Cloud and IT: how to gain control by letting go?

Dr. Peter H.J. van Eijk, CCSK, CCSP

ClubCloudComputing

Meet your presenter

Dr Peter HJ van Eijk

One of the world's most experienced independent cloud trainers; Delivered worldwide to 1000s of students

Certified trainer for CSA "Certificate of Cloud Security Knowledge" (**CCSK**), 100+ and counting…

Pilot trainer for **Certificate of Cloud Audit Knowledge (CCAK)**.

Author of "**Cloud Adoption Essentials**" (2010)

Co-author of "**Professional Cloud Technology Associate**" (2013)

Author and Master trainer for "**CompTIA Cloud Essentials**"

Master Trainer for "Virtualization Essentials"

Former instructor for **CCSP Certified Cloud Security Professional**

Worked at (a.o.) Deloitte Consulting, EDS and University of Twente

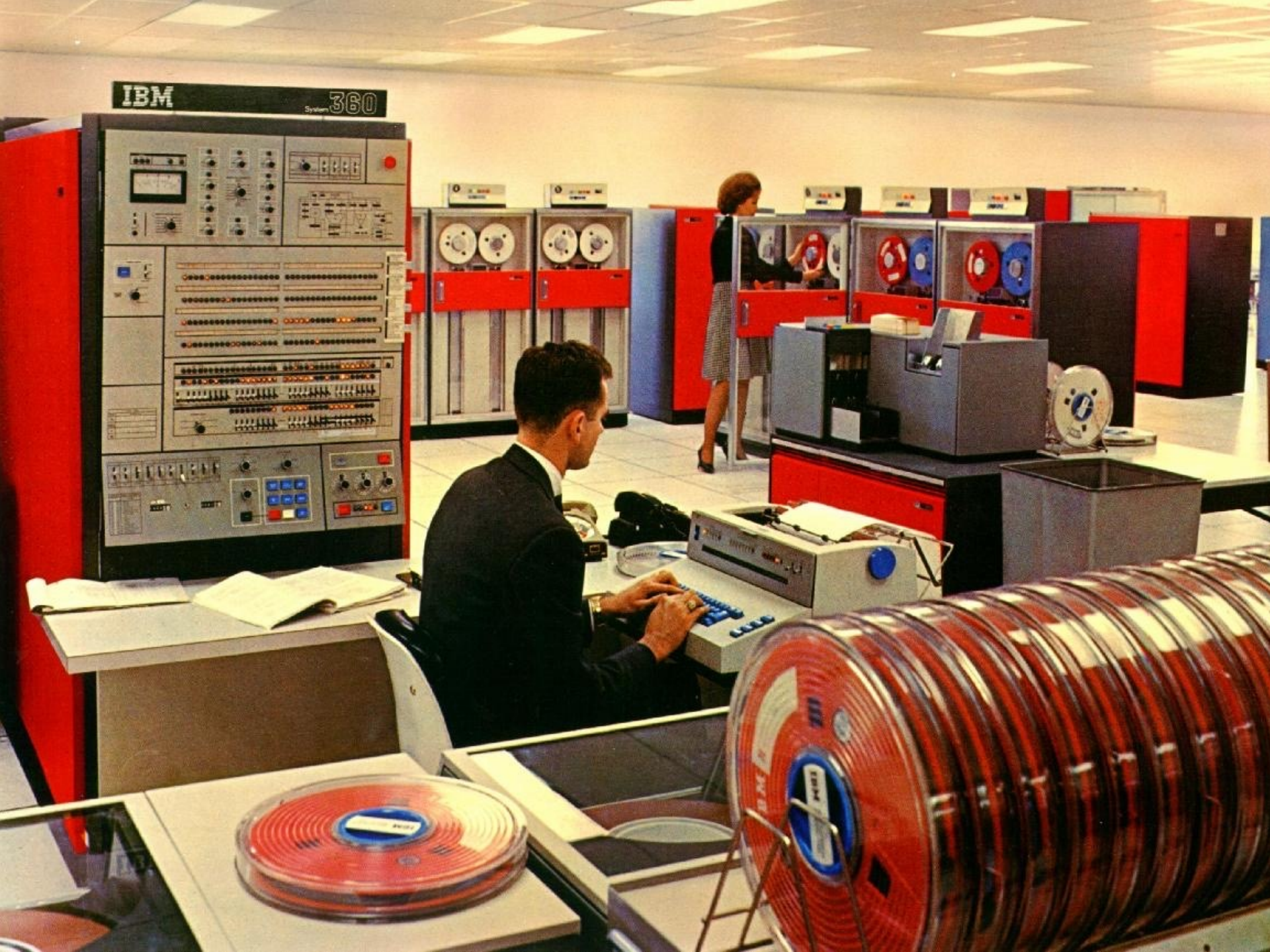
Board member Dutch Cloud Security Alliance Chapter

