MAPR®

WATERLINE DATA

How to Build a Successful Data Lake

May 17, 2016

Before We Begin

- This webinar is being recorded. Later this week, you will receive an email on how to get the recording and slide deck.

- If you have any audio problems, please let us know in the chat window and we’ll try to resolve them quickly.

- If you have any questions during the webinar, please type them in the chat window.

Introducing Our Speakers

Dale Kim
Sr. Director, Industry Solutions
MapR Technologies

Alex Gorelik
Founder and CEO
Waterline Data

How to Build a Successful Data Lake

Dale Kim, Sr. Director, Industry Solutions, MapR Technologies

May 17, 2016

What to Consider for Your Platform

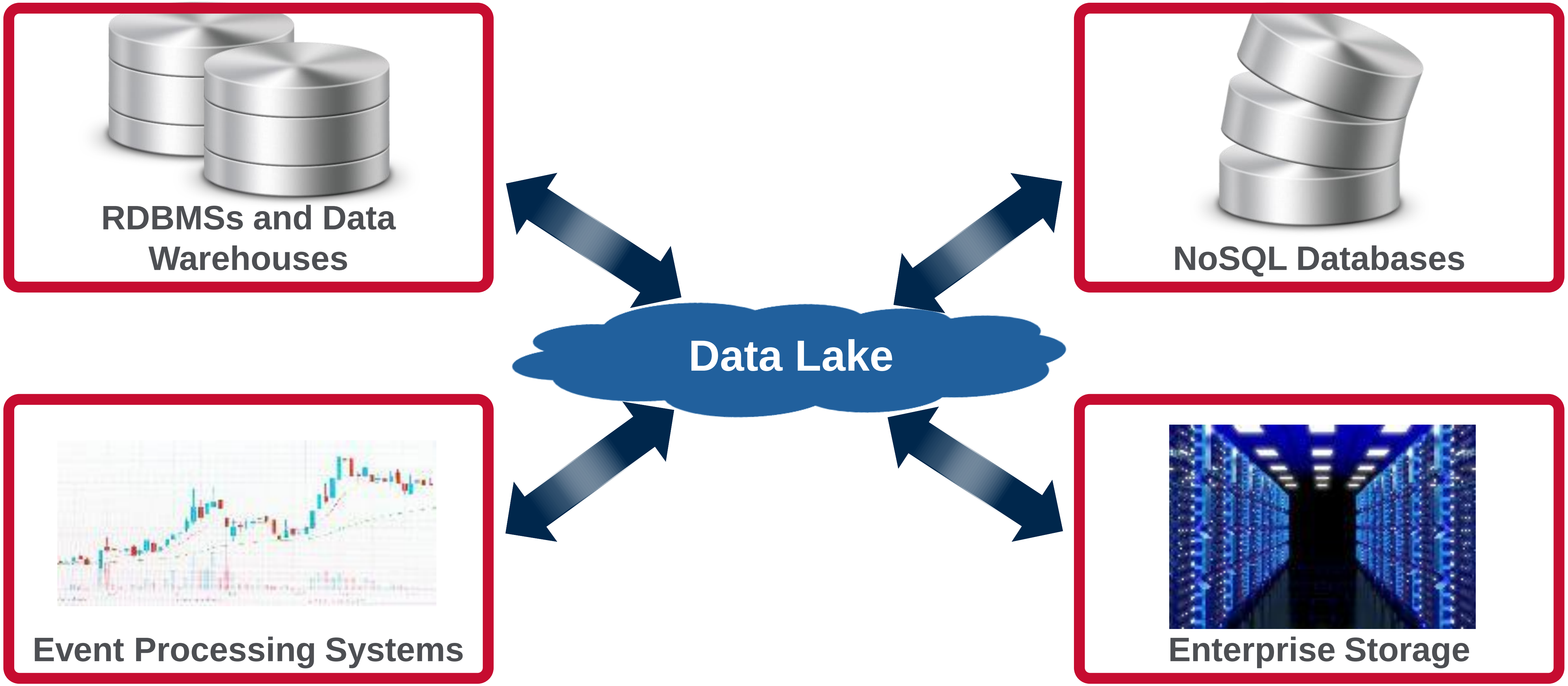
- Broad analytics capabilities
- Interoperability
- Business continuity
- Cost effectiveness
- Multi-tenancy capabilities

Broad Analytics Capabilities

- Human analytics
  - Visualizations – graphs, charts, pictures
  - Obvious insights when presented in the right way

- Algorithmic analytics
  - Heavy computations
  - Finding non-obvious trends and alerting a system or a human

