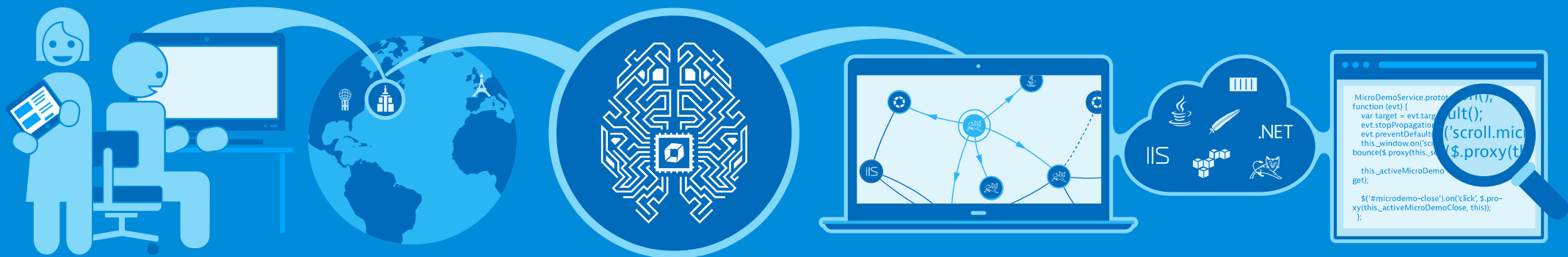




# Dynatrace Guest Lecture @ TU Vienna

## LVA SEPM SS2018

May 30, 2018



## Daniela Rabiser – Technical Product Manager at Dynatrace

- 2017-today: **Technical Product Manager, Dynatrace**

Broadening and deepening monitoring capabilities for enterprise cloud platforms

- 2013-2016: Wissenschaftliche Projektmitarbeiterin / Doktoratsstudium der Technischen Wissenschaften, Dissertationsgebiet: Software Engineering
- 2010-2013: Studentische Mitarbeiterin / Wissenschaftliche Projektmitarbeiterin
- 2005-2010: Softwareentwicklerin



## Stefan Frandl – Development Lead at Dynatrace

- 2016 - today: DevLead OneAgent, Dynatrace
- 2007 – 2015: Test Automation Team Lead, Dynatrace
- 2005 – 2006: Software Engineer, Dynatrace
- 2000 – 2005: Winf JKU, TU Wien



Dynatrace is worldwide market-leader in

**DPM**

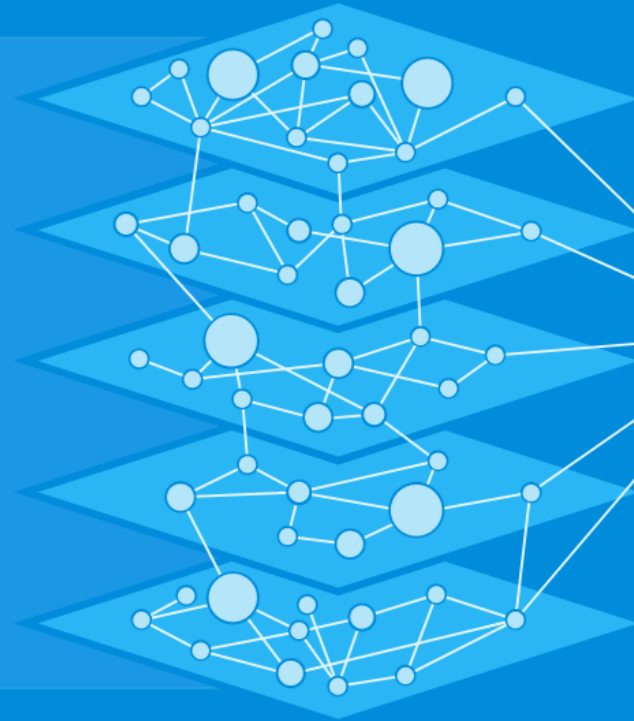
Digital Performance Management

# Dynatrace monitors

Every user, every app, everywhere. AI-powered, full stack, & automated.

SaaS | On-premises

Mobile	Browser
Application	Synthetic
Code	Server
Database	Mainframe
Network	Log & Events
Container	API
Microservices	Cloud



Optimize customer experience

Modernize operations

Accelerate innovation

Full stack monitoring  
All-in-one platform

Smartscape & PurePath  
Business transaction topology

Big data analytics  
powered by A.I.

# Some facts about Dynatrace

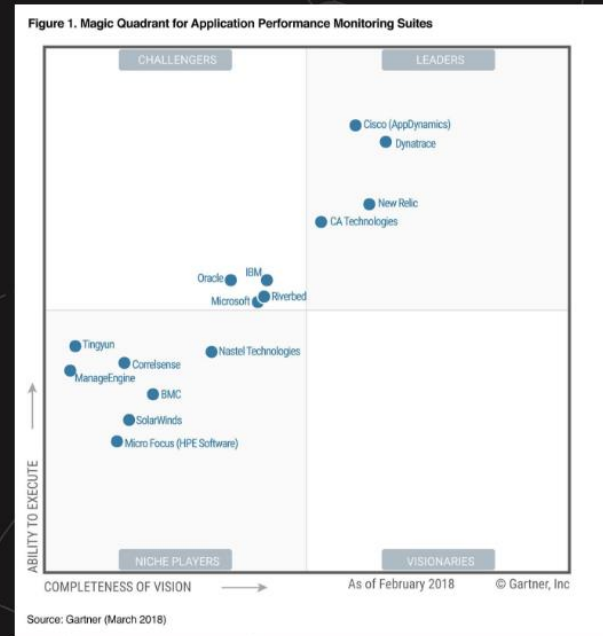
- Global R&D Labs  
Linz, Klagenfurt, Barcelona, Gdansk, Detroit
- Founded 2005 in Linz
- 1.7k employees ww
- 10k customers  
80% of Fortune500
- \$500M revenue
- Strong Y/Y growth



