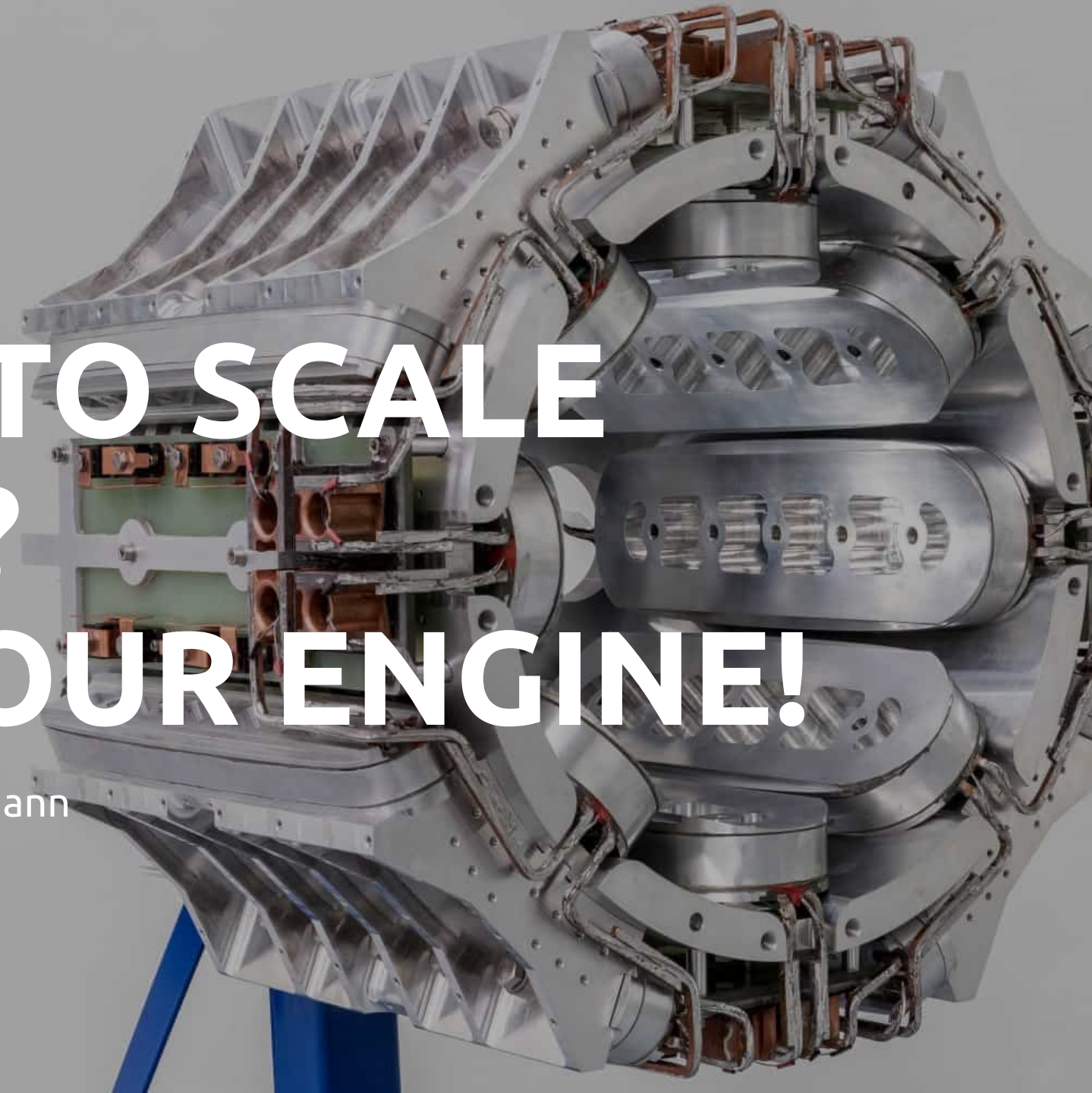




YOU WANT TO SCALE ANALYTICS? IMPROVE YOUR ENGINE!