Associate Professor Hogeschool Utrecht

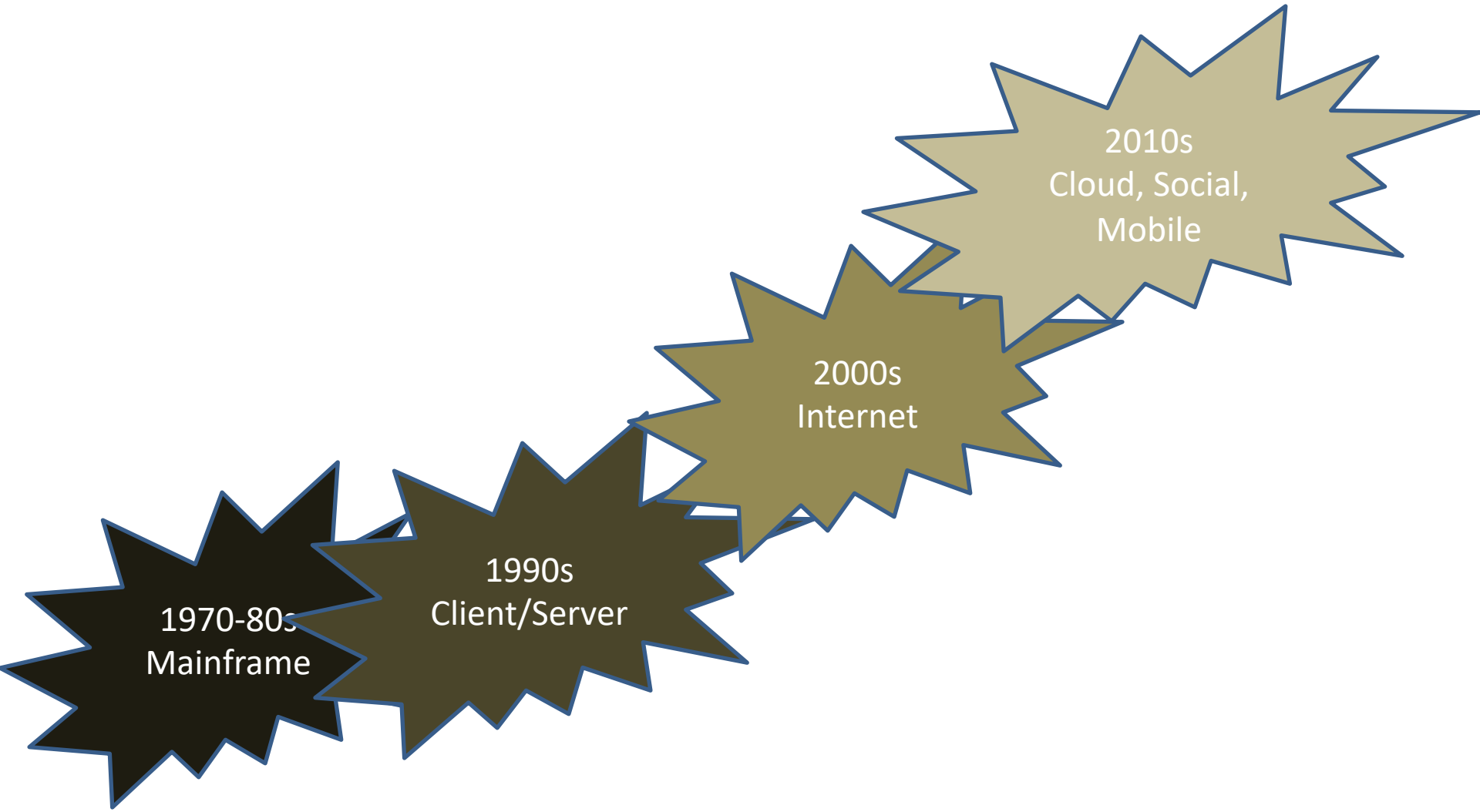

Cloud is a state of mind

Your job

Let's assume that you work with IT. As an IT manager, systems or solutions architect, QA, or any other IT role. Or you are involved in procuring IT or as an auditor or on the legal side of IT.


IBM
System 360

How did we get here?



Each of these steps was a disruptive innovation …

Disruptive innovations

Characteristics	Examples
• Not as good (initially) • Much cheaper • Addresses 'over-served' customers • Rapidly improving • Eventually drives original out of the market	• Wikipedia • PC • Internet • Cloud computing

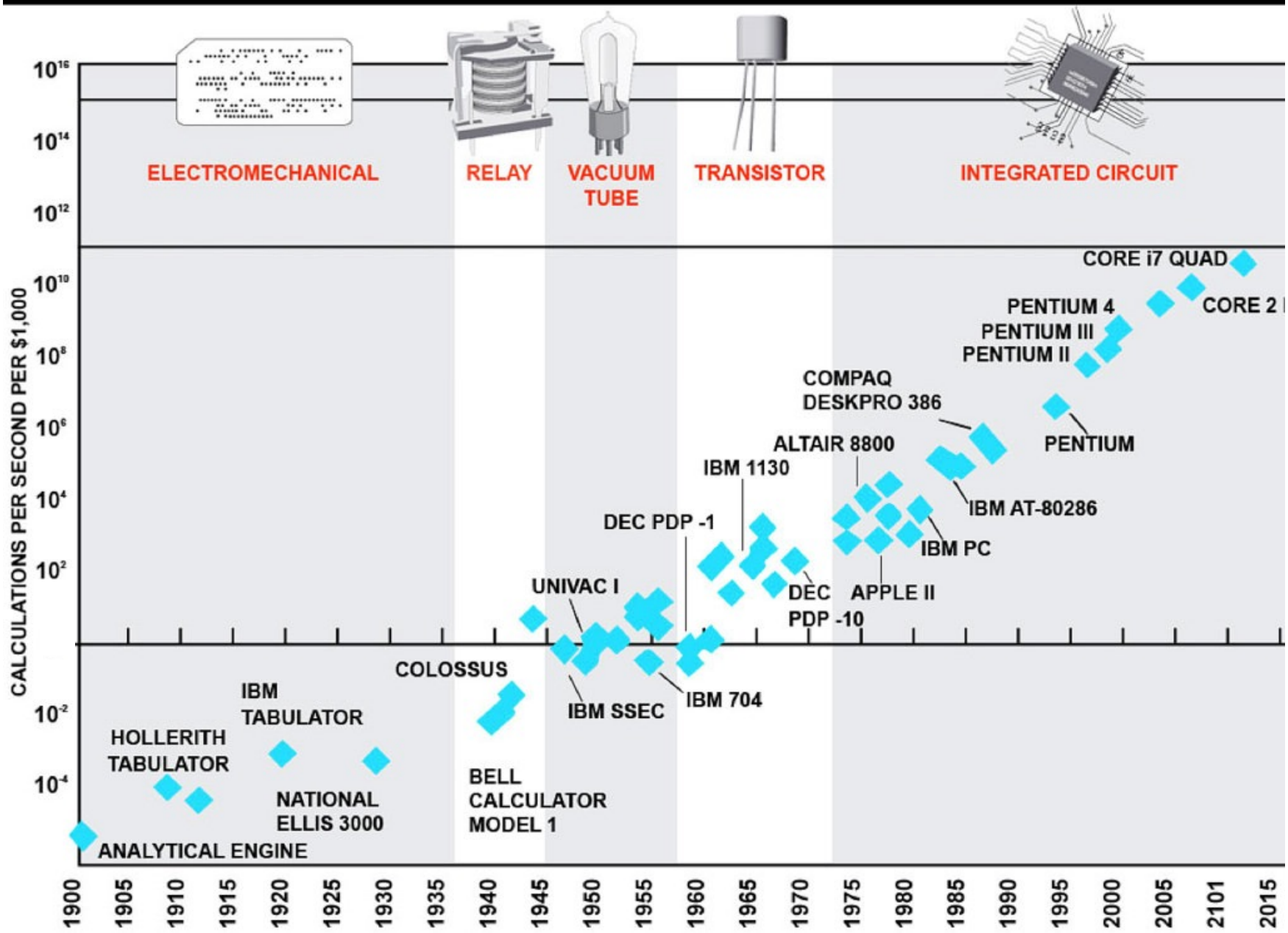
https://en.wikipedia.org/wiki/Disruptive_innovation