Interoperability



RDBMSs and Data Warehouses

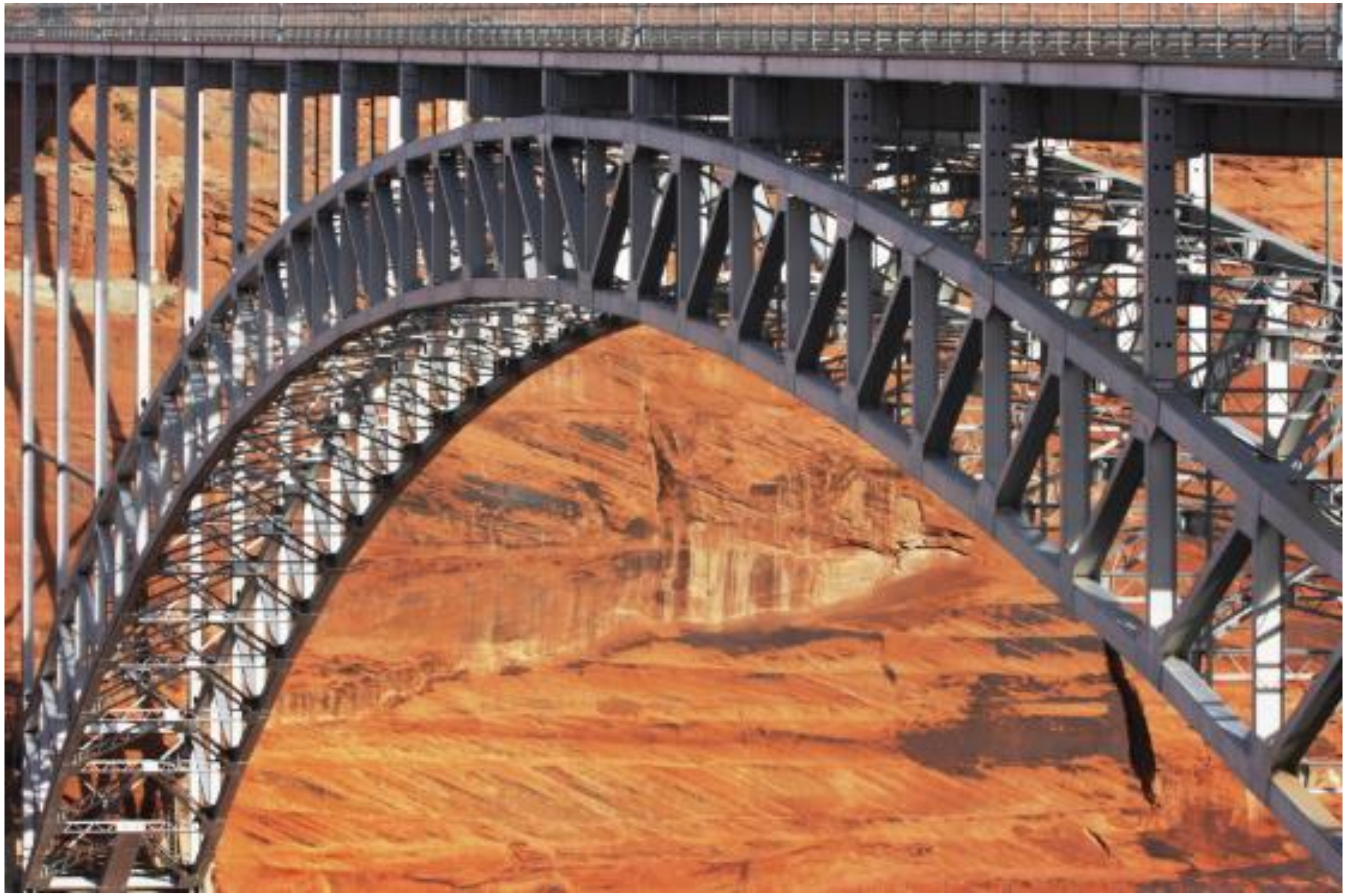
NoSQL Databases

Data Lake

Event Processing Systems

Enterprise Storage

Business Continuity



- High availability – tolerance for multiple hardware failures in a data center
- Disaster recovery – fast failover to a remote site
- Data recovery – quickly restore from data corruption from user/app errors

Cost Effectiveness

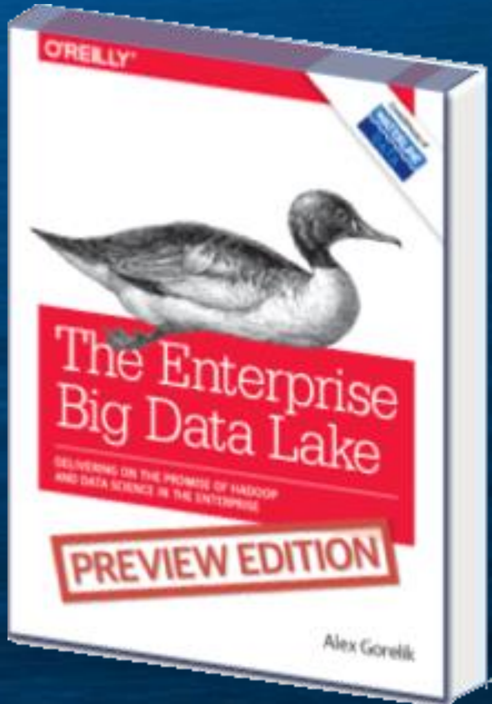
- Any combination of:
  - Lower hardware footprint
  - Lower admin. overhead
  - Higher performance
  - Greater resource sharing

Multi-Tenancy Capabilities

How to Build a Successful Data Lake

Alex Gorelik

Founder and CEO, Waterline Data


O'REILLY
The Enterprise Big Data Lake
DELIVERING ON THE PROMISE OF HADOOP AND DATA SCIENCE IN THE ENTERPRISE
PREVIEW EDITION
Alex Gorelik

Waterline Data Overview

Alex Gorelik
Founder, CEO

Founded Exeros (IBM) and Acta (SAP), IBM DE, Informatica GM, MSCS Stanford, Columbia BSCS

Oliver Claude
Marketing

VP SAP, VP Informatica, IBM Siebel, Nova Southeastern MS MIS

Jason Chen
Engineering

VP Teradata, Acta, Sybase. USC PhD CS.

Ravi Ramachandran
Sales

CSC Infochimps, AppLabs, Xchanging. Scient-Razorfish. MBA Clark, BS Delhi University.

Mohan Sadashiva
Product

Narus (Boeing), Intel, Synchronoss, Trimble Navigation. MBA Columbia, MSCS Queens University