Nordics Architects Days 2023 | Arne Rossmann





:~\$ WHOAMI



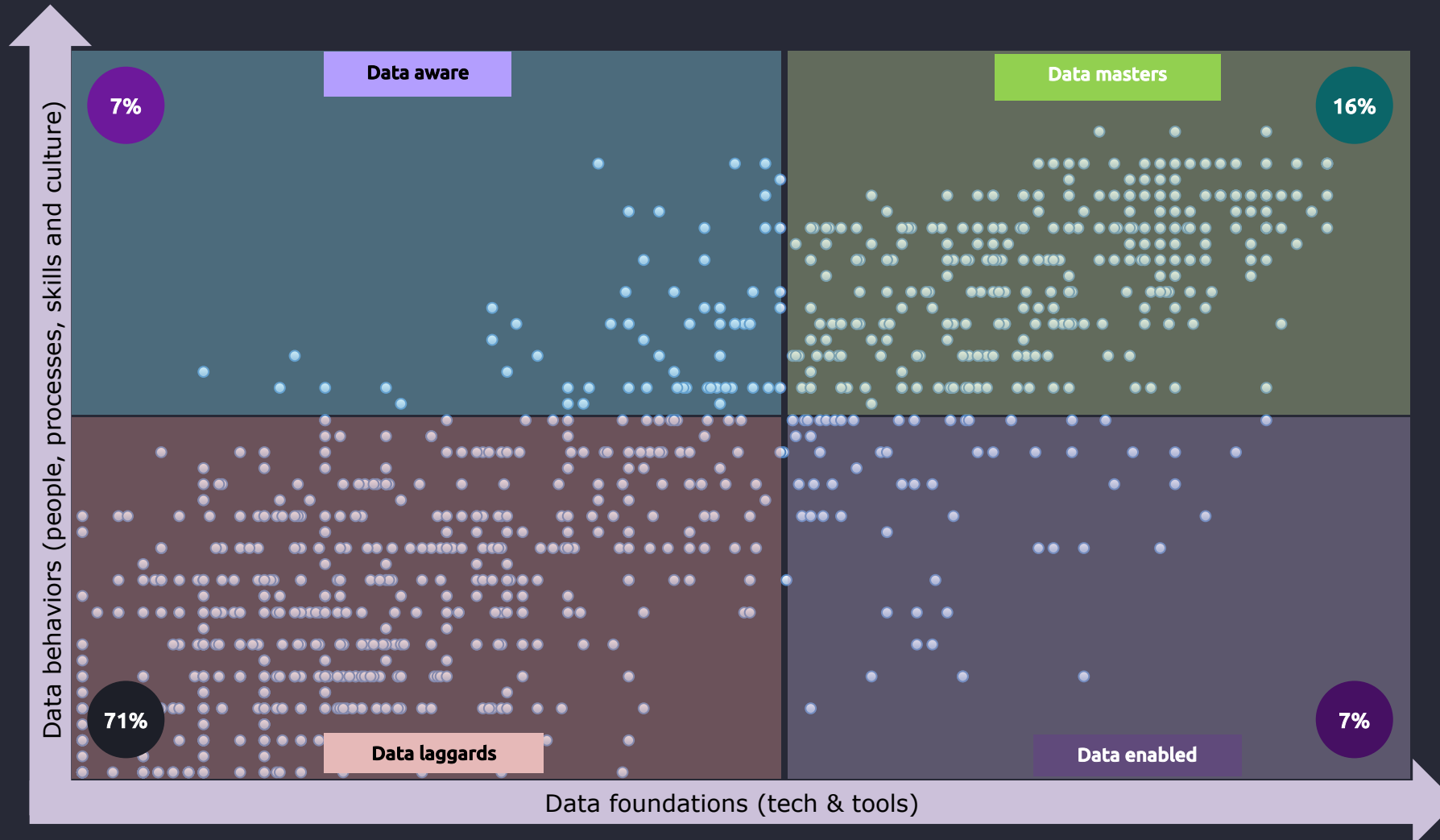
- 10 years at Capgemini | Germany
- Enterprise Architect with Focus on Data Powered Enterprises and Data Platforms



- Facilitator for DevOps Transformation, BLAC, CACC, ...
- Dad of a ~1y old son
- Apart from the desk: be active (running, hiking, cycling, ...)
- Love to code (Smart Home, ...)