Tipping
Points

Your daddy's datacenter

The new cloud world: everything is connected

115 Years of Moore's Law

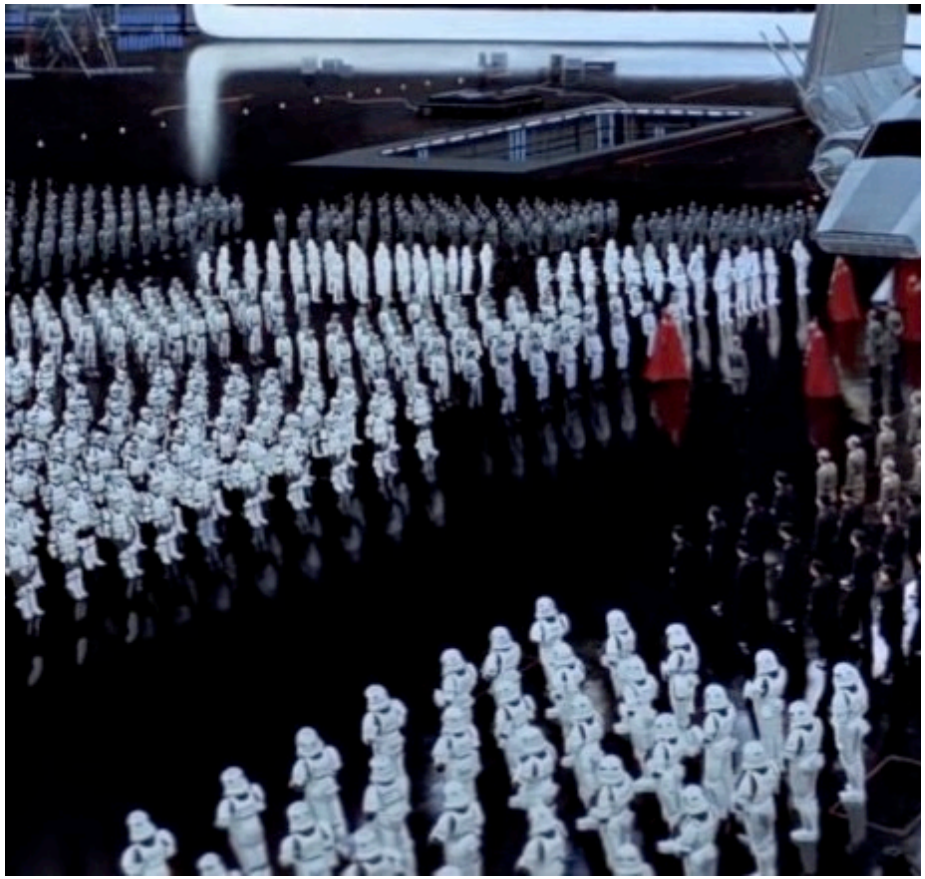


IT is getting more complicated

- Moore's law
- More technology
- More components
- More programming languages
- More interfaces and devices
- More pervasive IT
- More threats
- More brainpower required
- More productivity required