Investors

Menlo

JSV

PARTECH VENTURES

Infosys

Advisors

Google

in

MAPR

KAISER PERMANENTE

Partners

amazon web services

MAPR

CSC

Infosys

TRIFACTA

syncsort

Production Customers by Industry

Healthcare

Fortune 500
Healthcare Provider

Insurance

Fortune 500 Health Insurer
& Global Insurer

Government

Government Agency in EMEA

Automotive

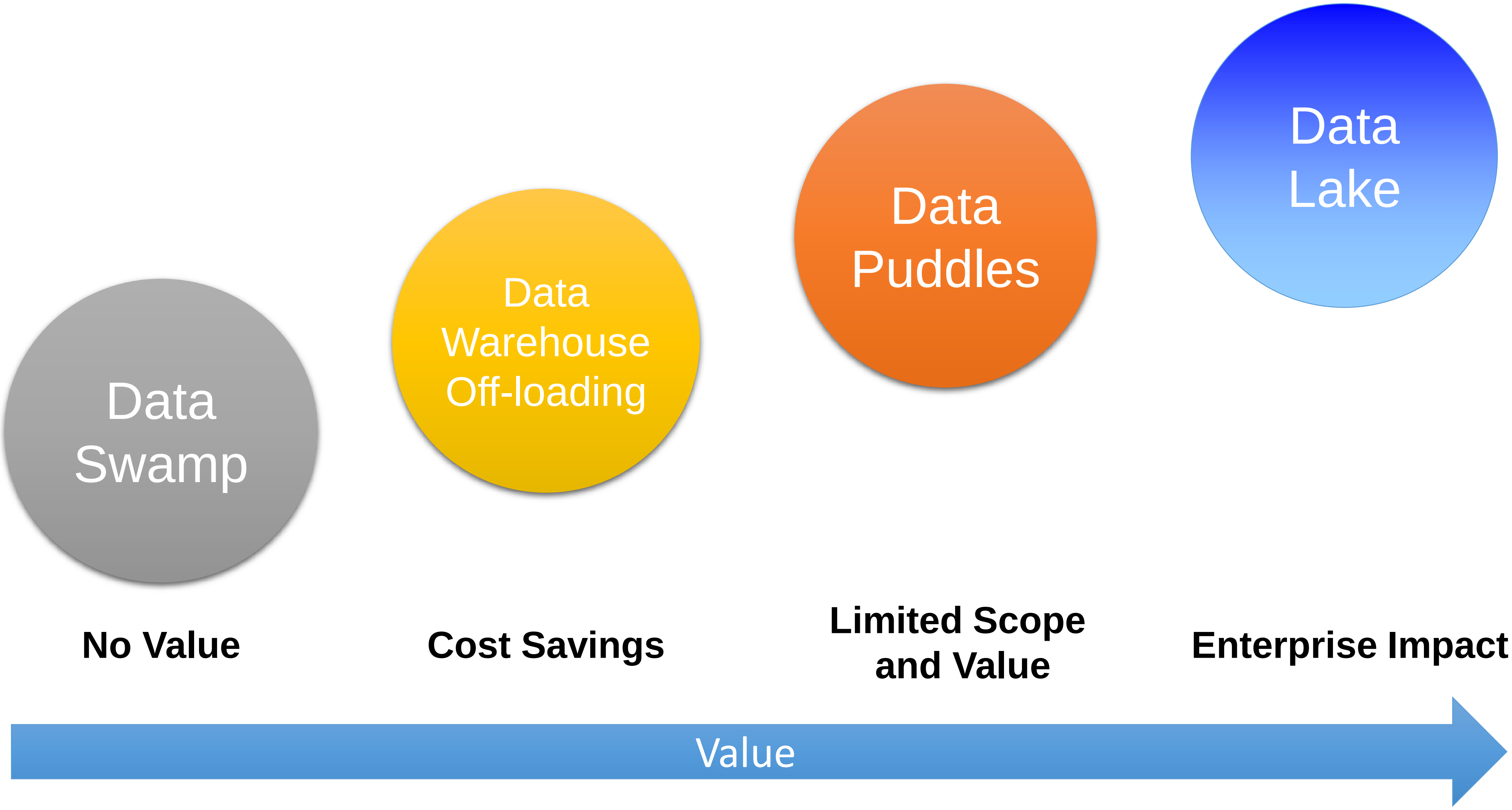
Leading US Vehicle
Remarketing Provider

Consumer Marketing

Leading Market Research Firm in EMEA

Data Lakes Power Data Driven Decision Making

Business Value



Data Swamp

No Value

Data Warehouse Off-loading

Cost Savings

Data Puddles

Limited Scope and Value

Data Lake

Enterprise Impact

Value

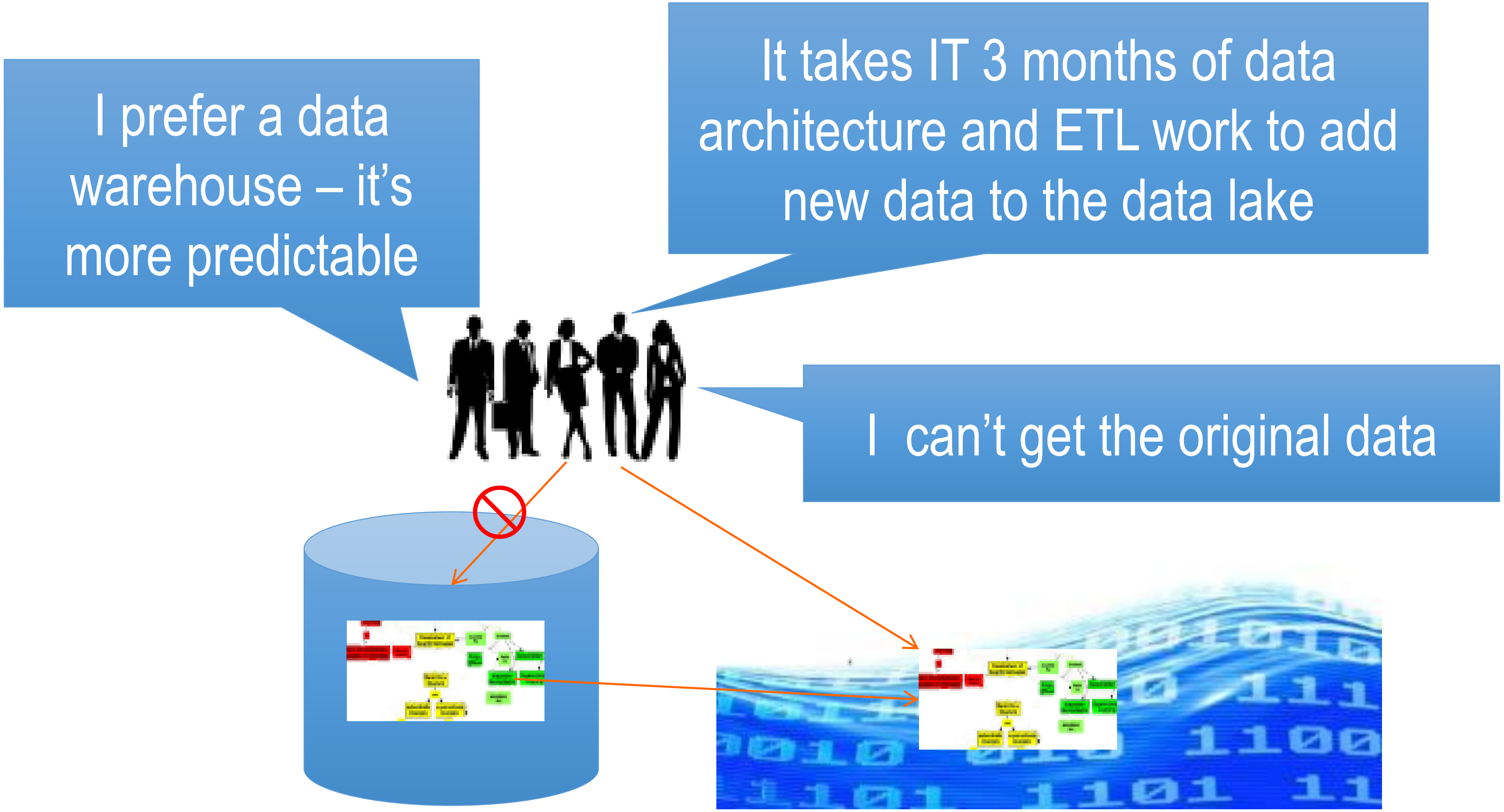
Data Swamps

Raw data

Can’t find or use data

Can’t allow access without protecting sensitive data

Data Warehouse Off-loading: Cost Savings



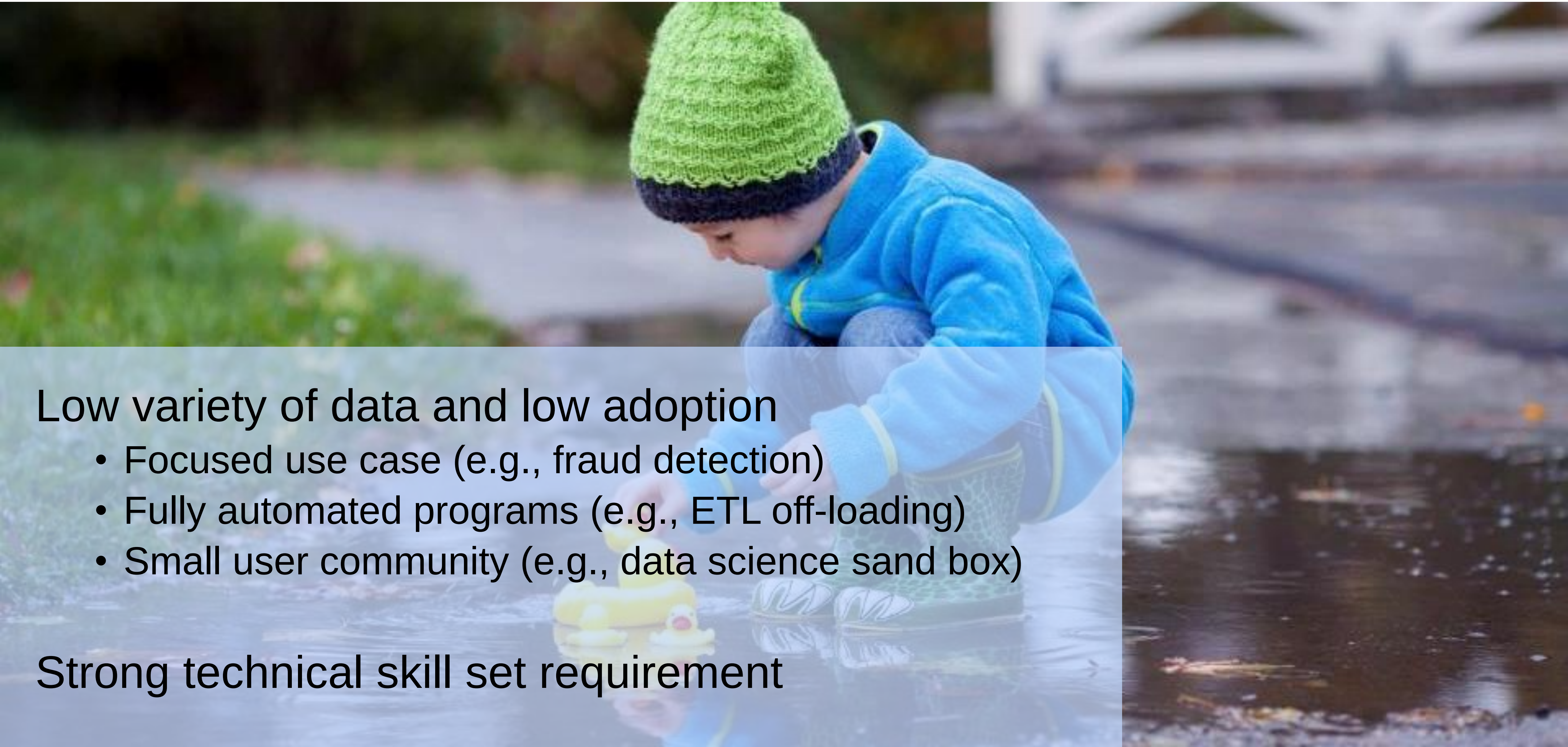
I prefer a data warehouse – it's more predictable