ONLY ABOUT ONE IN SIX ORGANIZATIONS GLOBALLY CAN BE CATEGORIZED AS A DATA MASTER



Source: Capgemini Research Institute, Data-powered enterprises survey, August 2020, N=500 global technology executives, N=504 global business unit executives, N=50 technology executives in retail, N=50 business executives in retail. Percentages are rounded off to the nearest integer and do not sum to 100.



THE FOCUS IS NOW ON VALUE

CEOs and boards of directors



Have Spent Lots Of Money & Time On D&A



Where is next Repeatabe & Sustainable Value

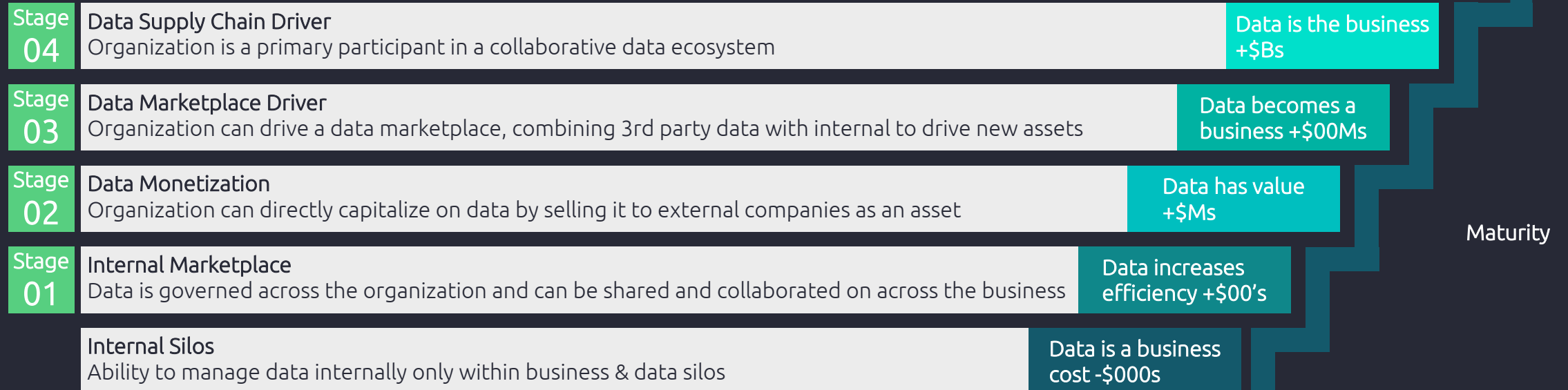


TIME IS RUNNING OUT



By **2022**, **30%** of CDOs will partner with their CFO to formally value the organization's information assets for improved information management and benefits.

Gartner: Top Priorities for IT : Data & AI Leaders – Leadership Vision 2021





AB VOLVO HAS A BOLD STRATEGY TO BOTH GROW AND STAY RESILIENT, WHILE LEADING POSITIVE SOCIETAL CHANGE

• Growth



- >35% electric vehicle sales by 2030
- Higher life cycle revenue per unit
 - >1.5x for electric vehicles
 - >5x for autonomous solutions

• Resilience



- >50% of Group sales from service by 2030

Leading the way to a fossil free society by 2050



TO ACHIEVE THE GOAL OF > 50% DIGITAL SERVICE , THE ESTABLISHMENT OF A DATA-DRIVEN VALUE CHAIN IS THE KEY

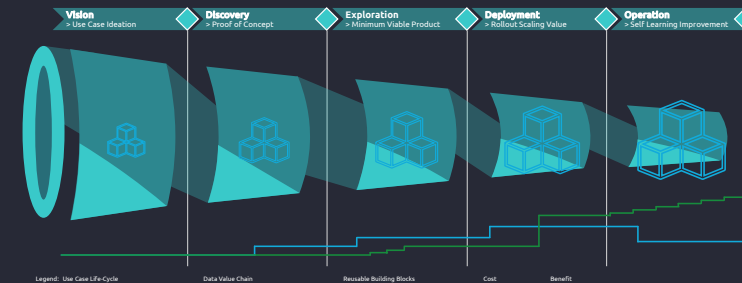
>50% of Group sales from **service** by 2030