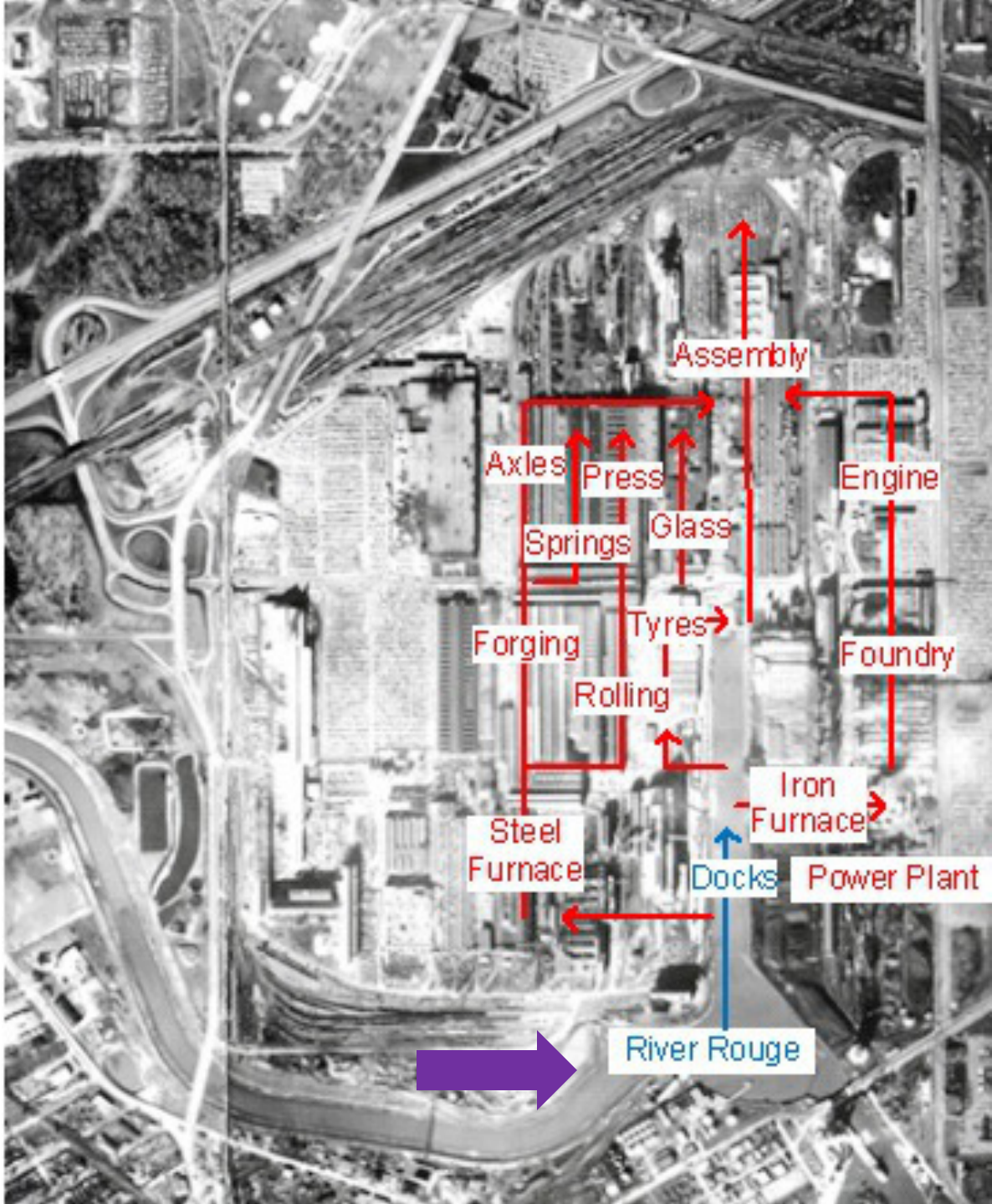
Cloud is here to stay

- Imagine: 10 times the number of computers and amount software from what we have today
- How much staff does that take to manage?



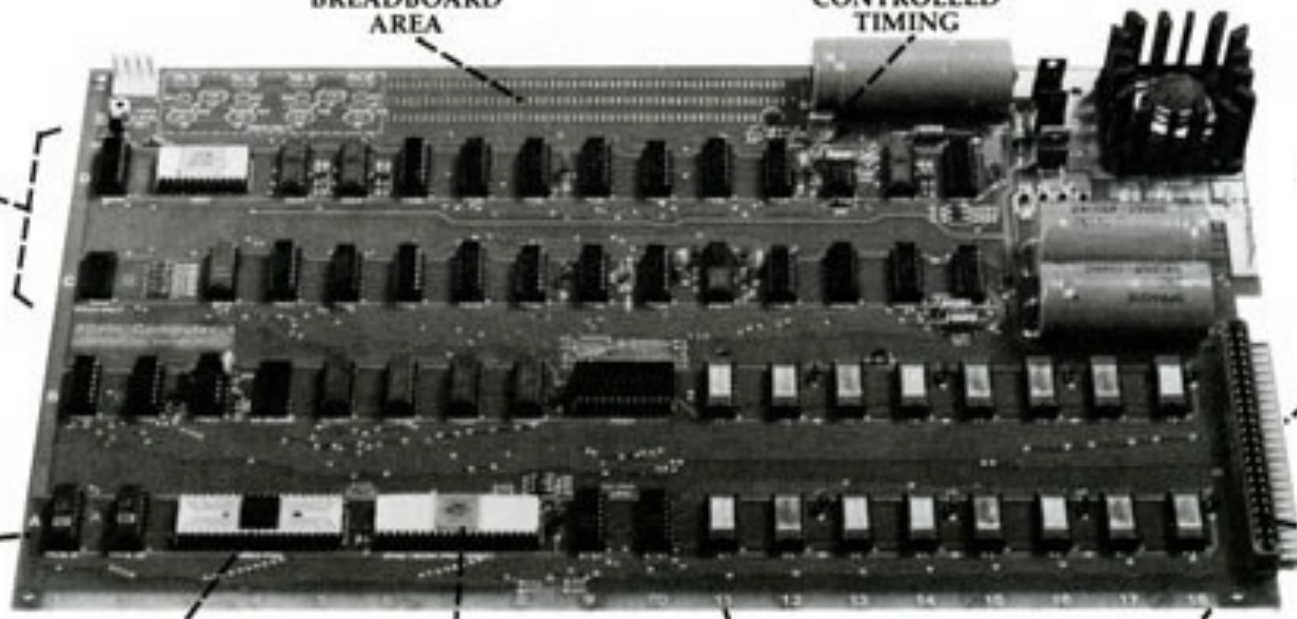

Ford

Ford River Rouge plant



Byte into an Apple $666.66*

* includes 4K bytes RAM



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CIRCLE NO. 7 ON INQUIRY CARD


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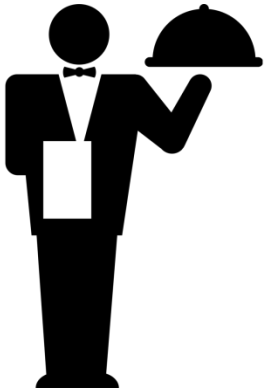
Control in the supply chain

