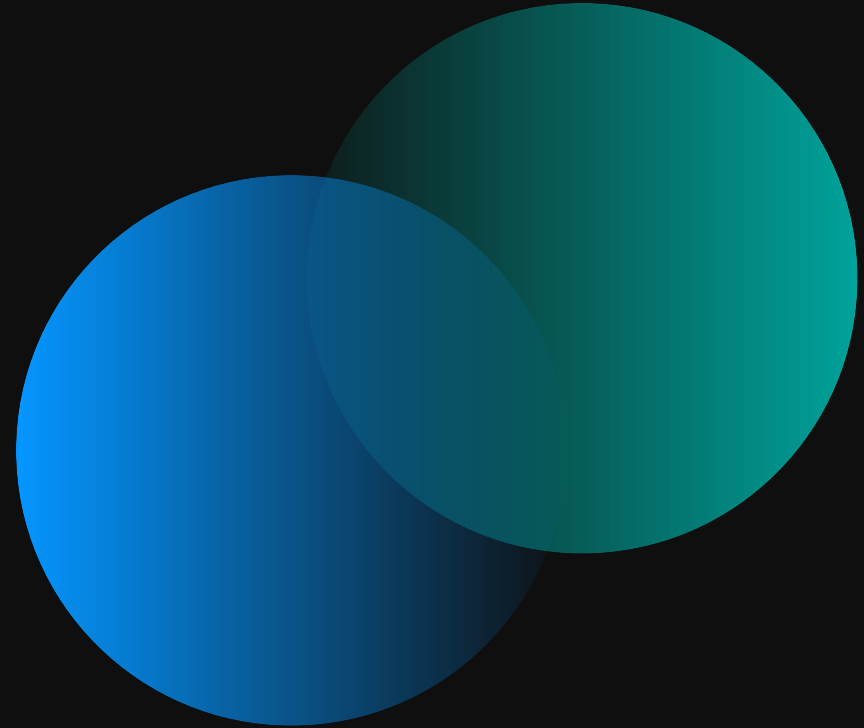


# HPC Cloud & As-a-Service

Key to **flexible high-end IT resources** or **insecure cost-trap?**



# Cloud & As a Service

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# Cloud & As a Service

**B I N G O**

Kubernetes	On Demand	Serverless	XaaS	scaleable
CI / CD	Container	IaC	NoSQL	multi tenant
SecDecOps	AWS	Hybrid	RESTful	GCP
agile	Azure	Edge	Pay as you go	vGPU
modern	Fog	Low-code	Zero trust	GitOps
public	Self-service	Cost saving	Service oriented	Automation
flexible	private	API	global	value

» TechFo... - Gespeichert Camen, Marcus CM

Datei Start Einfüg Zeich Entw Über Anim Bildsc Über Ansicl Hilfe Atos

1 Supporting your digital Strategies with high-value Solutions  
art portfolio

2 **Presentation in OneDrive**

3

4

5

6

7

8

9

10

Folie 4 von 50

Notizen

50%

**Information Protection by Azure Active Directory**

terraform.tfvars - jarvice-helm [C x +]

vscode.dev/github/mcamen/jarvice-helm

virtualized

EXPLORER

JARVICE-HE

extra

files

jarvice-settings

scripts

templates

modules

locals.tf

main.tf

outputs.tf

providers.tf

README.md

terraform.tfvars

variables.tf

OUTLINE

Editor in the browser

Code in GitHub Cloud

```

5 # See the JARVICE Terraform Configuration d
6 # on terraform variable definitions and JAR
7 # https://github.com/nimbix/jarvice-helm/bl
8 #
9 # The following configuration sections are
10 # * Global settings - Configuration optio
11 # * Deployment - Deploy JARVICE
12 # Provision GKE infrastr
13 # Provision EKS infrastr
14 # Provision AKS infrastr
15
16 #####
17 ### Global settings ###
18 #####
19 global = { # Global config options can be
20   meta = {
21     ssh_public_key = "~/ssh/id_rsa.pub
22