Operated Data-Driven Use Cases

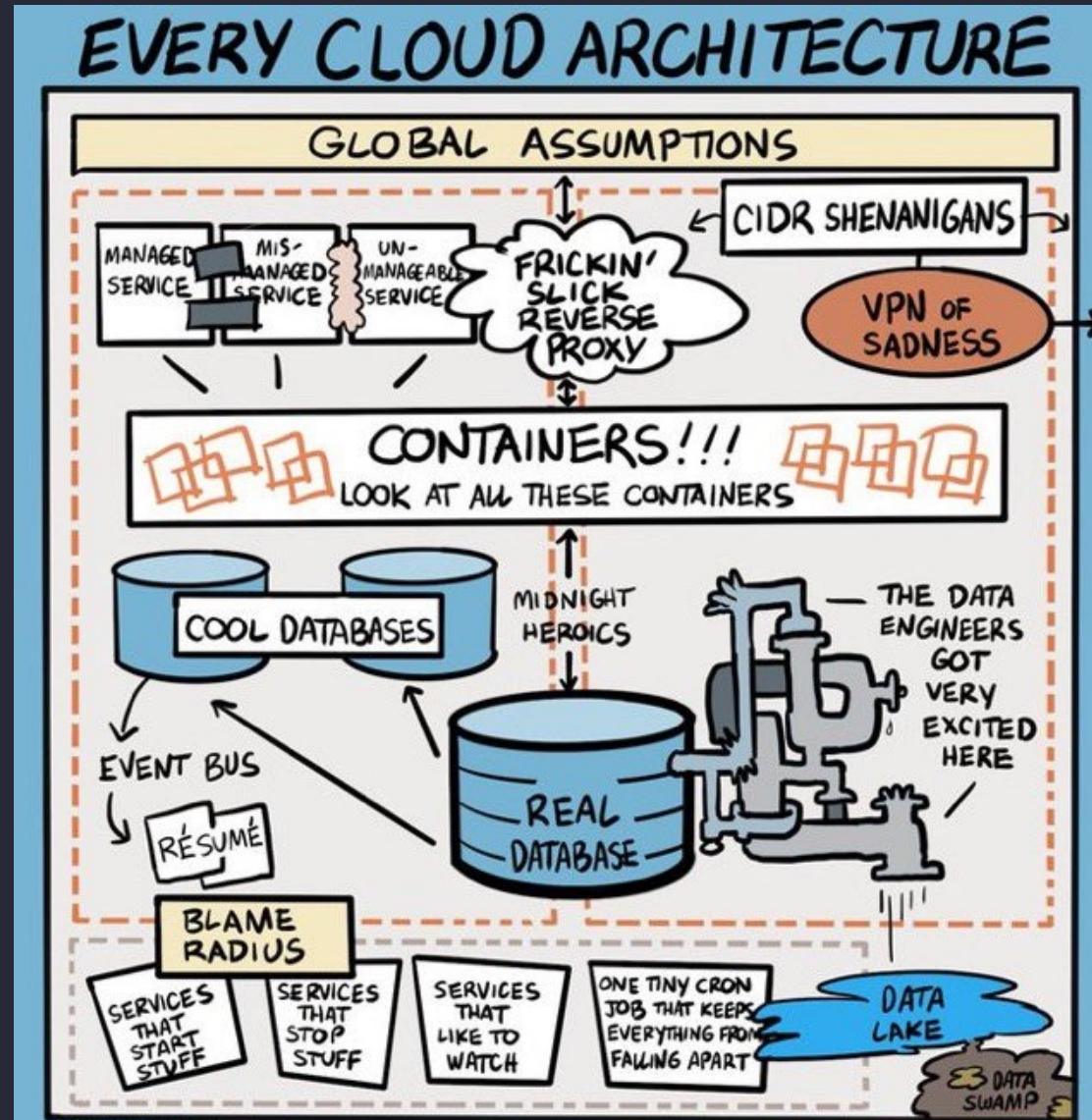


Fast & Reliable Data Product Delivery to **serve** Use Cases





.. BUT THE ARCHITECTURE IS SIMPLE ...