# Dynatrace is the Leader in the Gartner Magic Quadrant for 8 years running

## 2018 Gartner Magic Quadrant for Application Performance Monitoring (APM) Suites

Dynatrace is an industry leader for the 8th consecutive year



# The #1 partner for digital performance management

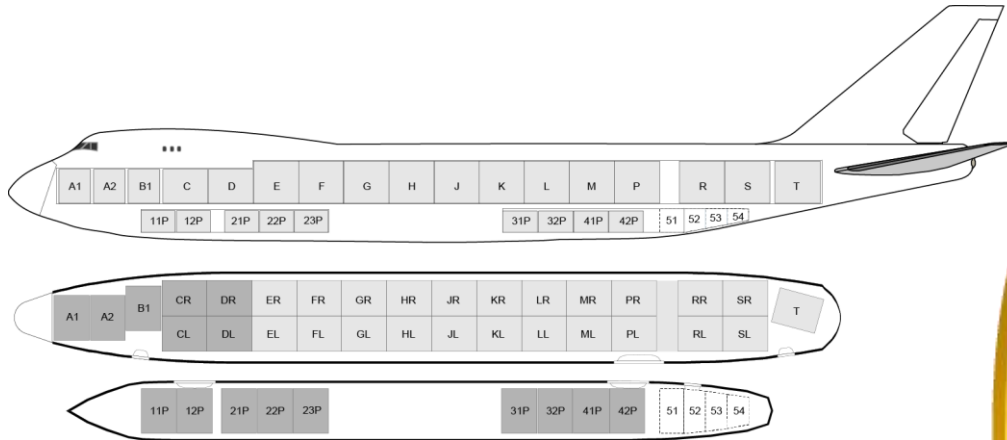
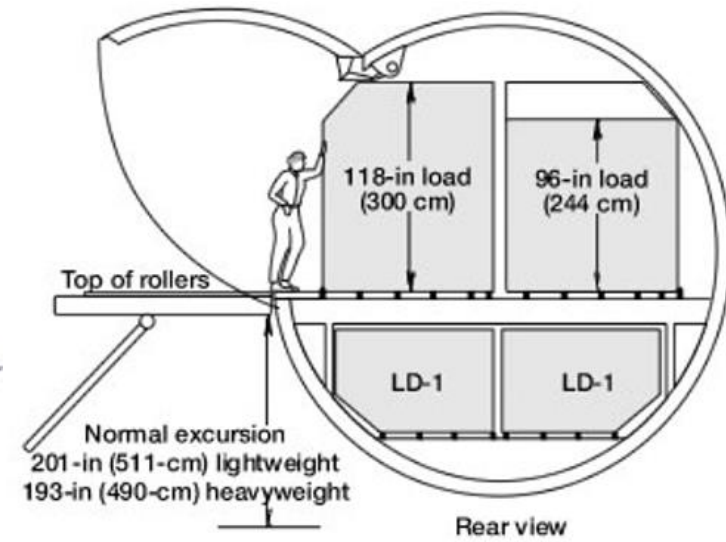