```

Spaces: 4 UTF-8 LF Terraform Variables Layout: German

**Application runs on Kubernetes on Amazon AWS**

JARVICE

Nicht sicher https://tf-jarvice.eu-central-1.eks.jarvice.18.159.102.160.nip.io

Bookmark synced to Google Cloud

Login

User name

Outlook connected to Exchange aaS

**Zero Trust security assured by zScaler Cloud**

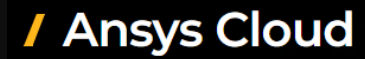
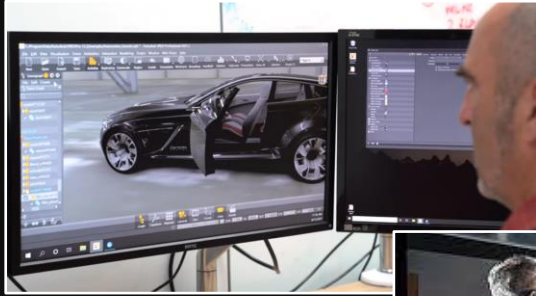
**Time sheet accounting in SAP Cloud**

We all are encompassed by  
Cloud & As a Service IT

Why not in  
High Performance Computing?



# Engineering IT is Ready





# Showstoppers & Drivers for HPC

## Previous inhibitors

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Reduced performance due to virtualization

Application licensing for key applications not adapted for Cloud

No scalable low-latency high-performance network connect (Infiniband) available

Too slow data movement and ingress / egress

Data security

# Showstoppers & Drivers for HPC

## Current drivers for HPC Cloud growth

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- Reduce asset position in the financial report
- Availability of HPC optimized hardware and networks
- Direct network links and intelligent data tiering
- Closely coupled hybrid cloud / bursting
- Hardware component shortage





# Before we start

## B I N G O

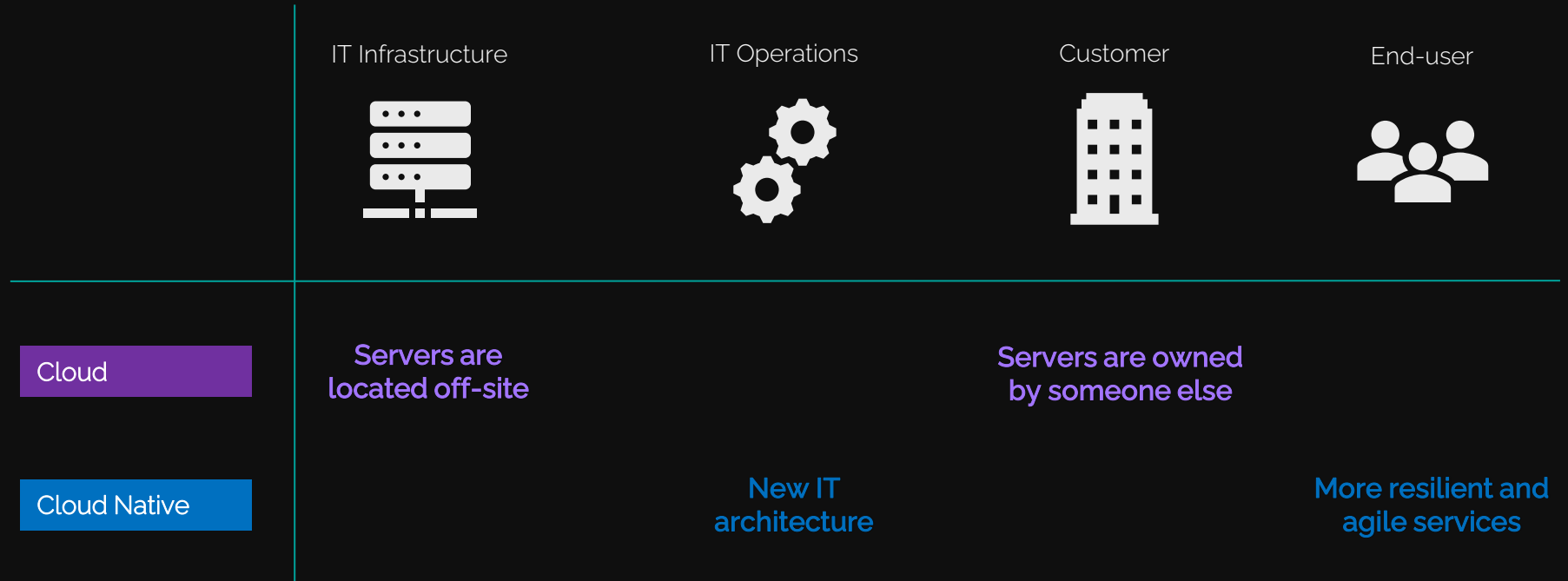
Kubernetes	On Demand	Serverless	XaaS	scaleable
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modern	Fog	Low-code	Zero trust	GitOps
public	Self-service	Cost saving	Service oriented	Automation
flexible	private	API	global	value