THE READY-TO-USE SOLUTIONS ARCHITECTURES ARE A GOOD BASIS

ARCHITECTURE
IBM z/OS online transaction processing (OLTP) workload on Azure

ARCHITECTURE
Zero-trust network for web applications with Azure Firewall and Application Gateway

ARCHITECTURE
Azure IoT reference architecture

ARCHITECTURE
Modern data warehouse for small and medium business

1-6 (48)

| | | |
|--|---|---|
| <p>REFERENCE ARCHITECTURE DIAGRAM UPDATED</p> <p>AWS DevOps Monitoring Dashboard</p> <p>Reference architecture for automating the process of ingesting, analyzing, and visualizing continuous integration/continuous delivery (CI/CD) metrics.</p> <p>PDF</p> <p>August 2021</p> | <p>REFERENCE ARCHITECTURE DIAGRAM NEW</p> <p>Change Data Capture Using AWS Database...</p> <p>Reference architecture series that enables customers to migrate databases using on-going replication, ingest real-time changes from source databases through streaming services, and create data pipelines to build transactional data lakes.</p> <p>PDF</p> <p>August 2021</p> | <p>REFERENCE ARCHITECTURE DIAGRAM NEW</p> <p>Machine to Cloud Connectivity Framework</p> <p>Deploy a solution that provides secure factory equipment connectivity to the AWS Cloud.</p> <p>PDF</p> <p>Analytics Internet of Things Storage</p> <p>July 2021</p> |
| <p>REFERENCE ARCHITECTURE DIAGRAM NEW</p> <p>SQL-Based ETL with Apache Spark on Amazon...</p> <p>Deploy a solution that creates meaningful insights using codeless ETL capabilities and workflow orchestration automation.</p> <p>PDF</p> <p>July 2021</p> | <p>REFERENCE ARCHITECTURE DIAGRAM NEW</p> <p>Monitoring Streaming Data with Machine Learning</p> <p>This architecture enables customers to monitor streaming data and compare it in near-real-time to a machine-learned forecast, raising an incident or alarm if actual performance deviates significantly from the forecast.</p> <p>PDF</p> <p>July 2021</p> | <p>REFERENCE ARCHITECTURE DIAGRAM NEW</p> <p>AWS Streaming Data Solution for Amazon Kinesis</p> <p>Deploy a solution that automatically configures the AWS services necessary to easily capture, store, process, and deliver streaming data using Amazon Kinesis.</p> <p>PDF</p> <p>Analytics</p> |

| | |
|--|---|
| <p>Machine learning with structured data: Training the model (Part 2)</p> <p>In this tutorial, you create a wide and deep machine learning (ML) prediction model using the TensorFlow high-level Keras API. You train the model on AI Platform using the CSV files...</p> <p>Learn more</p> | <p>Machine learning with structured data: Deploying a web application (Part 3)</p> <p>In this tutorial, you use the prediction API to drive online predictions for a web application running on App Engine. This tutorial is the final part of a three-part series. It assumes that you...</p> <p>Learn more</p> |
| <p>Migrating containers to Google Cloud: Getting started</p> <p>This document helps you plan, design, and implement the migration of your containers to Google Cloud. If done incorrectly, moving your workloads from one environment to another ca...</p> <p>Learn more</p> | <p>Migrating containers to Google Cloud: Migrating from OpenShift to Anthos</p> <p>This document helps you plan, design, and implement your migration from OpenShift to Anthos. If done incorrectly, moving your workloads from one environment to another ca...</p> <p>Learn more</p> |

<https://docs.microsoft.com/en-us/azure/architecture/browse/>

https://aws.amazon.com/architecture/reference-architecture-diagrams/?achp_addr=cs5