It takes IT 3 months of data architecture and ETL work to add new data to the data lake

I can't get the original data

Data Puddles: Limited Scope and Value

Data Puddles: Limited Scope and Value



Low variety of data and low adoption

- Focused use case (e.g., fraud detection)
- Fully automated programs (e.g., ETL off-loading)
- Small user community (e.g., data science sand box)

Strong technical skill set requirement

What Makes a Successful Data Lake?

Right Platform + Right Data + Right Interface

Right Platform:

- Volume - Massively scalable
- Variety - Schema on read
- Future Proof – Modular – same data can be used by many different projects and technologies
- Platform cost – extremely attractive cost structure

Right Data Challenges:
Most Data is Lost, So it Can’t Be Analyzed Later

Data Exhaust

Only a small portion of data in enterprises today is saved in data warehouses

Right Data: Save Raw Data Now to Analyze Later

- You don’t know now what data will be needed ***later***

- Save as much data as possible ***now*** to analyze later

Right Data: Save Raw Data Now to Analyze Later

- Don’t know ***now*** what data will be needed later
- Save as much data as possible now to analyze ***later***
- Save ***raw*** data, so it can be treated correctly for each use case

Right Data Challenges: Data Silos and Data Hoarding

- Departments hoard and protect their data and do not share it with the rest of the enterprise

- Frictionless ingestion does not depend on data owners

I'M HOARDING MY KNOWLEDGE IN CASE I EVER NEED IT.
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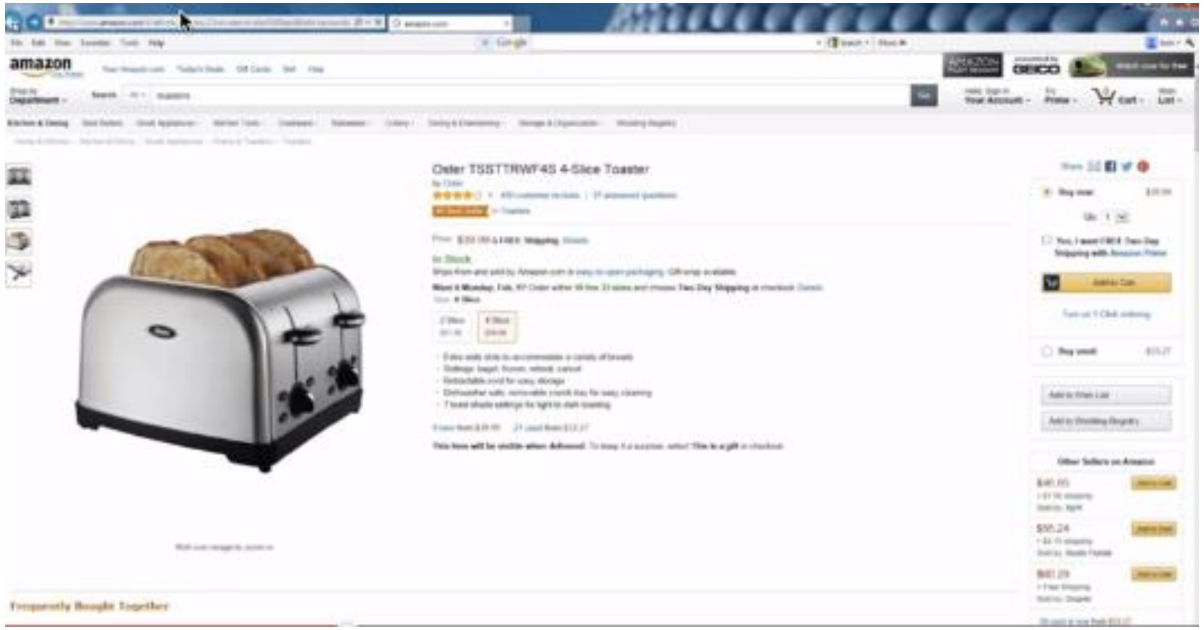
Right Interface: Key to Broad Adoption

- Data marketplace for data self-service

- Providing data at the right level of expertise



Providing Data at the Right Level of Expertise

Clean, trusted,
prepared data

Raw data

Data Scientists

Business Analyst

Providing Data at the Right Level of Expertise

Clean, trusted,
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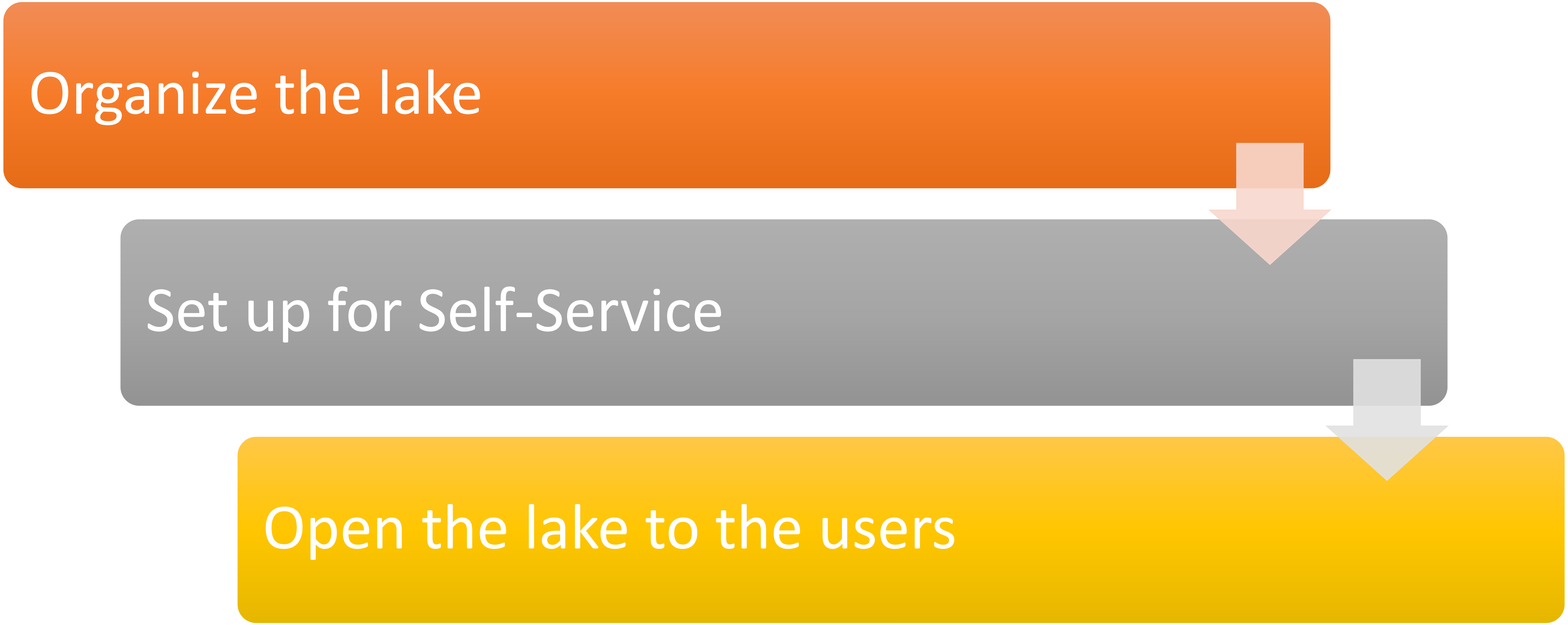
Roadmap to Data Lake Success