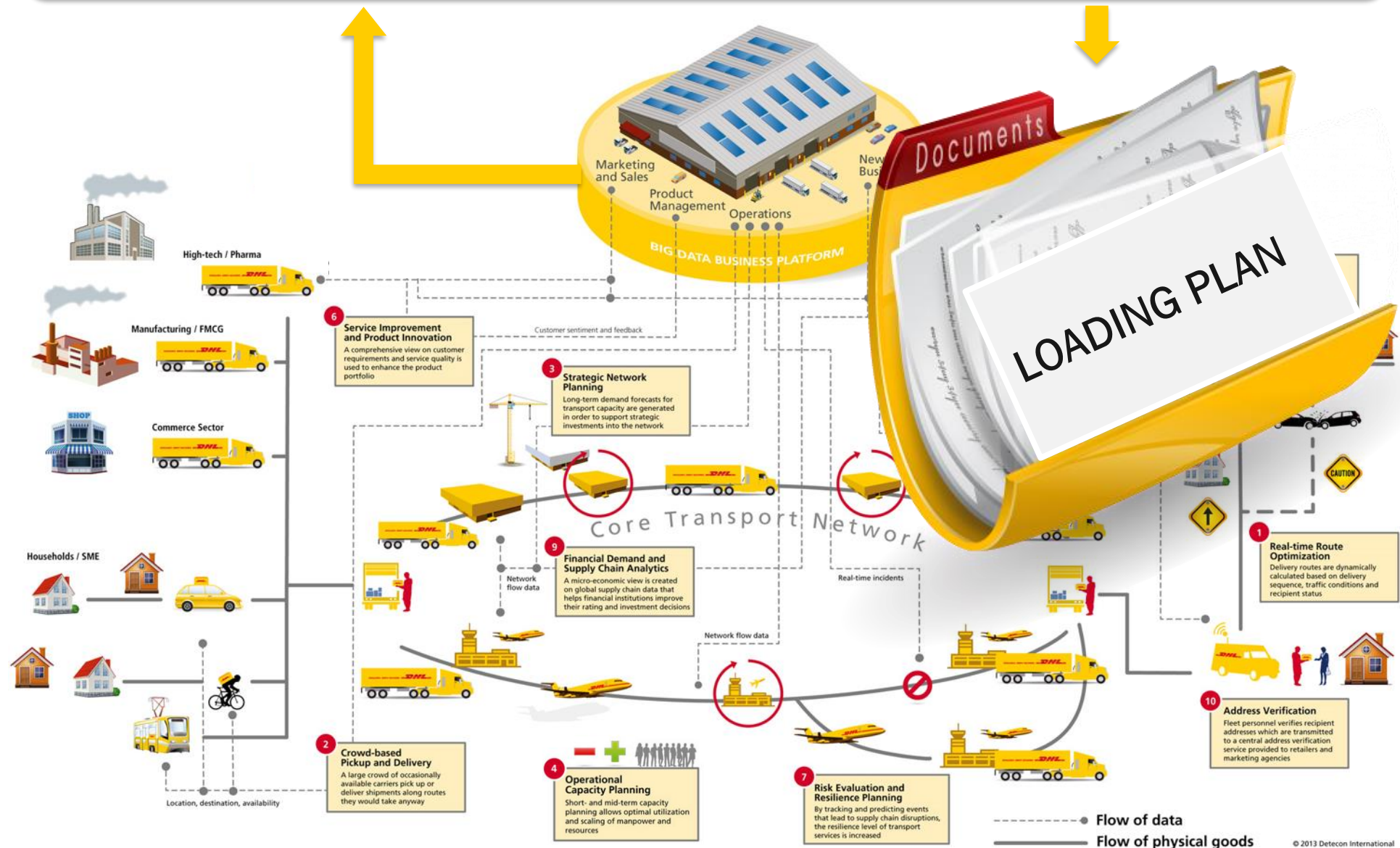


# Story

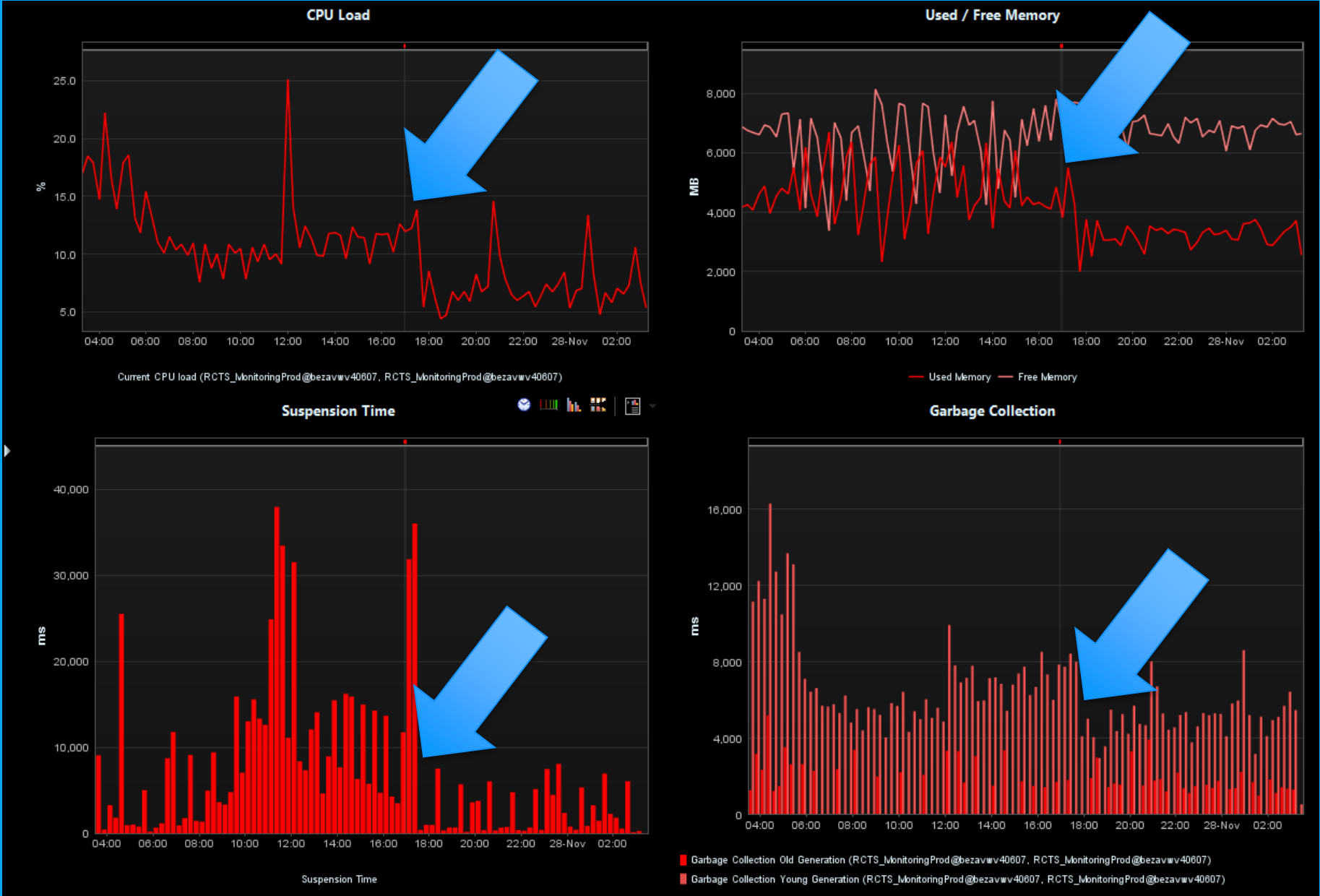
## Global Logistics

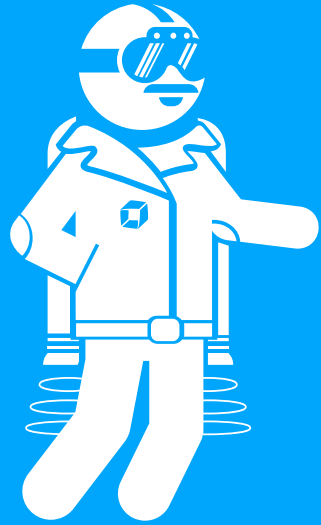






What if  
**LOADING PLAN**  
generation is too slow/late  
?





# Development Process



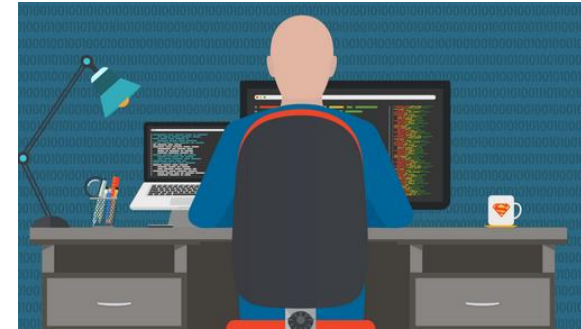
## Roles

- Product Architects
  - Responsible for architecture design, scalability and reliability
  - Non-func
- Team Lead
  - Leads an engineering team of 4-8 engineers
  - Shared product owner role with Product Management



# Roles

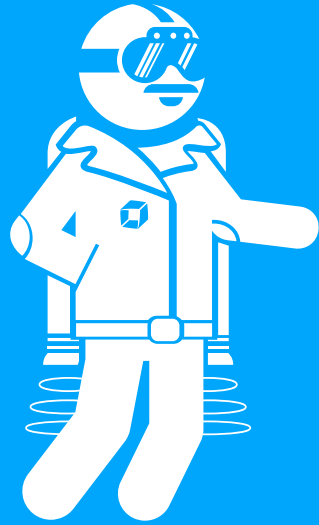
- Engineer
  - Implements user stories
  - Build it, run it (tests, quality, deployment, support)
- DevOps
  - Takes care of operations
  - Roll-out of new features, fixes, etc.
  - Direct feedback to the DevTeam (e.g. production requirements)
- Acceptance
  - Internal customer
  - Automated end-to-end coverage of use cases
  - Explorative testing



# Roles

- Engineering Productivity
  - Supports DevTeam with build, CI environment, CD pipelines, test frameworks
- Infrastructure and Services
  - Provide lab infrastructure (VMs, Container, etc.)
  - Host services (e.g. Artifactory, Jenkins, ..)
- Product Management
  - Gathers requirements from the customers
  - Coordinates Roadmap with other stakeholders
  - Shared product owner role with Team Lead
  - Define functional requirements