## Cloud, Cloud Native, As a Service

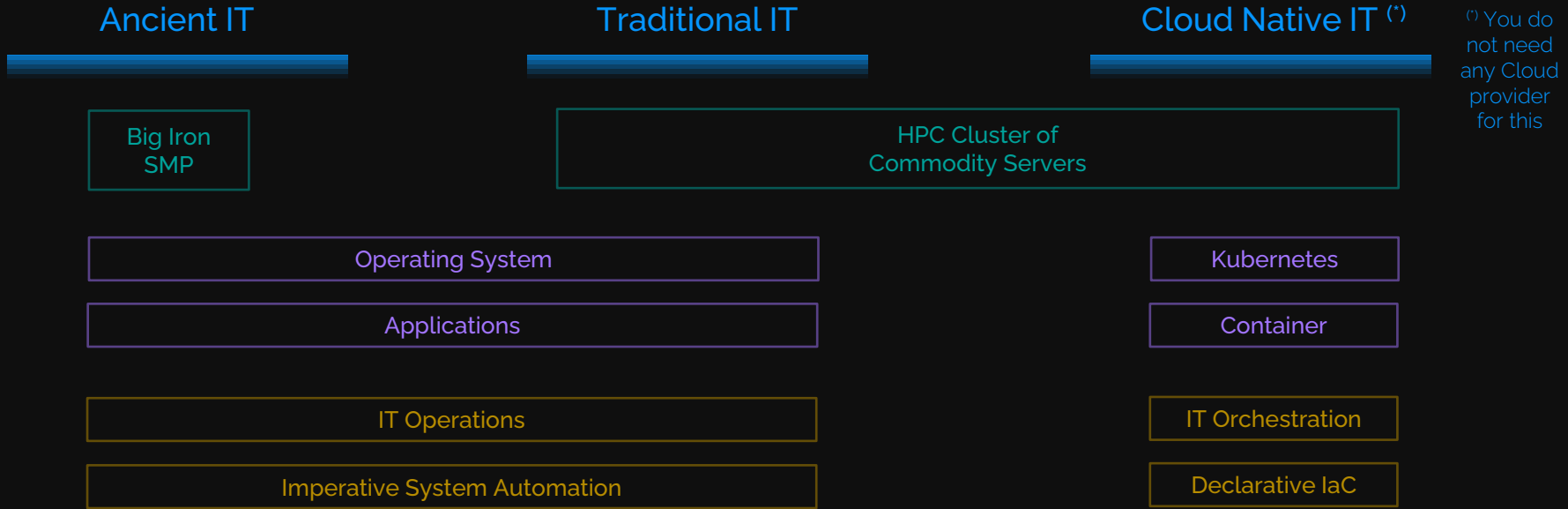
What do we mean?