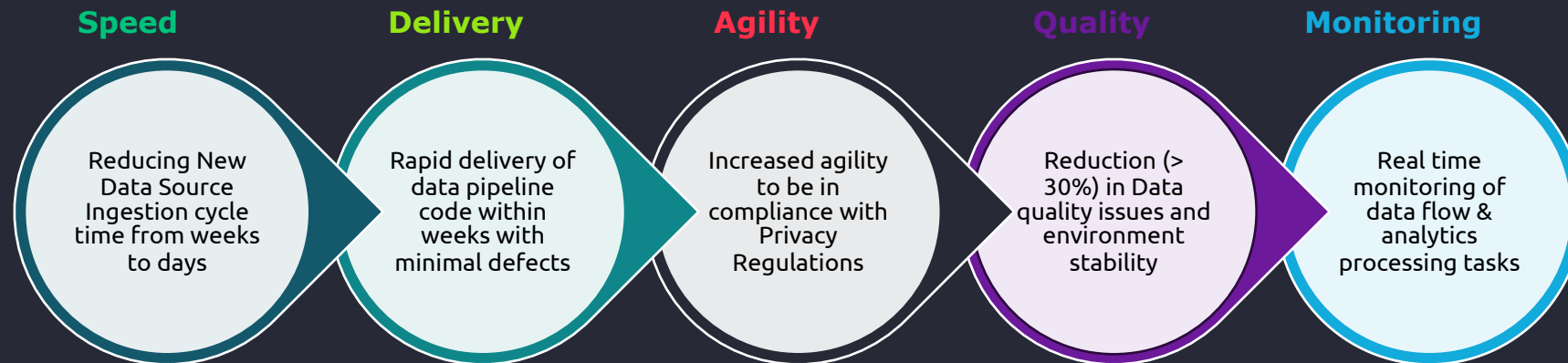
<https://cloud.google.com/architecture>



IMPLEMENTING THE DATAOPS VALUE CHAIN SUPPORTS THE OVERARCHING GOALS



Resulting Into



For Business

- Enabling Data Powered Culture
- Improved collaboration to enable quicker availability of data
- Improved quality of data and transparency of defects
- Easier governance and management of data

For IT

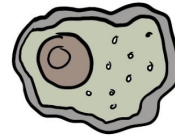
- Better agility to adopt changes in data sources
- Quicker releases and improved quality of data pipeline
- Reduced effort to identify data quality defects and issues
- Proactive monitoring and management of data pipelines



... BUT ~~DEVOPS~~ DATAOPS WILL HELP US

EVOLUTION OF OPERATIONS

OPS



- PRIMORDIAL, PROTOZOIC
- BORN IN THE SWAMPS OF PERL
- OPERATES IN A SINGLE-CELL SILO
- SURPRISINGLY RESILIENT

DEVOPS



- A CROSS-FUNCTIONAL MARVEL
- VASTLY INCREASED AGILITY
- SECRETLY JUST A BUNCH OF SINGLE CELLS THAT HAVE LEARNED NOT TO KILL EACH OTHER

DEVSECOPS



- MORE ADVANCED, MORE PARANOID
- SECURITY IS AUTOMATED RIGHT INTO ITS DNA
- KNOWS THAT SHARED RESPONSIBILITY IS THE ONLY ESCAPE FROM FOSSILIZATION

DEVSECMLOPS



- WHAT EVEN IS THIS?
- IS IT A FISH WITH FEET?
- WE SHOULD PROBABLY LEAVE IT ALONE FOR A FEW MILLION YEARS AND SEE WHAT HAPPENS

TRICERATOPS






- DOES NOT CARE ABOUT YOUR ORG STRUCTURE
- VULNERABLE ONLY TO DIRECT METEOR STRIKES
- WHAT WERE WE TALKING ABOUT, AGAIN?

@acloudguru



THE FOUR DORA METRICS AND THE BENEFITS OF IMPLEMENTING THEM

Four Key Metrics of DORA

-  Deployment Frequency
-  Mean Lead Time for Changes
-  Change Failure Rate
-  Time to Restore Services

