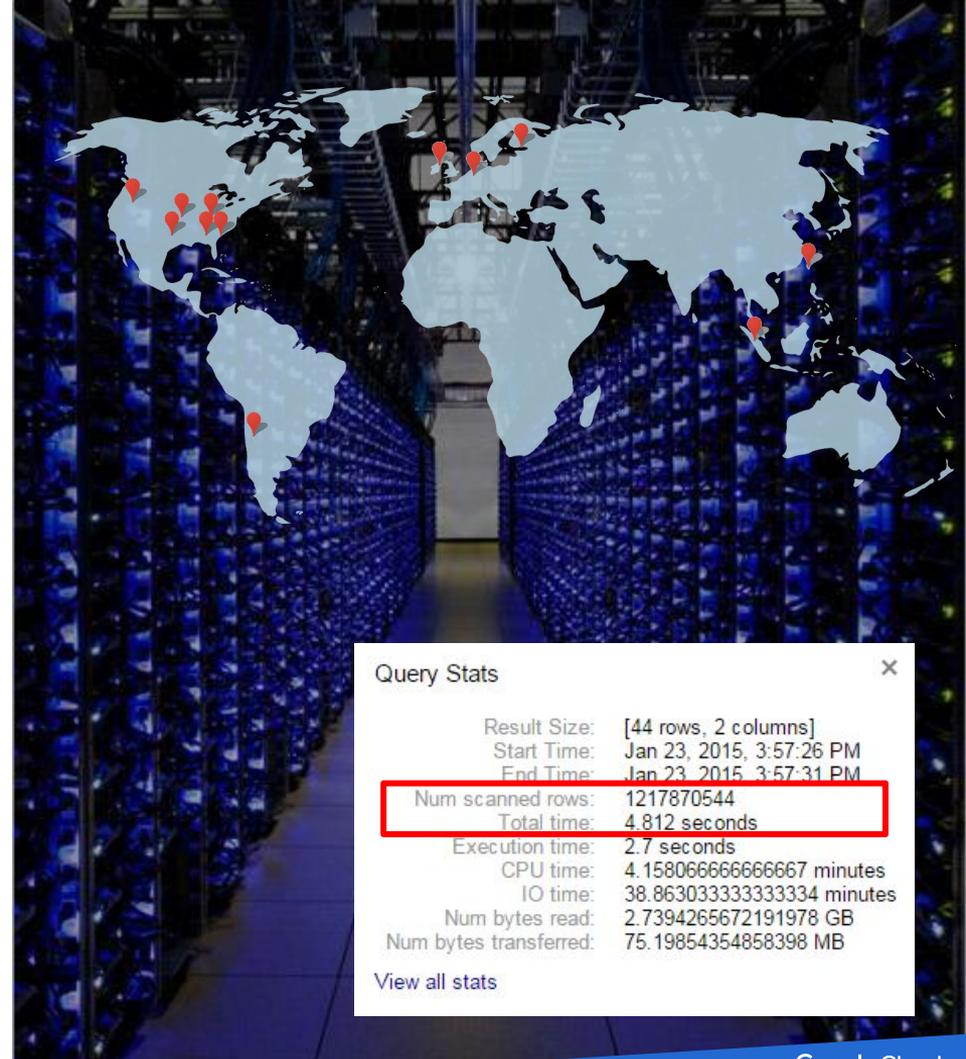
- DoubleClick Support

Question:

Find root cause why ad was or was not delivered in the last 30 days.

```
select date, rejection_reason,  
count(*)  
from line_item_table.last30days  
where line_item_id=56781234
```

1.2B Rows scanned Result in ~5 seconds!



Query Stats ✕

Result Size:	[44 rows, 2 columns]
Start Time:	Jan 23, 2015, 3:57:26 PM
End Time:	Jan 23, 2015, 3:57:31 PM
Num scanned rows:	1217870544
Total time:	4.812 seconds
Execution time:	2.7 seconds
CPU time:	4.158066666666667 minutes
IO time:	38.863033333333334 minutes
Num bytes read:	2.7394265672191978 GB
Num bytes transferred:	75.19854354858398 MB

[View all stats](#)

Retail | Win with Data Analytics & ML

- **Inform supply chain** - moves business, product and transactional data out of inaccessible silos
- **Increase logistical efficiencies** - analytics of more than 100TB of data helps control inventory, predict demand and more
- **Allow for expansion and competitive advantage** - continues to compete against brick-and-mortar grocery stores

"We don't have to do a lot of work to get an answer, as Google does most of the heavy lifting and scaling with the data."