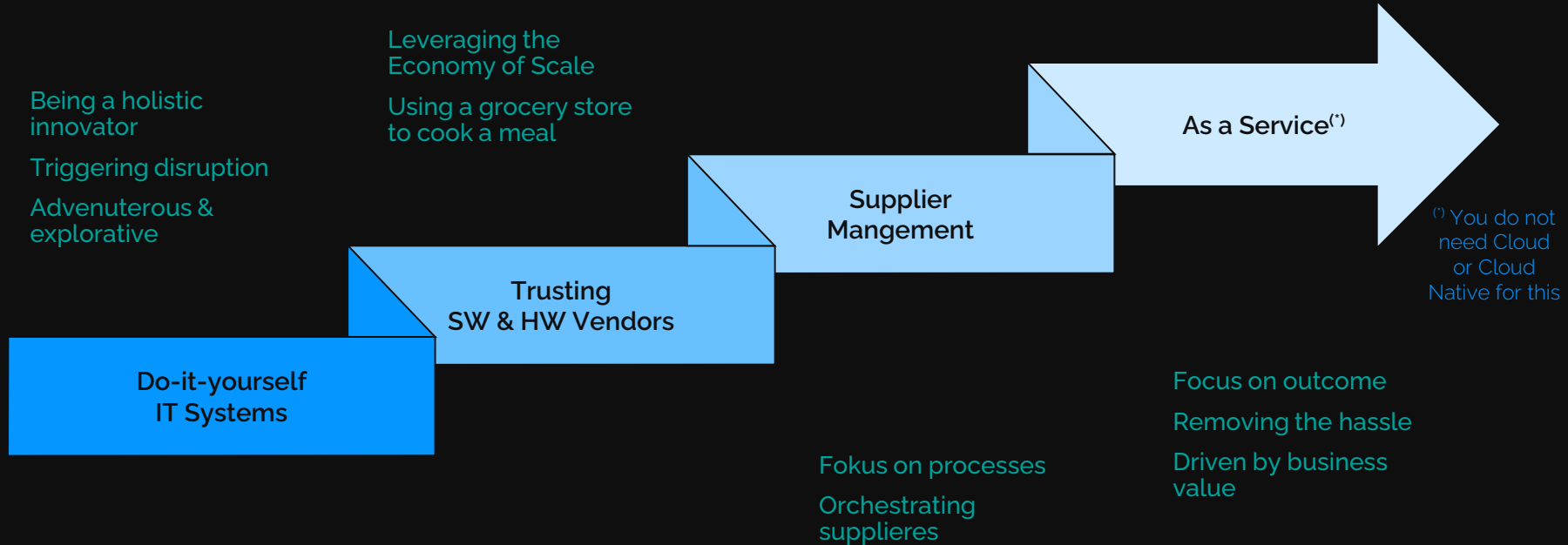
# Cloud vs. Cloud Native



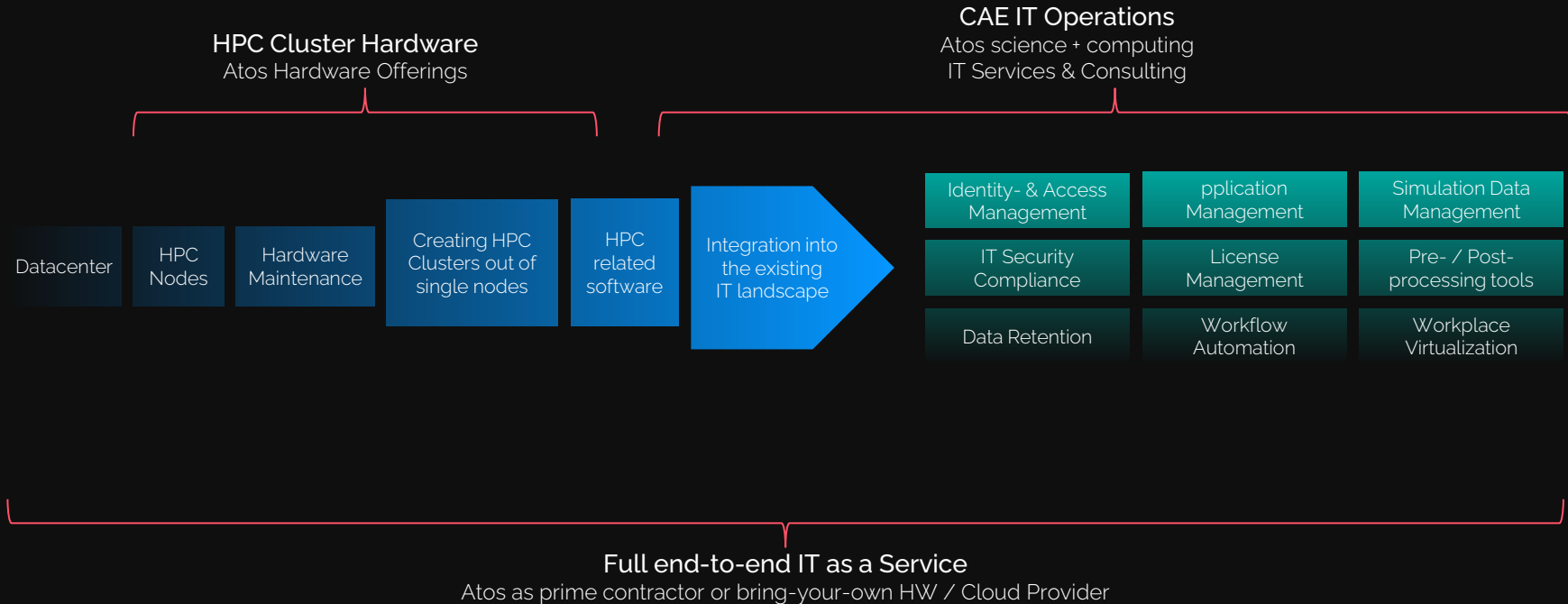
# Cloud-Native is a Disruption



# As