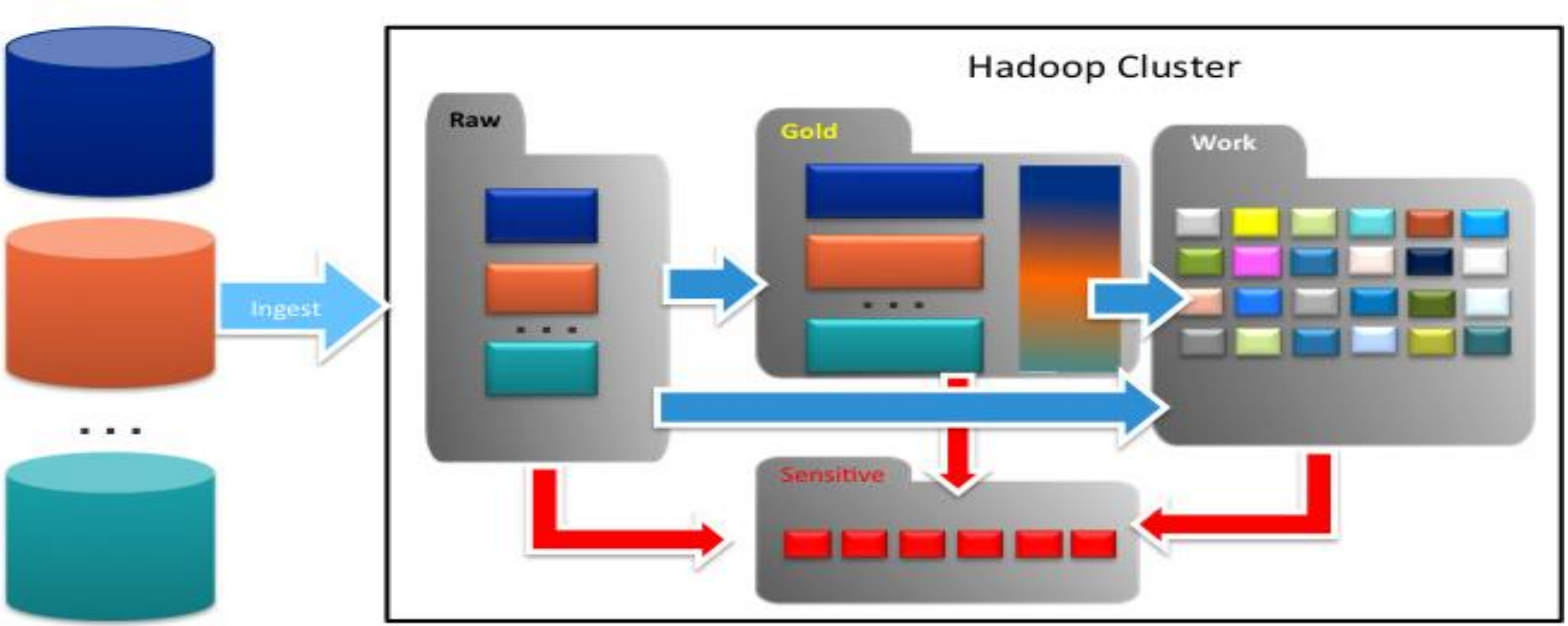
Organize the lake

Set up for Self-Service

Open the lake to the users

Organize the Data Lake into Zones

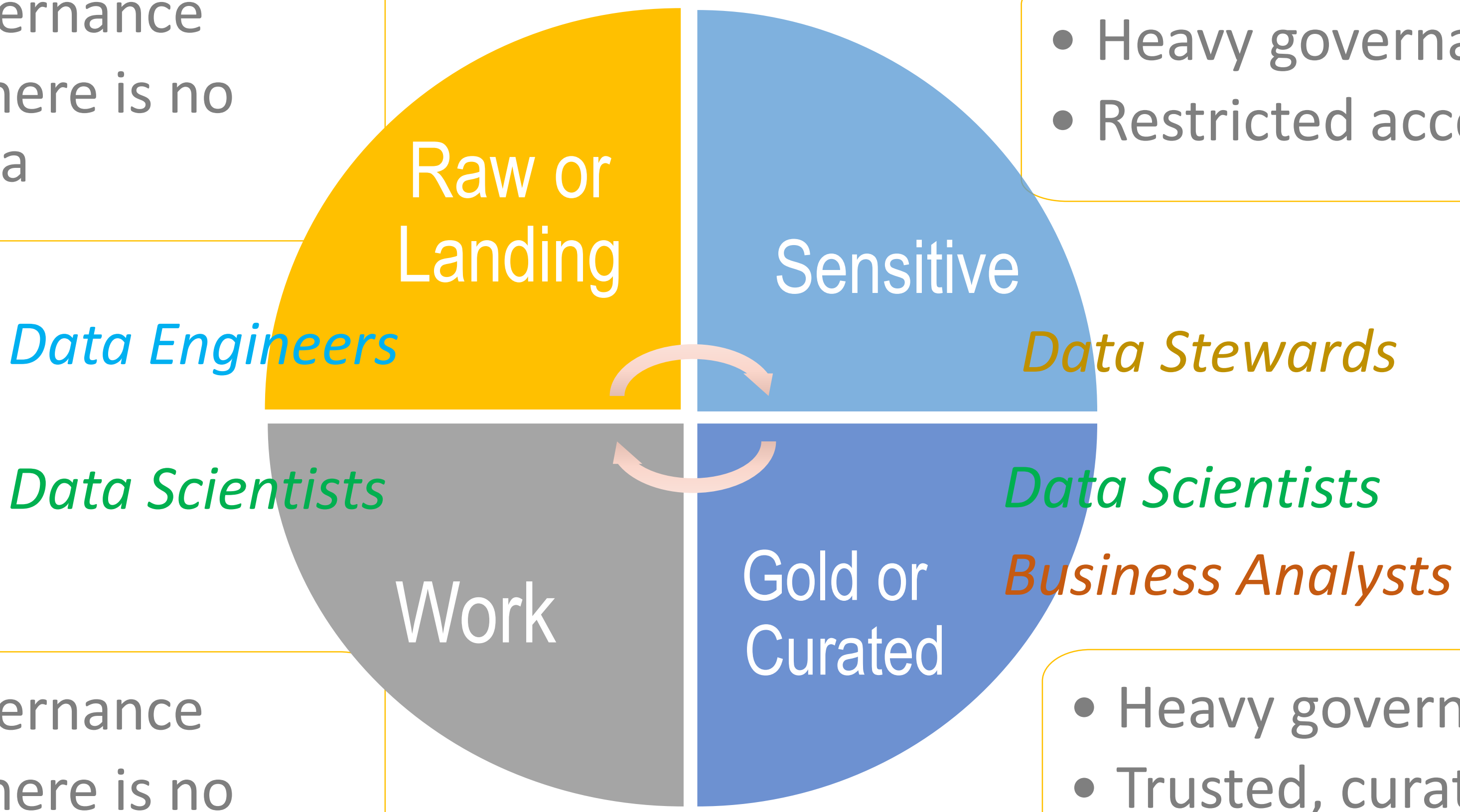
Organize the lake



Multi-modal IT – Different Governance Levels for Different Zones

- Minimal governance
- Make sure there is no sensitive data

- Heavy governance
- Restricted access



Raw or Landing

Sensitive

Work

Gold or Curated

Data Engineers

Data Stewards

Data Scientists

Data Scientists

Business Analysts

- Minimal governance
- Make sure there is no sensitive data

- Heavy governance
- Trusted, curated data
- Lineage, data quality

Business Analyst Self-Service Workflow

Set up for Self-Service

Find and Understand

Provision

Prep

Analyze

Finding, understanding and governing data in a data lake is like shopping at a flea market

“We have 100 million fields of data – how can anyone find or trust anything?” – AT&T Executive