Today's car

- Cheaper
- More fuel efficient
- More functional
- Safer
- Better
- More colors

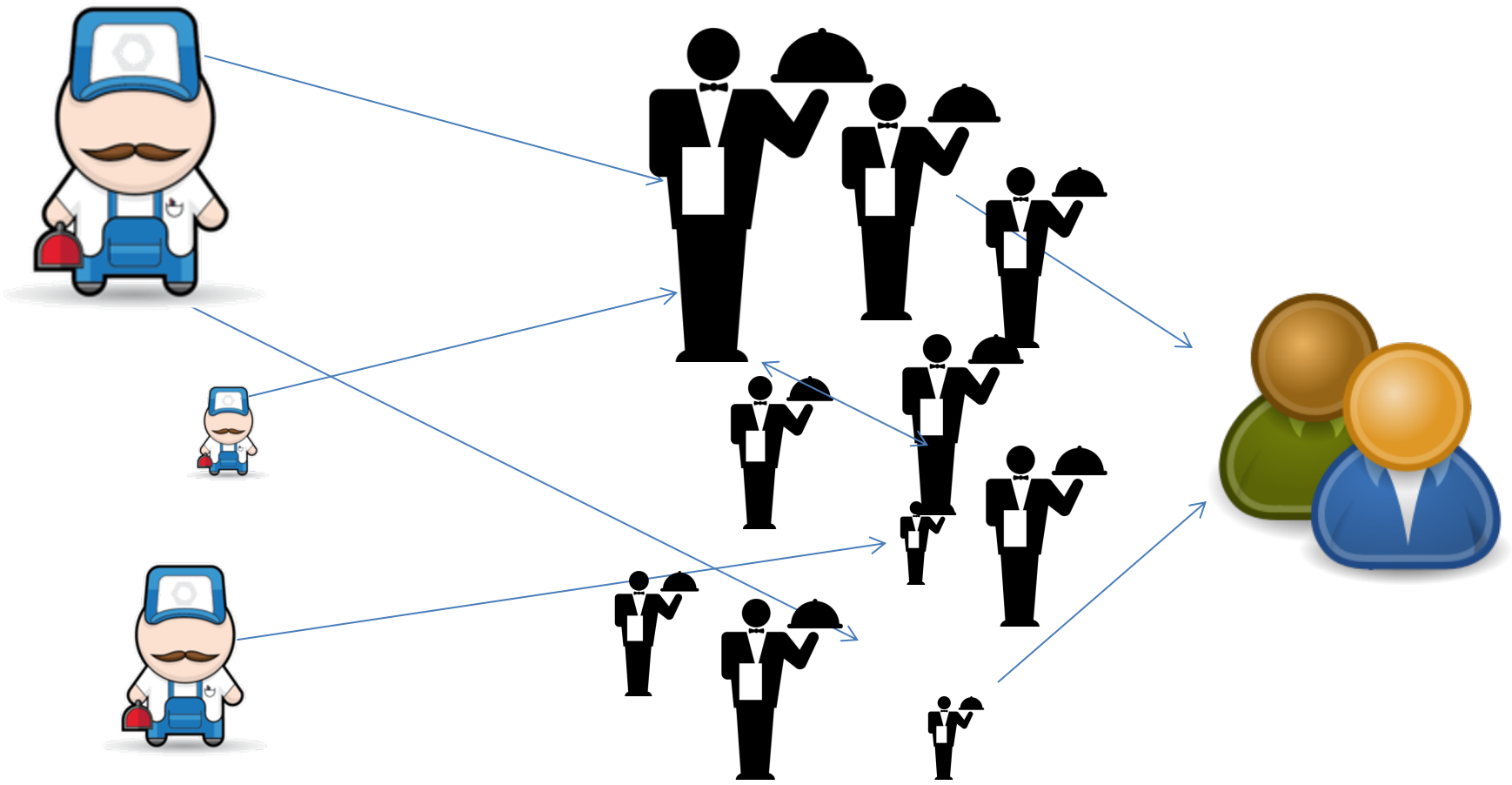
uting

A simple cloud supply chain



IaaS → SaaS → Consumers

A more realistic supply chain

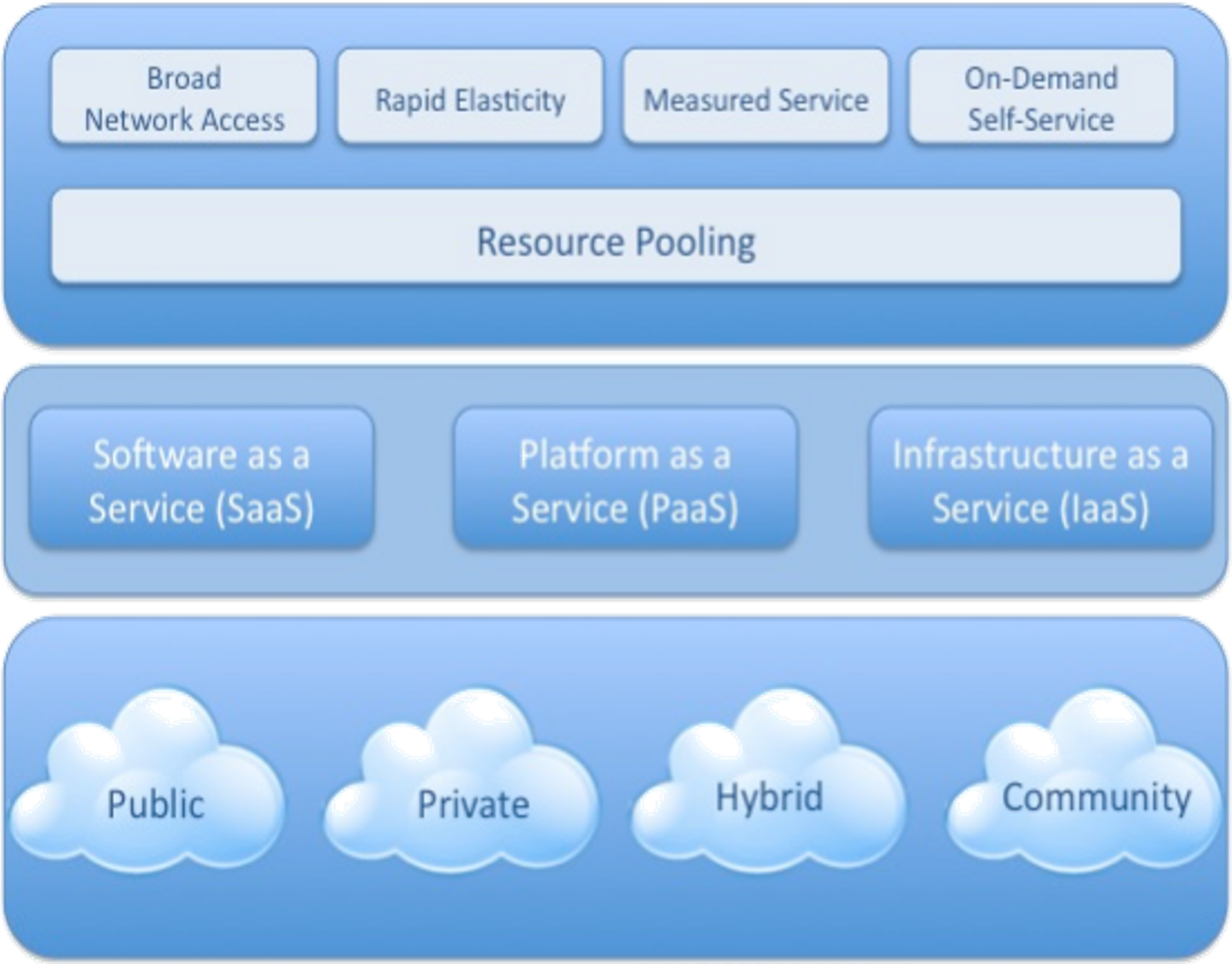


IaaS | Paas | SaaS | Consumers

The Cloud, what is it?

Cloud computing is a service based delivery model (outsourcing) for IT with 5 essential characteristics leading to new business value. *(and new risk ☺)*

NIST Model of Cloud Computing



5 essential characteristics lead to new value and new risk

- **Resource pooling**. Multiple customers
- **On-demand self-service**. Unilateral provisioning, programmable infrastructure
- **Broad network access**. Network and client
- **Rapid elasticity**. Speedy provisioning and deprovisioning
- **Measured Service**. Pay per use

Public, Private en Community

- **Private**: enforcement by contract or organization of adequate isolation from other ‘tenants’.
  Economic ownership nor location is essential.
  Community: private under the control of a consortium

NEW THINGS BECOME POSSIBLE

Programmable infrastructure
→Automated deployment and DevOps

Capacity at scale
→ Big Data, ML, AI

Out on the network
→ Social and IOT

Cloud is here to stay

- Imagine: 10 times the amount of computers and software from what we have today
- How much staff does that take to manage?

- The cloud **business case** is about productivity
- Efficiency of people
- Faster delivery and time to market
- DevOps
- Big Data

Feature velocity through continuous delivery

Number of deployments per day (source: "The Phoenix Project", 2012)

Company	Deploy Frequency	Deploy Lead Time
Amazon	23.000/day	Minutes
Google	5.500/day	Minutes
Netflix	500/day	Minutes
Twitter	3/week	Minutes
Typical enterprise	1/9 months	Months