a Service is an Evolution

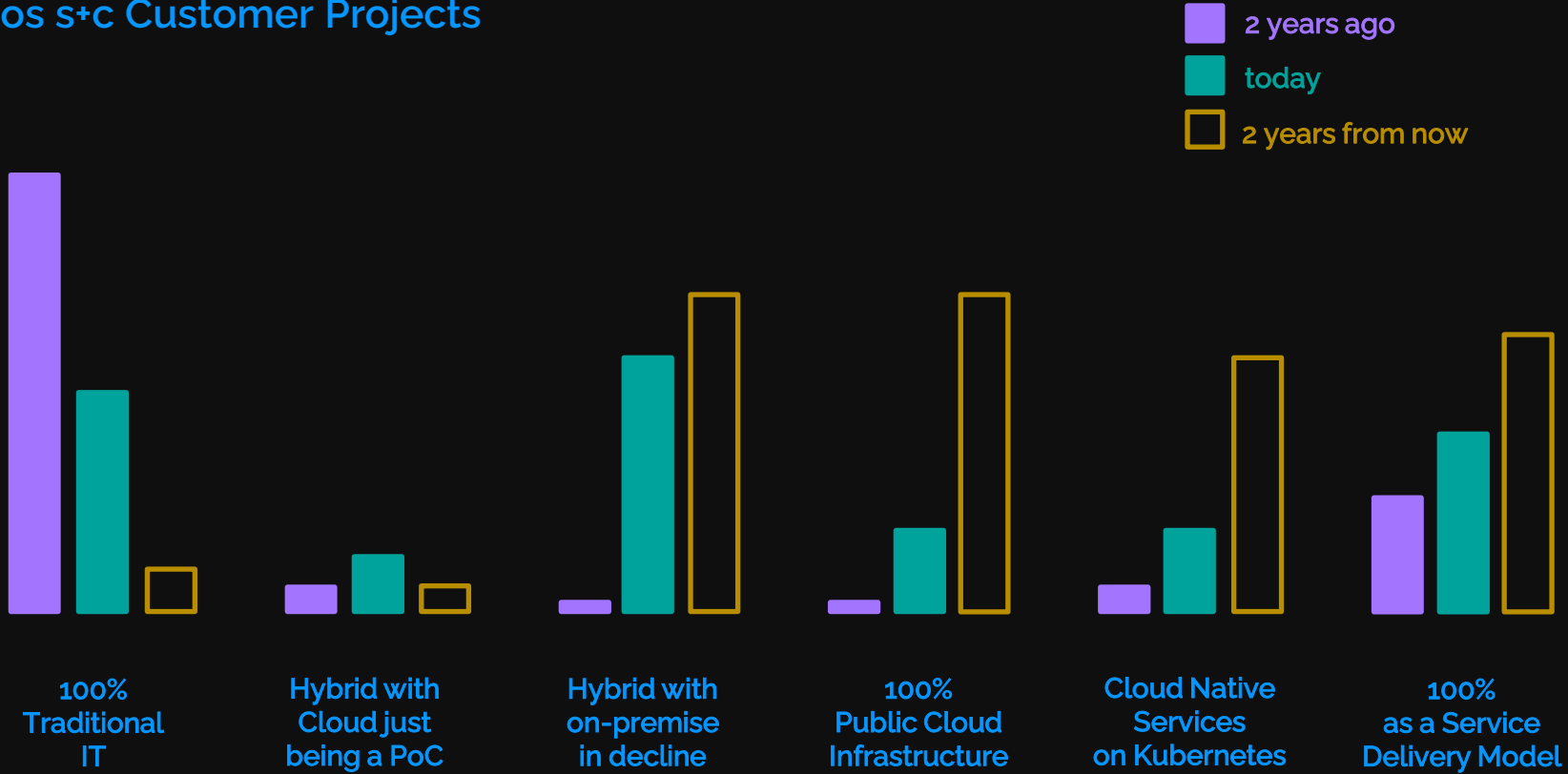


# HPC As a Service



# Trend towards Cloud, Cloud Native & aaS