I need data to use with self-service tools but I can’t explore everything manually to find and understand it

DATA SCIENTIST / BUSINESS ANALYST

I can’t govern and trust the data (metadata, data quality, PII, data lineage)

DATA STEWARD

I can’t inventory all the data manually and keep up with data provisioning

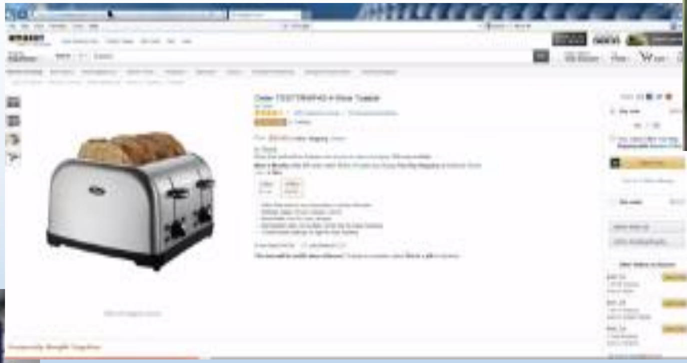
BIG DATA ARCHITECT

Botond Horvath / Shutterstock.com

Imagine shopping on Amazon.com – an Online Marketplace

Inventory

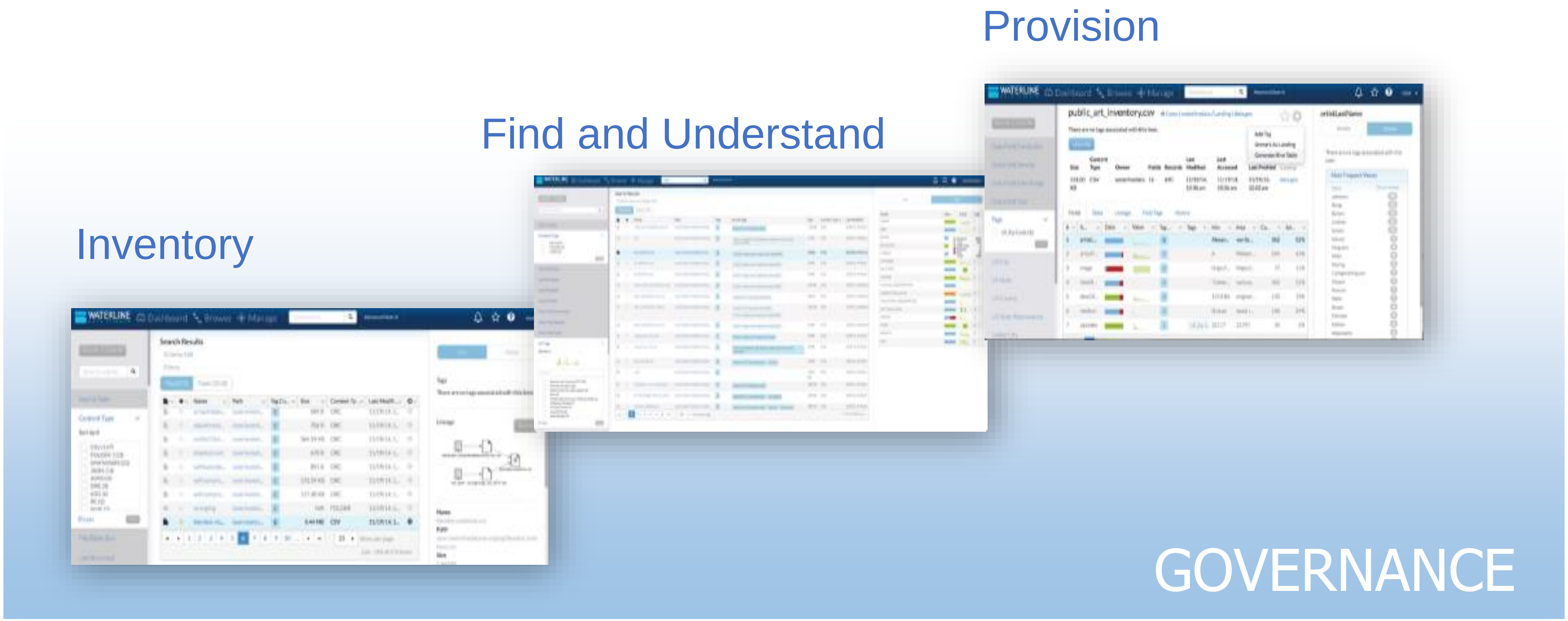
Find and Understand



Provision

GOVERNANCE

Waterline Data is like Amazon for Data in Hadoop – an Enterprise Data Marketplace



Inventory

Find and Understand

Provision

GOVERNANCE

Find and Understand

Finding and Understanding Data

- Crowdsource metadata and automate creation of a catalog
- Institutionalize tribal data knowledge
- Automate discovery to cover all data sets
- Establish trust
    - Curated annotated data sets
    - Lineage
    - Data quality
    - Governance