# Challenges in Product Management



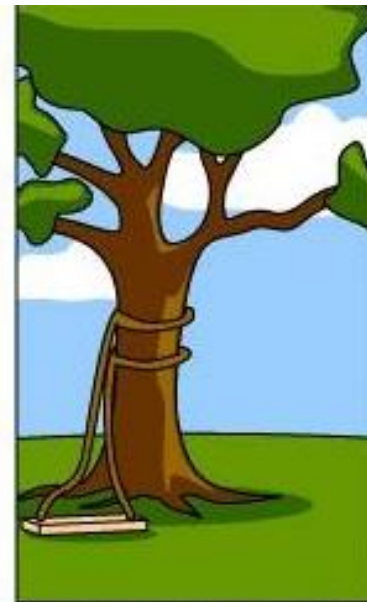
How the customer explained it



How the Project Leader understood it



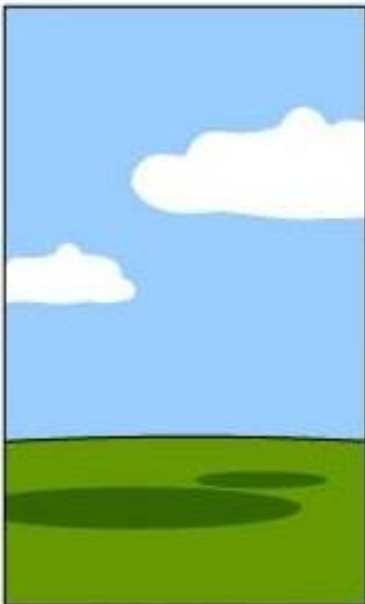
How the Analyst designed it



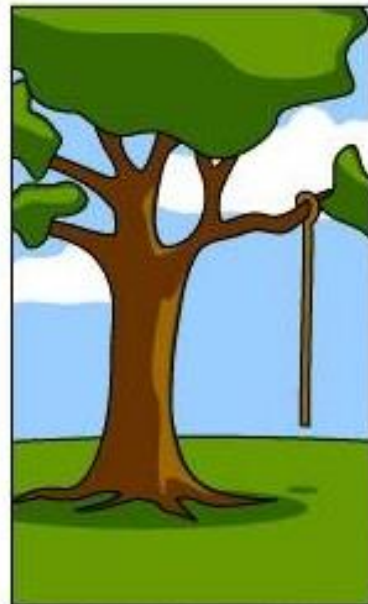
How the Programmer wrote it



How the Business Consultant described it



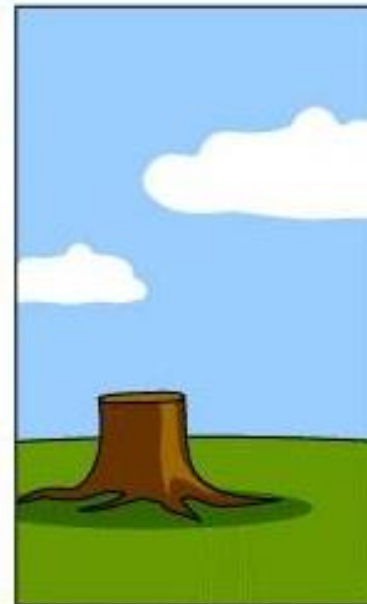
How the project was documented



What operations installed



How the customer was billed



How it was supported



What the customer really needed



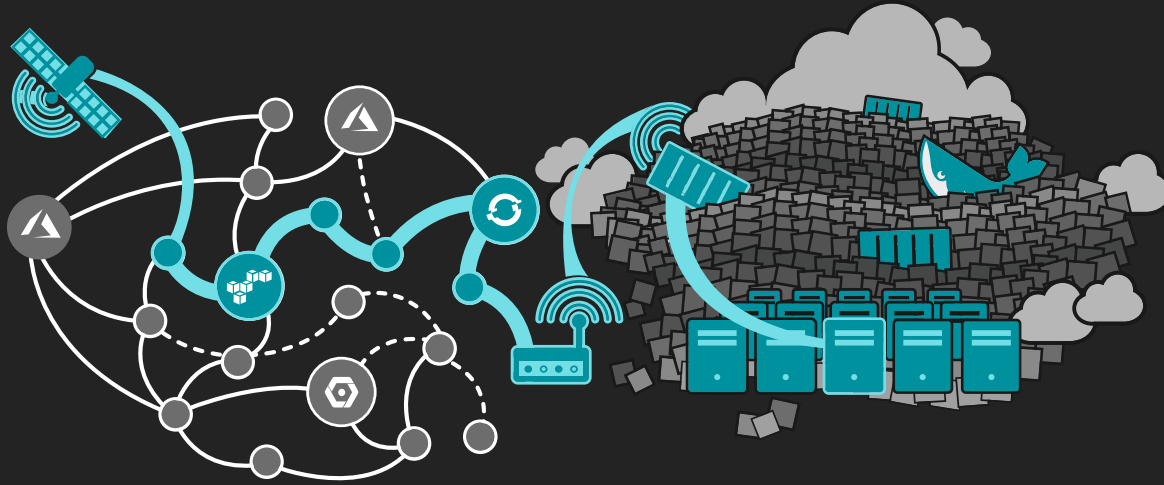
## Project Development

Definition nach DIN 69901:

Vorhaben, das im wesentlichen durch ***Einmaligkeit*** der Bedingungen in ihrer Gesamtheit gekennzeichnet ist, wie z.B. Zielvorgabe, zeitliche, personelle oder andere Begrenzungen, ***Abgrenzung*** gegenüber anderen Vorhaben und eine projektspezifische Organisation.

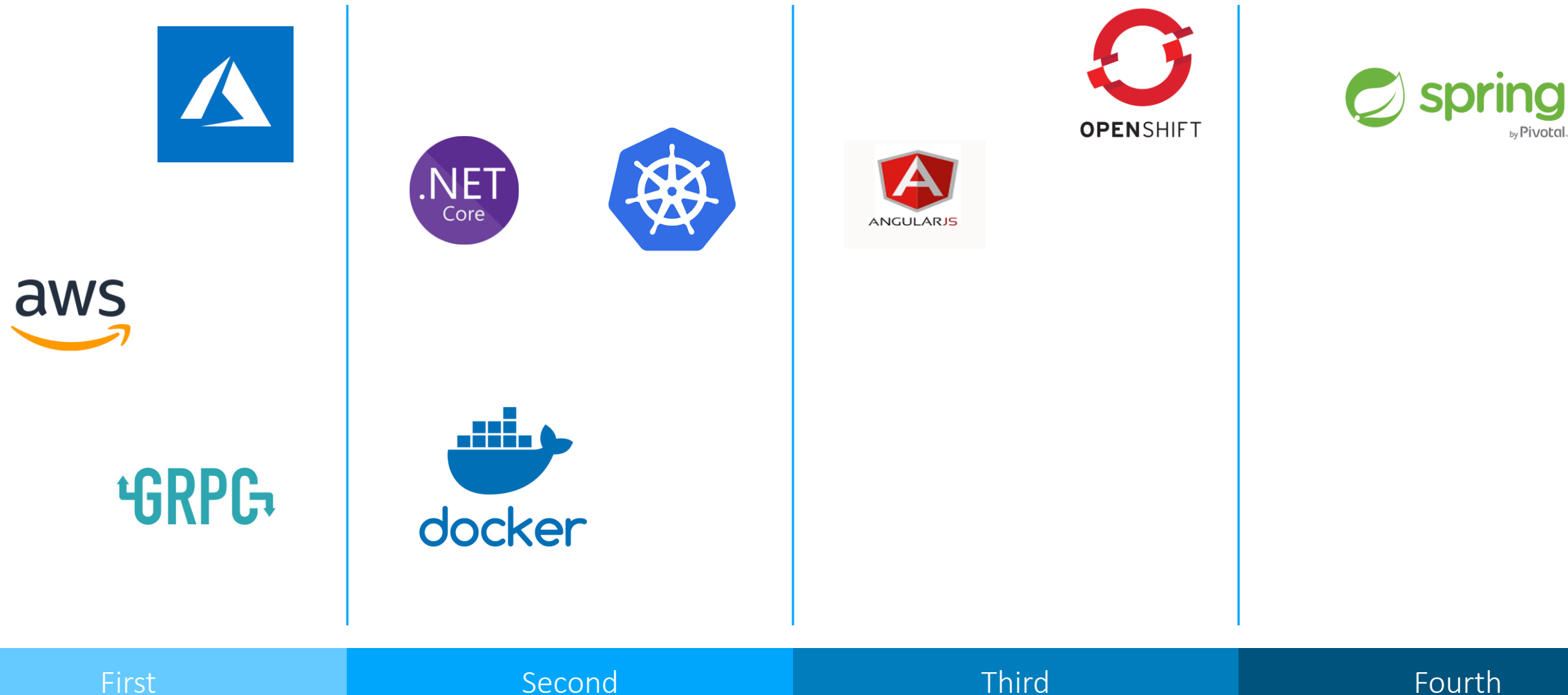
Kurz: *Einmaliges Vorhaben einer zeitlich begrenzten Aufgabenausführung*