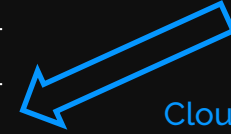
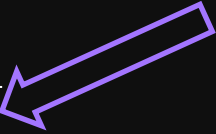
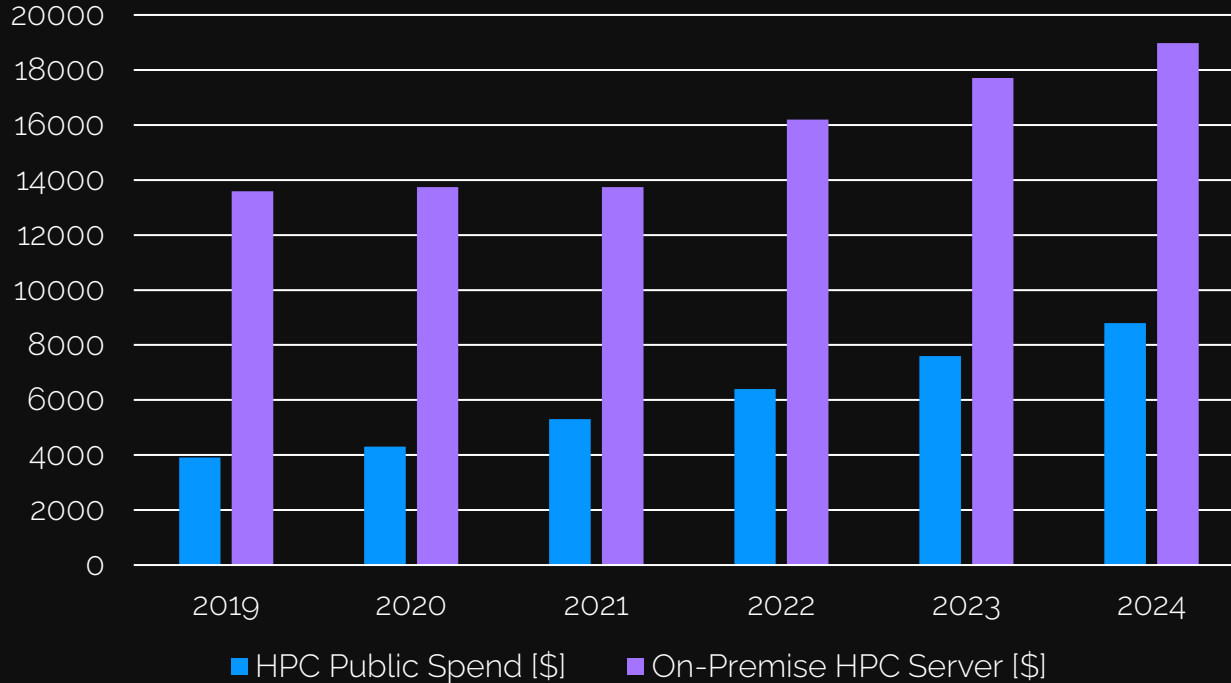
## Atos s+c Customer Projects