Accessing and Provisioning Data

Provision

You cannot give all access to all users

You must protect PII data and sensitive business information

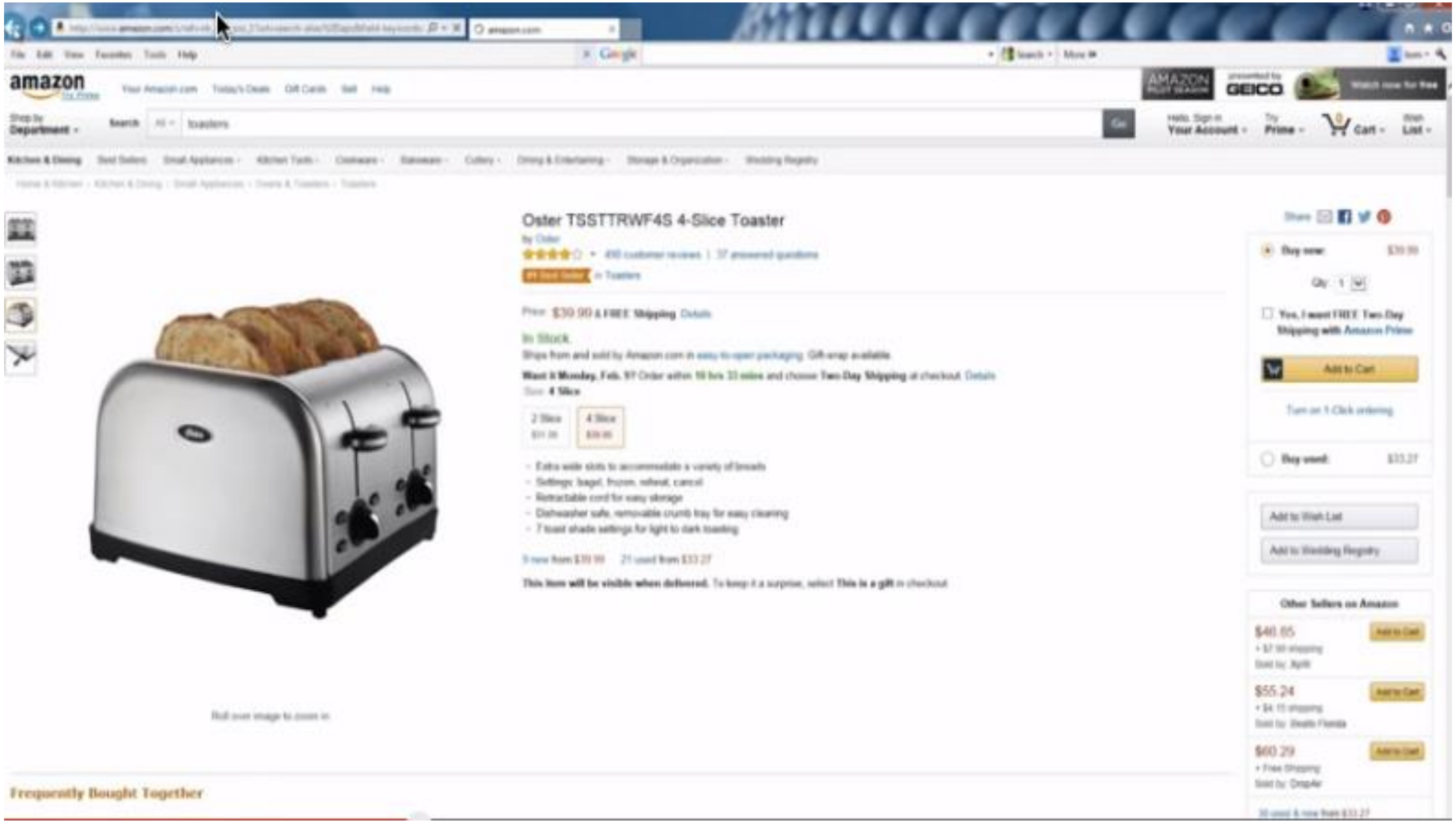
Top down approach

- Find and de-identify all sensitive data
- Provide access to every user for every dataset as needed

Agile/Self-Service Approach

- Create a metadata-only catalog
- When users request access, data is de-identified and provisioned

Provide a Data Marketplace Interface to Find, Understand and Provision Data



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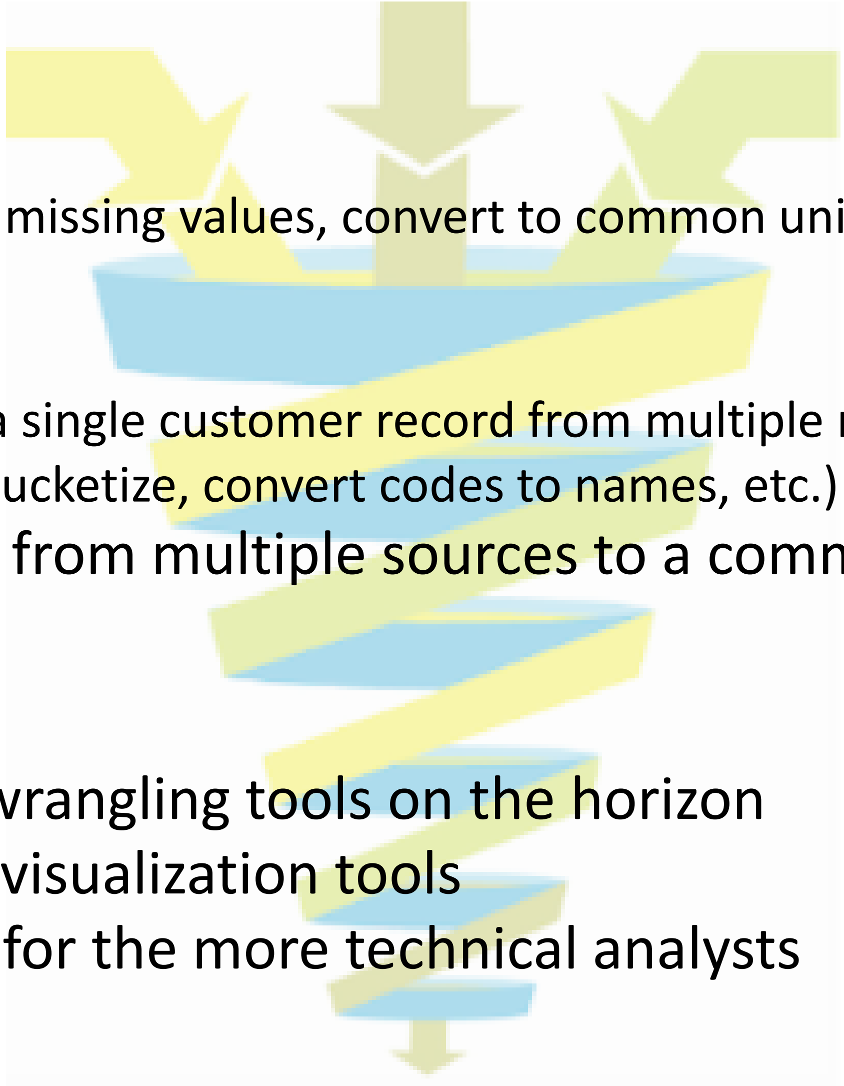
Data Prep

Prep

Prepare data for analytics

- Clean data
  - Remove or fix bad data, fill in missing values, convert to common units of measure
- Shape data
  - Combine (join, concatenate)
  - Resolve entities (e.g., create a single customer record from multiple records or sources)
  - Transform (aggregate, filter, bucketize, convert codes to names, etc.)
- Blend data - harmonize data from multiple sources to a common schema/model