At higher deploy frequency, reliability increases

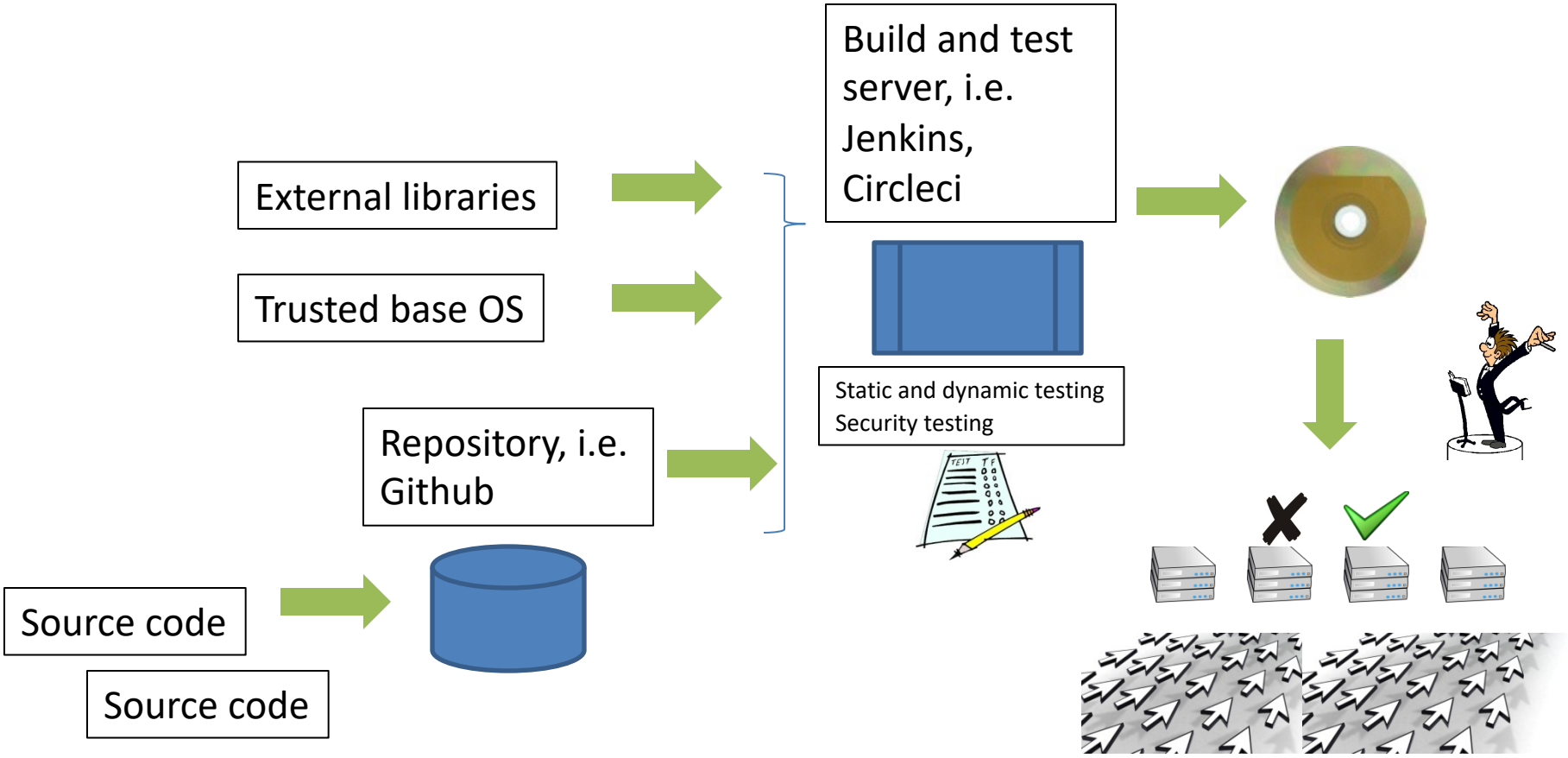
Cloud native: microservices

Reisplanner (vb):