# Product development driven by customers and market demand



 <p><b>Agile Stacks</b> Agile Stacks DevOps Automation Platform Agile Stacks</p> <p>Funding: \$2.53M</p>	 <p><b>Alauda EE</b> Alauda</p> <p>Funding: \$15M</p>	 <p><b>Alibaba Cloud</b> Alibaba Cloud</p> <p>MCap: \$508B</p>	 <p><b>Alibaba Cloud</b> Alibaba Cloud Container Service Alibaba Cloud</p> <p>MCap: \$508B</p>	 <p><b>Amazon EKS</b> Amazon Elastic Container Service for Kubernetes (EKS) Amazon Web Services</p> <p>MCap: \$769B</p>	 <p><b>aws</b> Amazon Web Services</p> <p>MCap: \$769B</p>	 <p><b>APPREND</b> Apprenda Kismatic Enterprise Toolkit (KET) Apprenda</p> <p>★709 Funding: \$96M</p>	 <p><b>Appcode Pharmed</b> AppCode</p>	 <p><b>Azure Container Service</b> Azure (ACS) Engine Microsoft</p> <p>★803 MCap: \$750B</p>	 <p><b>Azure</b> Microsoft</p> <p>MCap: \$750B</p>	 <p><b>Azure</b> Microsoft</p> <p>MCap: \$750B</p>	 <p><b>Baidu Cloud</b> Baidu</p> <p>MCap: \$83.9B</p>	 <p><b>Baidu Cloud</b> Baidu Cloud Container Engine Baidu</p> <p>MCap: \$83.9B</p>
 <p><b>BoCloud</b> BoCloud BeyondcentContainer Bocloud</p> <p>Funding: \$7.3M</p>	 <p><b>caicloud</b> Caicloud</p> <p>Funding: \$7.3M</p>	 <p><b>CANONICAL</b> Canonical Distribution of Kubernetes Canonical</p> <p>★83</p>	 <p><b>CISCO</b> Cisco Container Platform Cisco</p> <p>MCap: \$218B</p>	 <p><b>Maestro</b> Cloud 66</p> <p>Funding: \$2.24M</p>	 <p><b>APPLICATION RUNTIME</b> Cloud Foundry</p> <p>★1,072</p>	 <p><b>CONTAINER RUNTIME</b> Cloud Foundry</p> <p>★231</p>	 <p><b>containership</b> Containership</p> <p>Funding: \$2.81M</p>	 <p><b>CoreOS</b> CoreOS bootkube Red Hat</p> <p>★745 MCap: \$29B</p>	 <p><b>DaoCloud</b> DaoCloud Enterprise DaoCloud</p> <p>MCap: \$29B</p>	 <p><b>Diamanti</b> Diamanti Converged Container Infrastructure Diamanti</p> <p>Funding: \$43M</p>	 <p><b>DIGITAL REBAR</b> Digital Rebar RackN</p> <p>★99 Funding: \$800K</p>	 <p><b>DigitalOcean</b> DigitalOcean</p> <p>Funding: \$305M</p>
 <p><b>docker</b> Docker EE/CE Docker</p> <p>Funding: \$243M</p>	 <p><b>EasyStack</b> EasyStack Kubernetes Service (EKS) EasyStack</p> <p>Funding: \$88M</p>	 <p><b>eKing Technology</b> eKing Cloud Container Platform Hainan eKing Technology</p>	 <p><b>FUJITSU</b> Fujitsu K5 Fujitsu</p> <p>MCap: \$12.7B</p>	 <p><b>GALACTIC FOG</b> Galactic Fog Galactic Fog</p> <p>Funding: \$2.5M</p>	 <p><b>Gardener</b> Gardener SAP open sourced by SAP</p> <p>★373 MCap: \$135B</p>	 <p><b>Ghostcloud</b> Ghostcloud EcOS Ghostcloud</p>	 <p><b>Giant Swarm</b> Giant Swarm Managed Kubernetes Giant Swarm</p> <p>Funding: \$3.33M</p>	 <p><b>Google Cloud</b> Google Cloud Google</p> <p>MCap: \$751B</p>	 <p><b>Google Cloud</b> Google Kube-Up Google</p> <p>★476 MCap: \$751B</p>	 <p><b>Google Kubernetes Engine</b> Google Kubernetes Engine (GKE) Google</p> <p>MCap: \$751B</p>	 <p><b>HarmonyCloud Container Platform</b> Hangzhou Harmony Technology</p>	 <p><b>HASURA</b> Hasura</p> <p>Funding: \$1.6M</p>
 <p><b>heptio</b> Heptio Quickstart for Kubernetes Heptio</p> <p>★129 Funding: \$33.5M</p>	 <p><b>heroku</b> Heroku Salesforce</p> <p>MCap: \$93.9B</p>	 <p><b>HUAWEI</b> Huawei Huawei Technologies</p>	 <p><b>HUAWEI</b> Huawei Cloud Container Engine (CCE) Huawei Technologies</p>	 <p><b>HUAWEI</b> Huawei FusionStage Huawei Technologies</p>	 <p><b>IBM Cloud</b> IBM Cloud IBM</p> <p>MCap: \$134B</p>	 <p><b>IBM Cloud</b> IBM Cloud Kubernetes Service IBM</p> <p>MCap: \$134B</p>	 <p><b>IBM Cloud</b> IBM Cloud Private IBM</p> <p>MCap: \$134B</p>	 <p><b>inwinSTACK</b> inwinSTACK kube-ansible inwinSTACK</p> <p>★3</p>	 <p><b>JD.COM TIG</b> JD.com TIG Jingdong Datacenter OS JD.com</p> <p>MCap: \$52.4B</p>	 <p><b>Joyent</b> Joyent Joyent</p> <p>★915 Funding: \$131M</p>	 <p><b>Joyent</b> Joyent Triton for Kubernetes Joyent</p> <p>★56 Funding: \$131M</p>	 <p><b>KONTENA</b> Kontena</p> <p>★1,348</p>
 <p><b>KONTENA PHAROS</b> Kontena</p> <p>★82</p>	 <p><b>kube-spawn</b> KubeSpawn Kinvolk</p> <p>★201</p>	 <p><b>Kubermatic</b> Kubermatic Loodse</p>	 <p><b>kublr</b> Kublr Kublr</p>	 <p><b>MAAS</b> MAAS Canonical</p> <p>★38</p>	 <p><b>MESOSPHERE</b> Mesosphere Mesosphere</p> <p>Funding: \$247M</p>	 <p><b>MIRANTIS</b> Mirantis Cloud Platform Mirantis</p> <p>Funding: \$220M</p>	 <p><b>navops</b> Navops Univa</p> <p>Funding: \$54.8M</p>	 <p><b>NetEase Cloud</b> Netease Container Service Dedicated NetEase</p> <p>MCap: \$30.7B</p>	 <p><b>nirmata</b> Nirmata Managed Kubernetes Nirmata</p>	 <p><b>OPENSIFT</b> OpenShift Red Hat</p> <p>★4,548 MCap: \$29B</p>	 <p><b>ORACLE</b> Oracle Cloud Oracle</p> <p>MCap: \$193B</p>	 <p><b>ORACLE</b> Oracle Container Engine Oracle</p> <p>MCap: \$193B</p>
 <p><b>ORACLE</b> Oracle Linux Container Services Oracle</p> <p>MCap: \$193B</p>	 <p><b>ORACLE</b> Oracle Terraform Kubernetes Installer Oracle</p> <p>★104 MCap: \$193B</p>	 <p><b>packet</b> Packet Packet</p> <p>Funding: \$11.0M</p>	 <p><b>Pivotal</b> Pivotal Container Service (PKS) Pivotal</p> <p>MCap: \$4.63B</p>	 <p><b>PLATFORM9</b> Platform9 Managed Kubernetes Platform9</p> <p>Funding: \$36.5M</p>	 <p><b>QFusion</b> QFusion WOQU Technology</p>	 <p><b>RANCHER</b> Rancher Rancher Labs</p> <p>★8,545 Funding: \$30M</p>	 <p><b>SAMSUNG SDS</b> Samsung Kraken Samsung SDS</p> <p>★45</p>	 <p><b>SAP</b> SAP Certified Gardener SAP</p> <p>MCap: \$135B</p>	 <p><b>STACKPOINT</b> StackPointCloud StackPointCloud</p>	 <p><b>SUPERGIANT</b> Supergiant Supergiant</p> <p>★550</p>	 <p><b>SUSE</b> SUSE CaaS Platform SUSE</p>	 <p><b>TECTONIC</b> Tectonic Red Hat</p> <p>★515 MCap: \$29B</p>
 <p><b>Telekube</b> MADE BY GRAVITATIONAL Telekube Gravitational</p> <p>Funding: \$4.2M</p>	 <p><b>Tencent Cloud</b> Tencent Cloud Tencent Holdings</p> <p>MCap: \$498B</p>	 <p><b>Tencent Cloud</b> Tencent Cloud Container Service (CCS) Tencent Holdings</p> <p>MCap: \$498B</p>	 <p><b>时速云</b> Tencent Cloud Container Engine (TCE) Tencent Cloud</p>	 <p><b>vmware</b> VMware VMware</p> <p>MCap: \$56.2B</p>	 <p><b>vmware</b> VMware Pivotal Container Service (PKS) VMware</p> <p>MCap: \$56.2B</p>	 <p><b>weaveworks</b> WeaveWorks kubeadm WeaveWorks</p> <p>★482 Funding: \$20M</p>	 <p><b>ise2c</b> ise2c Technology 睿云智合</p>	 <p><b>ZTE</b> ZTE ZTE</p> <p>MCap: \$29B</p>				