Tooling

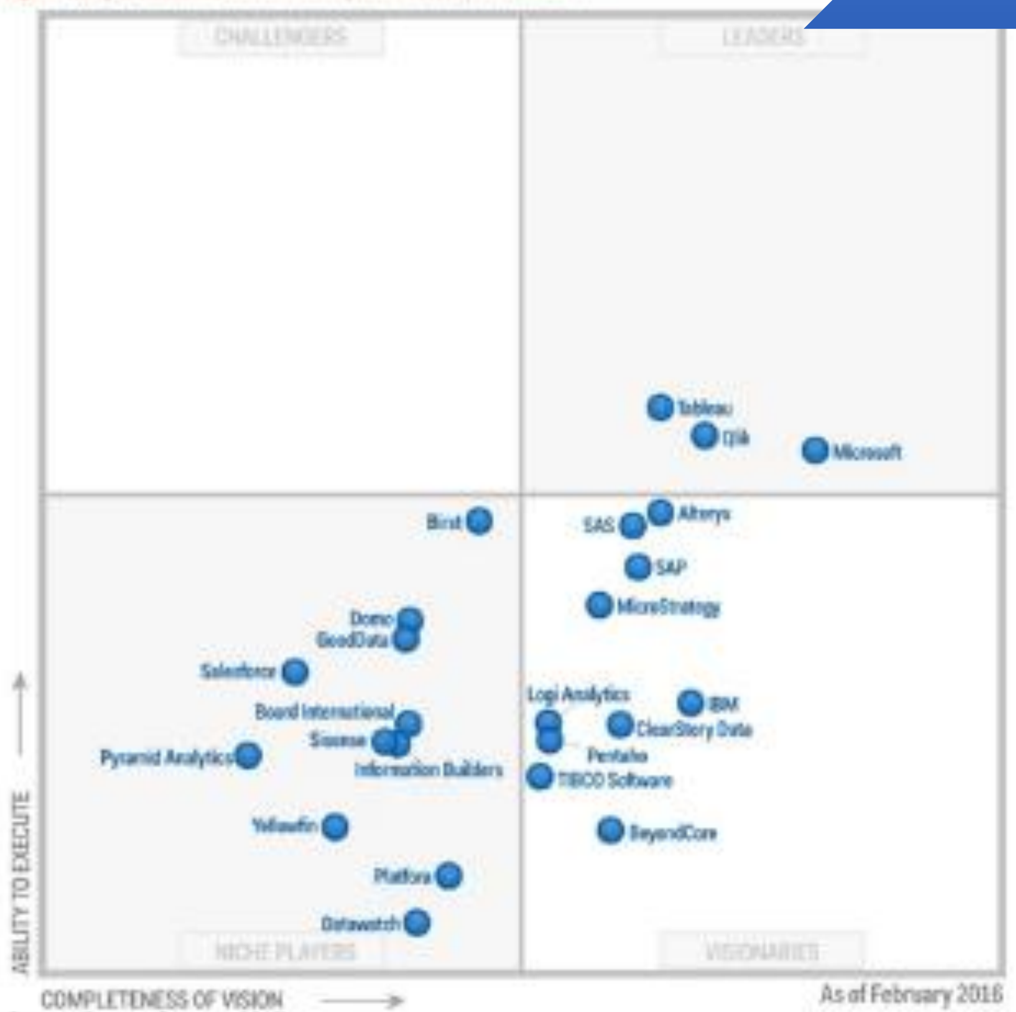
- Many great dedicated data wrangling tools on the horizon
- Some capabilities in BI/data visualization tools
- SQL and scripting languages for the more technical analysts

Data Analysis

Analyze

- Many wonderful self-service BI and data visualization tools
- Mature space with many established and innovative vendors

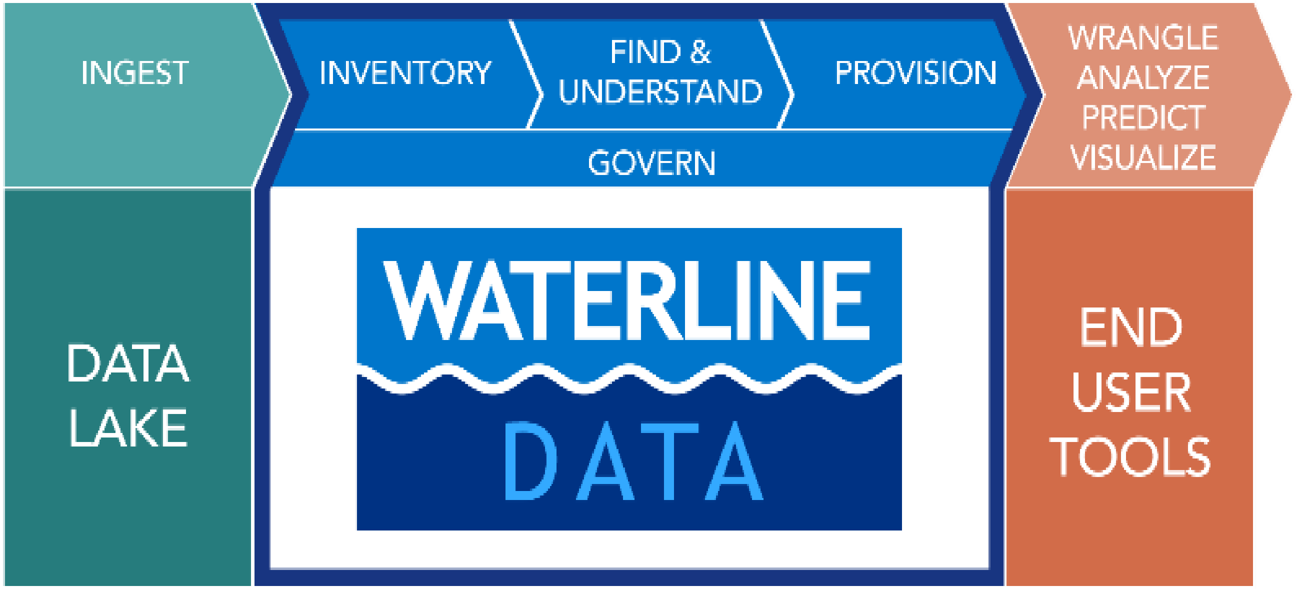
Figure 1. Magic Quadrant for Business Intelligence and Analytics Platforms



Source: Gartner (February 2016)

Magic Quadrant for Business Intelligence and Analytics Platforms
04 February 2016 | ID:G00275847
Analyst(s): Josh Parenteau, Rita L. Sallam, Cindi Howson, Joao Tapadinhas, Kurt Schlegel, Thomas W. Oestreich

Waterline Data Opens Your Data Lake to Unlock Bigger Value from ALL the Data



WATERLINE DATA NAMED COOL VENDOR

Gartner, Cool Vendors in Information Governance and MDM, 2015

*"Without **data discovery accelerators** (**like Waterline Data**), it may be less practical to **open up Hadoop-based data hubs to business users** to explore and use on their own."*

Boris Evelson, Boost your Business Insight by Converging Big Data and BI

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A Successful Data Lake

Right Platform + Right Data + Right Interface

Quick Overview of the MapR Converged Data Platform

- Broad analytics capabilities — Spark, APACHE DRILL, **and more**
- Interoperability — Standards-based APIs + POSIX NFS
- Business continuity — HA with no complex configurations, incremental mirroring, consistent snapshots
- Cost effectiveness $↓ — Higher performance, simplified stack, transparent compression, distributed master (NameNode) data
- Multi-tenancy capabilities — Volumes, data/job placement control, granular security

Q&A