- Lokatie
- Haltes
- Wandelafstand
- Dienstregeling

Overheid voorbeelden: DigiD, RDW, e-Codex

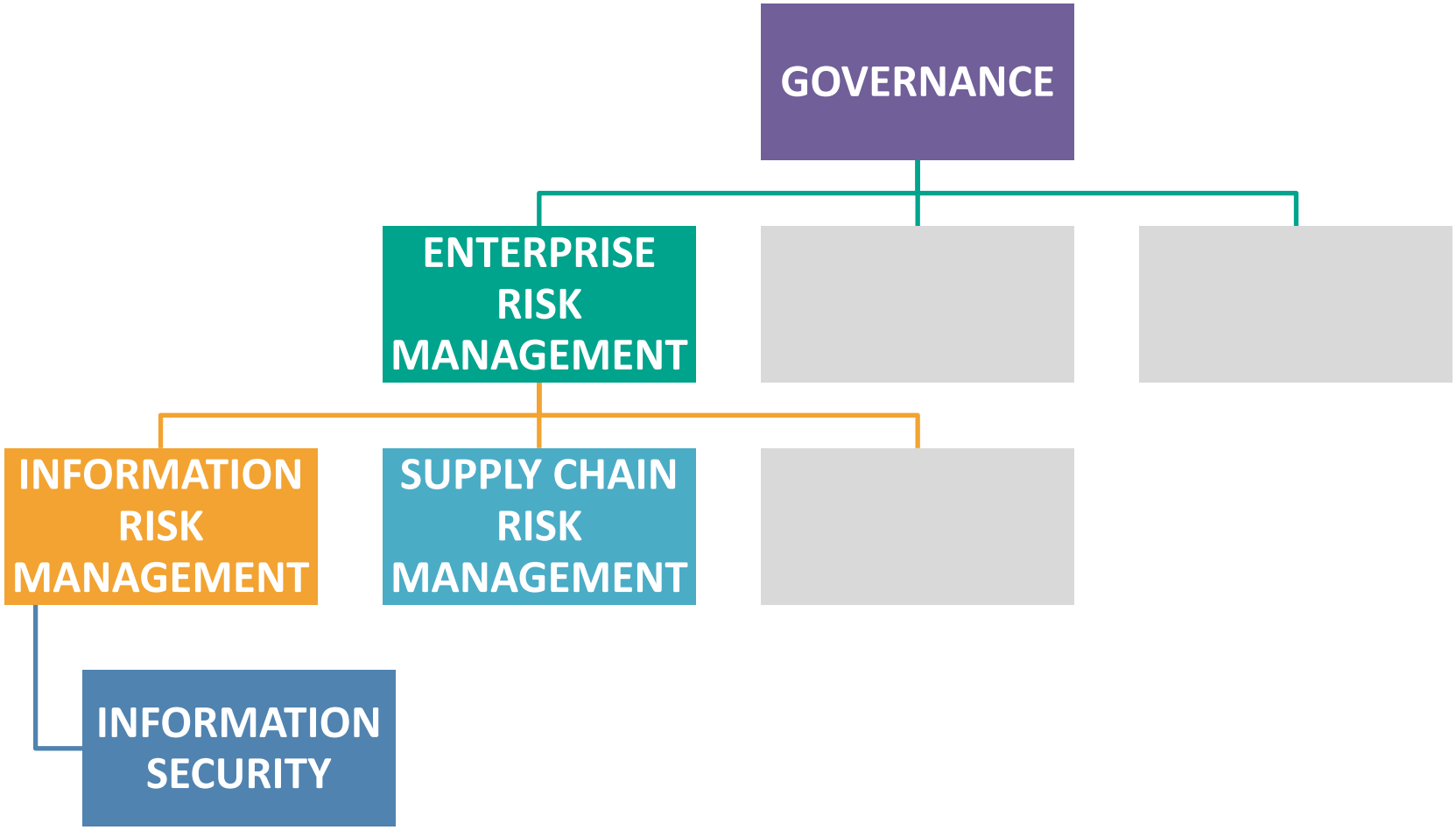
Cloud native: from code to production



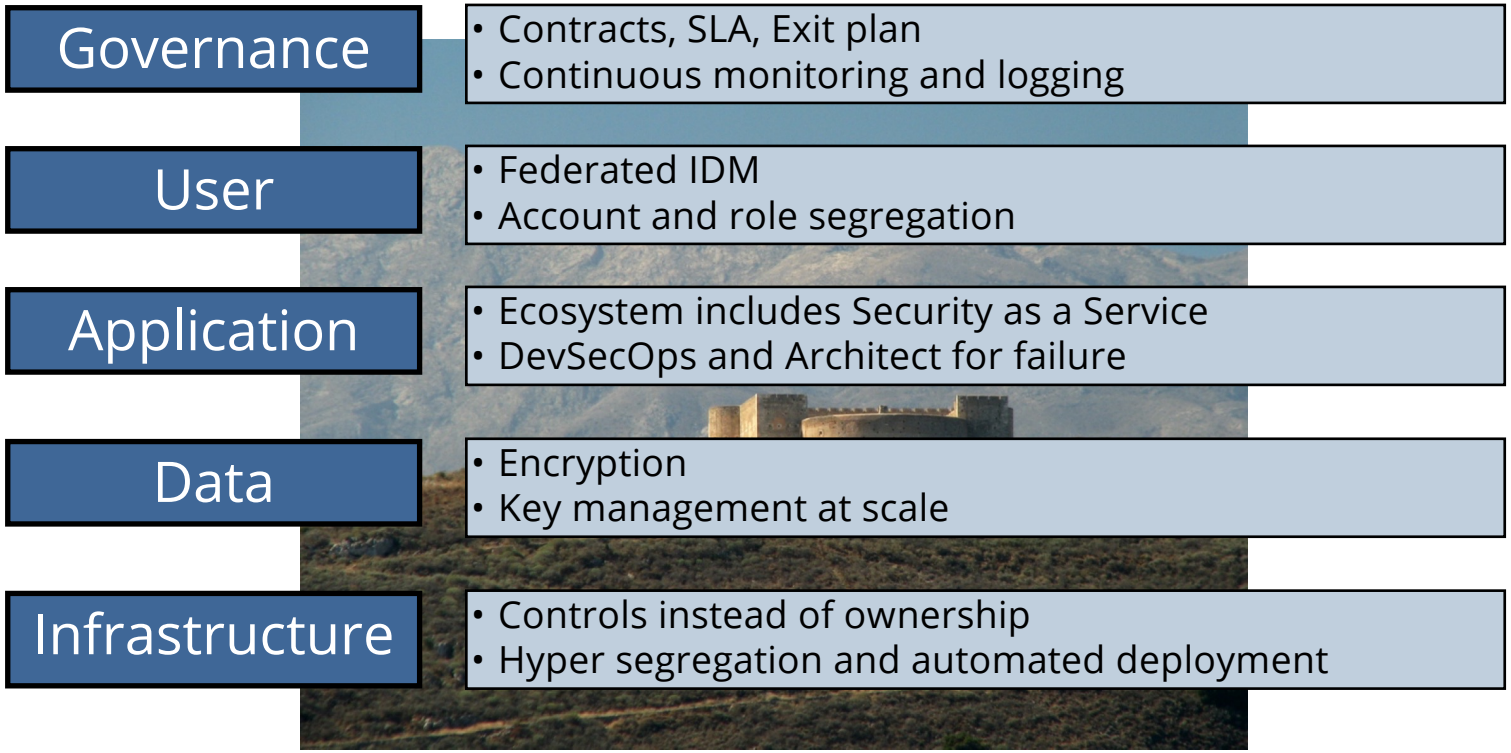
Old School Auditor shock

- Testing in production?
- No patching of servers?
- No weekly CAB meetings?

Governance and Risk management



ELEMENTS OF CLOUD SECURITY



Attributes of Cloud Auditing

- Comprehensive
- Scalable
- Repeatable
- Continuous

Continued education

CCSK Course Structure

1

Intro to cloud computing

- NIST definitions
- Essential characteristics
- Service models
- Deployment models

2

Infrastructure security for cloud

- Securing base infrastructure
- Management plane security
- Securing virtual hosts & networks
- IaaS, PaaS, SaaS security

3

Managing cloud security & risk

- Risk & governance
- Legal & compliance
- Audit
- Data governance

4

Data security for cloud

- Cloud data architectures
- Data security & encryption
- CASB and data loss prevention
- BC/DR

5

Securing cloud applications, users, & related technologies

- Application security
- Identity & access management
- Related technologies

6

Cloud security operations

- What to look for in a cloud provider
- Security as a Service
- Incident response

CCAK Course content

The CCAK course is designed to cover the following 5 core areas of focus:

- Cloud Governance
- Cloud Compliance
- Cloud Auditing
- Cloud Assurance
- CSA Tools: CCM, CAIQ, and STAR Program

The course is based on the body of knowledge, and contains the following modules:

- An overview of cloud governance, frameworks, and cloud governance tools
- Cloud compliance program: designing and building
- CCM and CAIQ Goals, Objectives, & Structure
- A Threat Analysis Methodology For Cloud using CCM
- Evaluating a Cloud Compliance Program
- Cloud Auditing
- CCM: Auditing Controls
- Continuous Assurance and Compliance including DevSecOps
- STAR Program

Summary

- Cloud computing is just part of the industrialization of IT
- Automated testing, quality control, and auditing is essential to move to the next level of productivity
- Gain control by letting go to specialists

Q & A

More info

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Lean production & the three ways of DevOps

1. Systems thinking: reduce Muda
2. Rapid feedback loops: Jidoka
3. Continuous improvement: Kaizen, Chaos engineering