# Trend towards Public Cloud

Hyperion Research 2021

Dominated by  
public supercomputers



Cloud-trend dominated  
by non-public



# Is HPC Cloud a Cost Trap?

## Cloud switching costs too high for AstraZeneca

For [pharmaceutical giant AstraZeneca](#), switching to a cloud-based HPC system is off the cards for the foreseeable future for cost reasons, despite the company tapping into cloud for some of its high-performance workloads.

BTW

1/3<sup>rd</sup> of all HPC Cloud spend is for storage

# Battery Research in the Cloud

## Cellforce Group

The Cellforce Group initially develops and produces high-performance lithium-ion pouch cells for special automotive applications. Porsche AG holds a 72.7 percent stake in the company, with CUSTOMCELLS® holding the remaining shares. The managing directors are Markus Gräf as Chief Operating Officer (COO), Wolfgang Hüsken as Chief Financial Officer (CFO) and Torge Thönnessen as Chief Technology Officer (CTO). By 2025, the workforce is expected to grow from 23 employees at present to around 100. Development and production facility for high-performance battery cells will be in Germany – Baden Württemberg – Reutlingen/Kirchentellinsfurt, just south of Stuttgart.

<https://www.cellforce.de>



# HPC in a Hypergrowth Market

## How to act fast?



### No physical IT-infrastructure

No hassle with on-premises data centers and network  
No cumbersome procurement processes



### Long delivery time

No wait for hardware delivery and installation  
No delays due to component shortage



### High Pace

Fast scaling of IT resources to demand  
Fast extension the HPC workspace architecture