## Roadmap

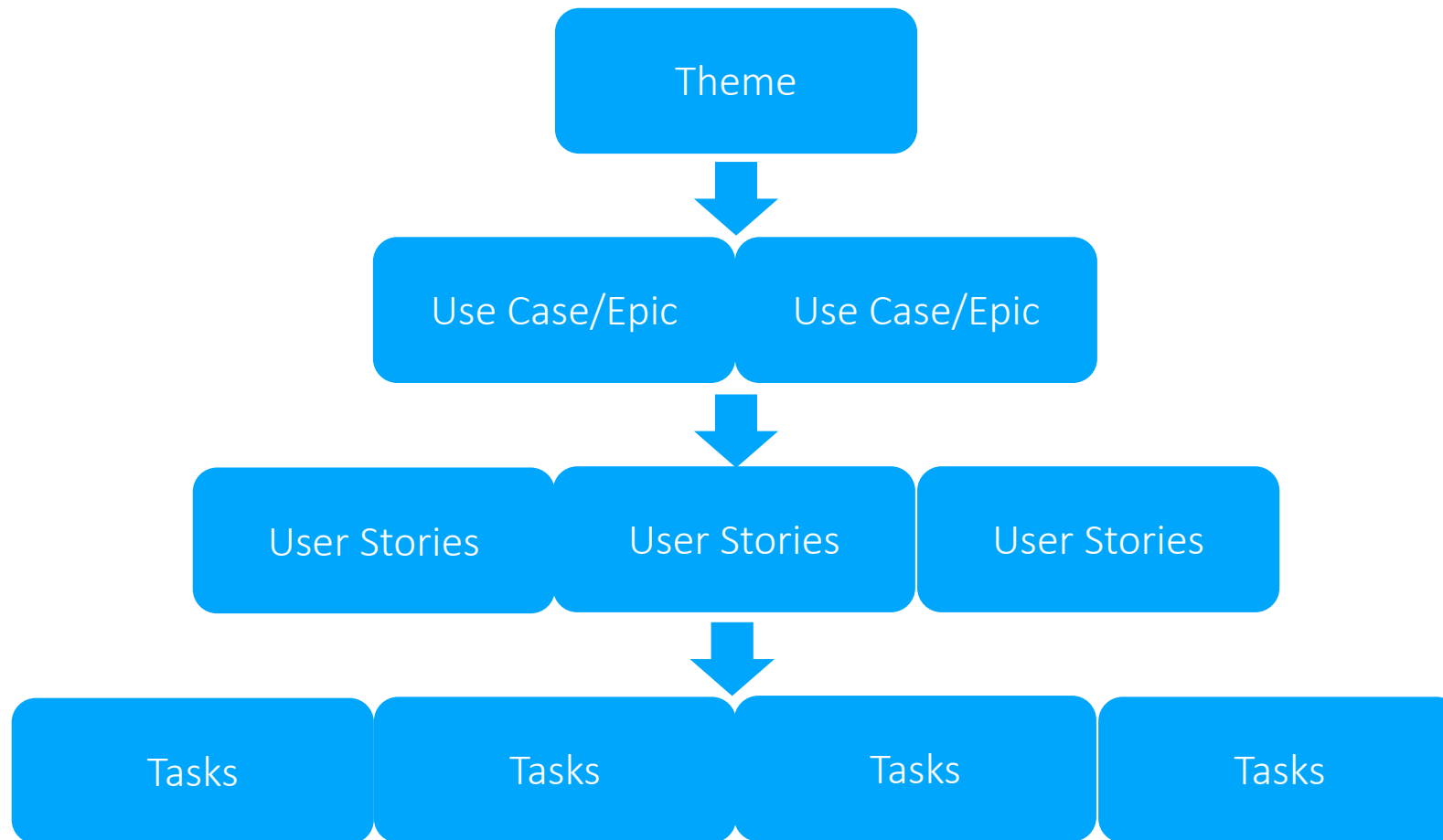


# Professor, what is a feature?





## Roadmap transformation



# Sprint

- 2 weeks cycle
- Sprint Planning
  - PM/PA together with DevTeam
  - Agree on Stories
  - Max 5 Story Points per Story and Engineer
    - Otherwise split up
- Sprint Review
  - Demos on live system
  - Move unfinished stories
- Retrospective
- Releases every two weeks



## Cross Team Collaboration

- 400+ engineers working on one code base
- Standard approach works fine for “smaller” Themes involving few teams
- Larger topics/themes need to have an owner: Epic owner
  - Kick-off
  - Status
  - Team coordination
  - Update of stakeholders
  - Responsible from kick-off to roll out in production
- Large Themes for non-trivial and high-prio cross-team effort over multiple sprints, which requires close collaboration and synchronization
  - Squads (virtual teams)

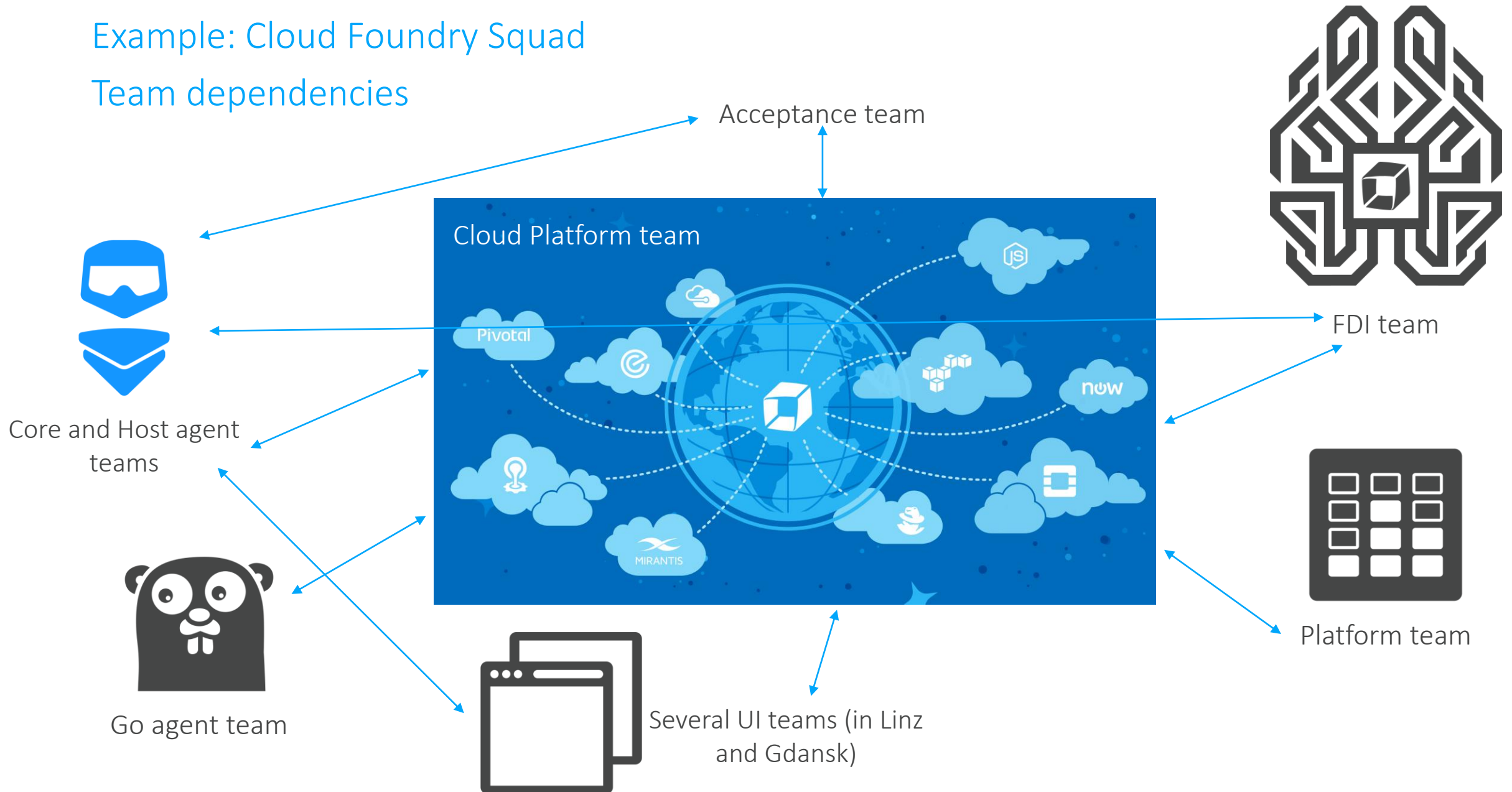


## Squads - Roles

- **Squad kickoff group** (PM Leads, DevLeads), signs off squad creation. Ensure management buy-in.
- **Squad lead** (could be TL, Dev, ...), responsible for squad organization (org. and process). Like a TL for the squad scope. Simultaneously also acting as a member in his usual role (e.g. Dev)
- **Squad members** (Dev, PM, CSA,...), getting actual work done. Recruited from multiple teams - for a longer continuous period (but not necessarily the complete squad timeframe)
- **Squad associates** (Dev, EP, AT, Managed...) contributing to the squad goal in a smaller scope, or should be in-sync resp. join the sprint meetings.