Benefits of DORA Metrics



Better Decision Making



Greater Value



Continuous Improvements

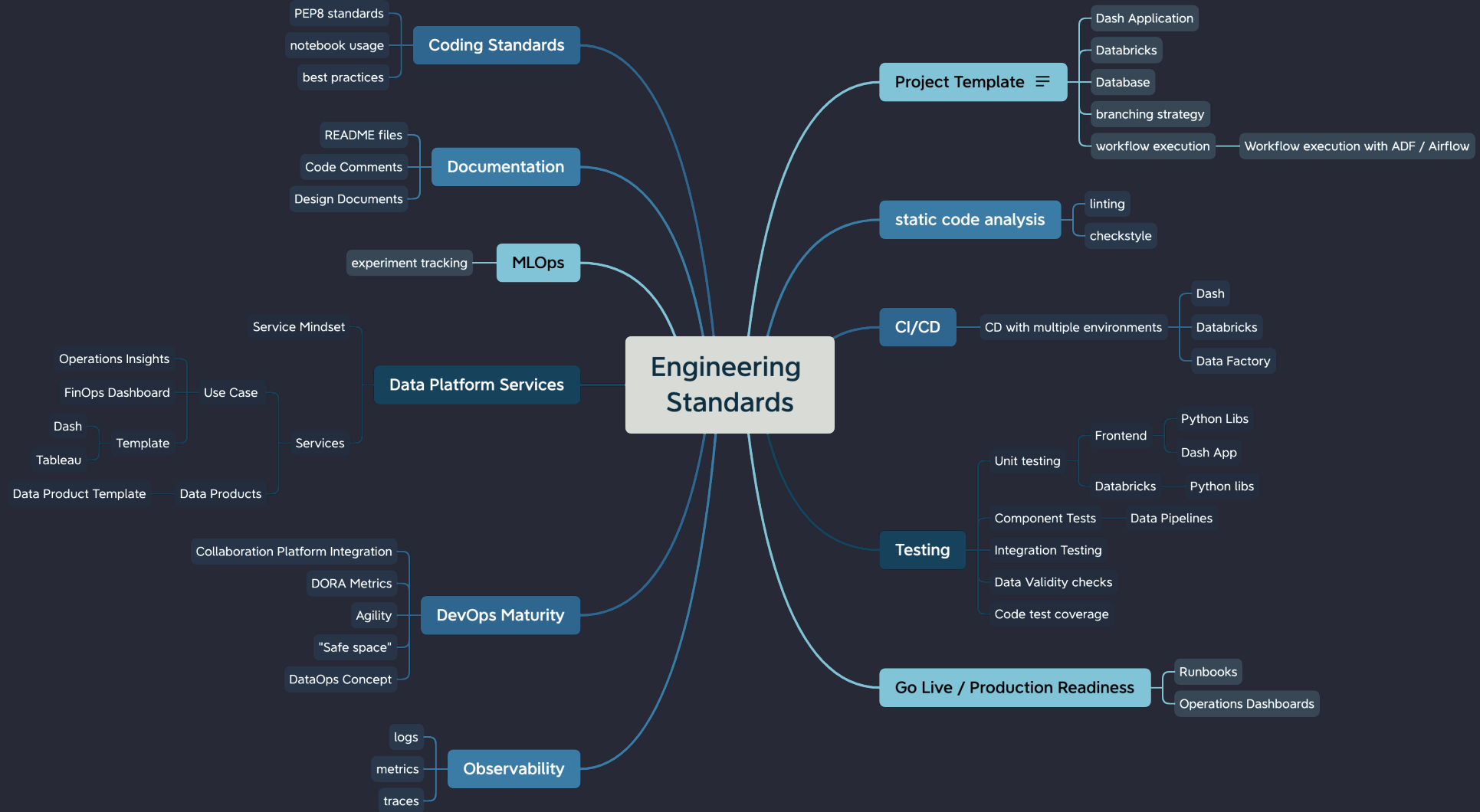


... IF WE WOULDN'T HAVE TO DEAL WITH TECHNICAL DEBTS





... WE NEED ENGINEERING STANDARDS





SUMMARY





YOU WANT TO SCALE? IMPROVE YOUR ENGINE!

To achieve **Data Mastery** and leverage the **Value** from **Data**



Operated Data-Driven Use Cases



Fast & Reliable Data Product Delivery to **serve** Use Cases



Cloud native, semantic enriched Data Platform with focus on **acceleration** of data provisioning & operations



Well-educated Architects, Engineers, a proper Target Operating Model & Data & Service Mindset



About Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of over 360,000 team members more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2022 global revenues of €22 billion.

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