Paul Clarke, Chief Technology Officer, Ocado



Machine Learning is
the next step.



“**Machine learning** is a core, transformative way by which we’re **rethinking how we’re doing everything**. We are thoughtfully applying it across **all our products**, be it search, ads, YouTube, or Play.”



Sundar Pichai, CEO at Google

1 8 0 2 1



Applying Machine Learning to transform Retail

Merchandising

- Forecast trends based on multiple data inputs (social feeds, sales data, other trend data)

Trend forecasting

Supply Chain

- Execute your supply chain to fulfill inventory forecast by store at SKU level by correlating store sales, customer and weather data

Assortment planning

Pricing

- Customers are offered the right price or promotion at the right time to better meet their expectations. Retailers improve promotion conversion

Dynamic pricing

Store operations

- Increase shelf level planogram compliance
- Monitor various real time data feeds for Fraud detection, predict failure/maintenance of store equipment

Visual merchandising compliance

Anomaly detection

Customer experience / Insights

- Offer products to customers that match their individual preferences
- Show related products while browsing or buying to the right customer
- Monitor social feeds, product reviews, call center conversations, in-store images

**Personalization
Recommendation engine**

Sentiment analysis

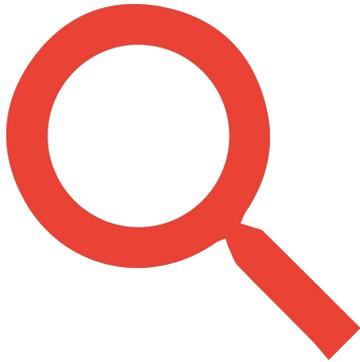
Digital Marketing / Online

- Giving customers the ability to search the retailer's catalog based on images taken on mobile phones or via the retailer App

Image search

How can ML change retail

Find the right product



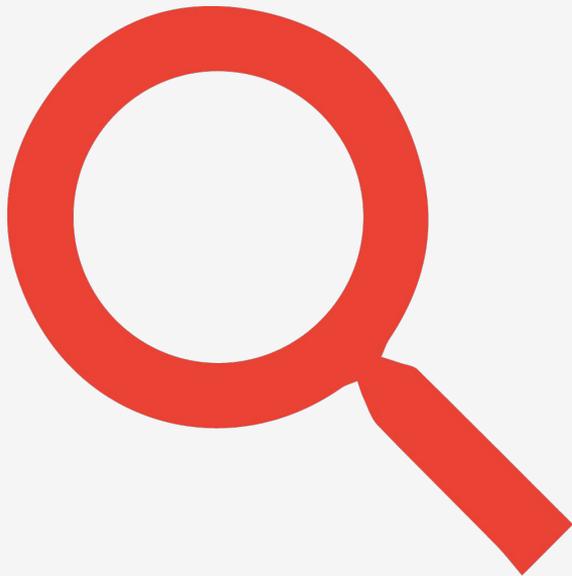
Recommend the next product



ML driven Customer Service



Find the right product - search by image



Get image metadata

Find popular logos

Recognize popular objects

Limit fraud

Image metadata



What is it?

Handbag 81%

Leather 78%

What color is it?



Visual Shopping



- Search drives the shopping experience on Retail
- Text search is inefficient
- Visual Shopping gives control to your consumer
- Find the right product
 - using mobile device or
 - from any image on the web

Enable product discovery through Visual Shopping



Recommend the next product



History of user behavior

Current product metadata

Organization dynamics

Environmental factors

ML driven Customer Service



Conversational Agent - Bots

Relevant Content & Knowledge Base

Sentiment Analysis

Predictive Call Routing



We set out to build
a better cloud for us.

Now, we're giving it to you.



Thank you