IT-Solution: 100% Amazon AWS – also HPC

# Remote HPC Workspace in the Cloud

## Use-case focused architecture



### Anywhere HPC

NICE DCV for high-end 3D accelerated Linux

### Scaleable HPC

Demand driven GPU HPC nodes based on in EC G4dn instances and EFS

### Reliable HPC

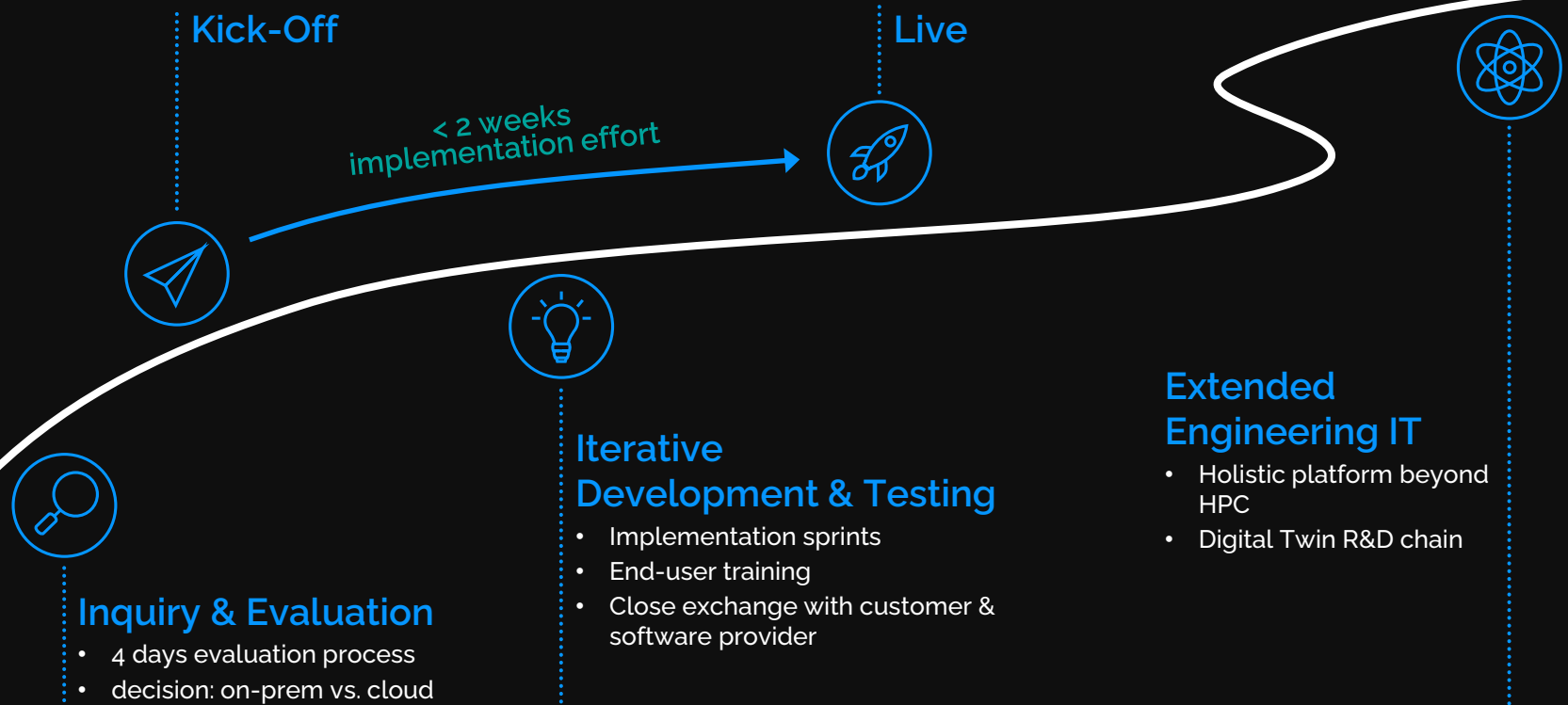
Data resilience based on S3 Object Storage

### Agile HPC

Dynamic canary style change management based of Infrastructure as Code

# Project Timeline

## Cellforce Cloud Journey



# Atos Nimbix

## Leading-Edge CAE as a Service



### Atos Acquires HPC Cloud Platform Provider Nimbix

July 27, 2021 by [staff](#)

Last month, Agnès Boudot, SVP, head of HPC & Quantum at Atos, told us — without sharing details — that the company's global strategy includes expansion into the U.S. market. At least part of that strategy was revealed today with the news that [Atos](#) has acquired long-time high-performance computing cloud platform provider [Nimbix](#).



Episode 339: Atos Acquires Nimbix

1:00 pm –  
1:15 pm

## Welcome

Matthias Schempp, Vorstand / Head of Atos science + computing

1:15 pm –  
2:00 pm

## HPC Cloud & As a Service - Key to flexible high-end IT resources or insecure cost-trap?

Marcus Camen, Chief Technology Officer

2:00 pm –  
2:30 pm

## Nimbix – Unified On Demand HPC As a Service

Steve Hebert, VP Global Head of Atos Nimbix HPC Cloud Competency Center

3:00 pm –  
3:30 pm

## Container & Kubernetes HPC - Hands-on deep dive to modern simulation, AI & analytics

Janina Dynowski, Head of science + computing Nimbix Cloud  
Holger Gantikow, Chief HPC Landscape Architect

3:30 pm –  
4:00 pm

## Cloud Security - Is your engineering data at risk?

Peter Curth, Head of Atos Cloud Operations

4:00 pm –  
4:30 pm

## Migration Cheat Sheet - Pitfalls and best practices

Open Panel