## Example: Cloud Foundry Squad

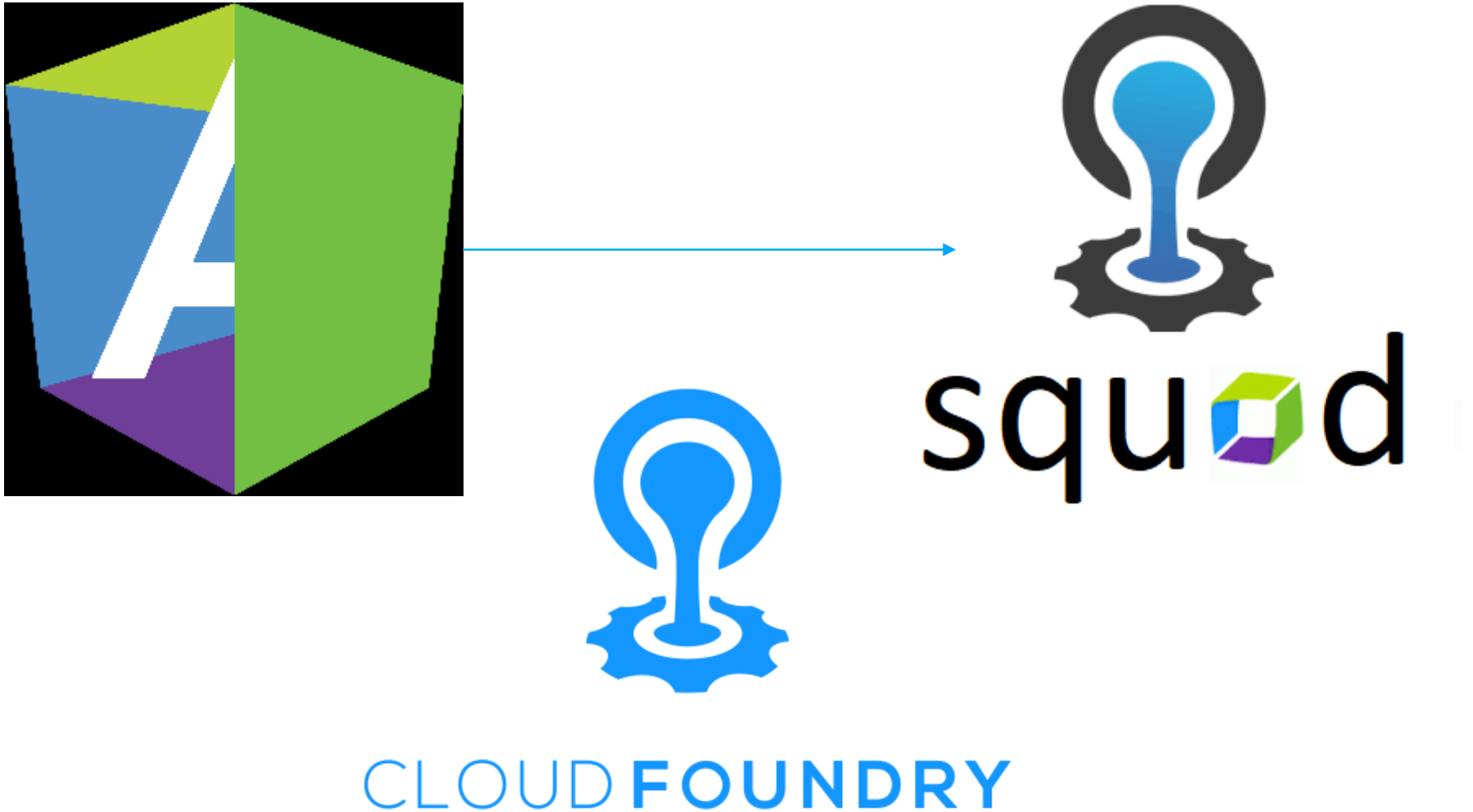
### Team dependencies



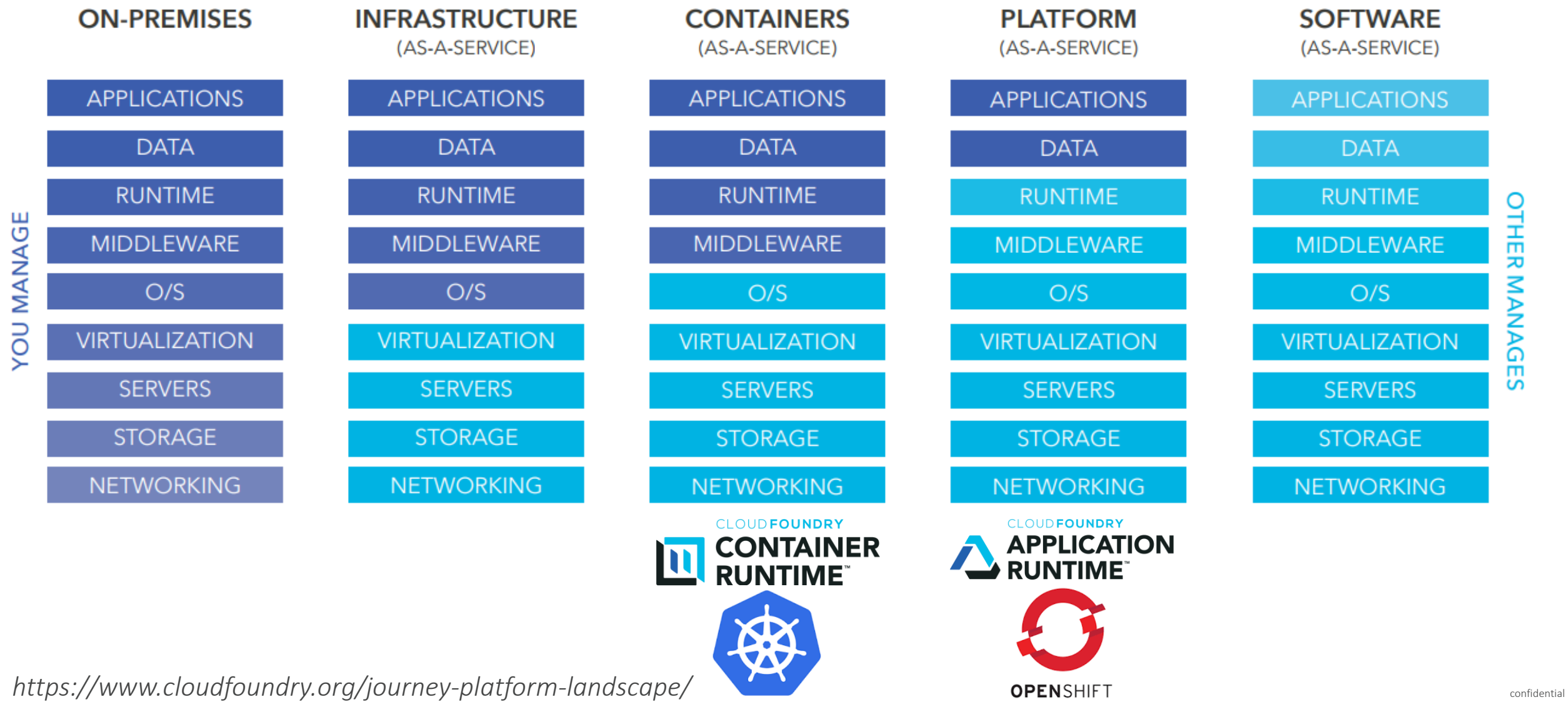


## Example: Cloud Foundry Squad

Squad dependencies



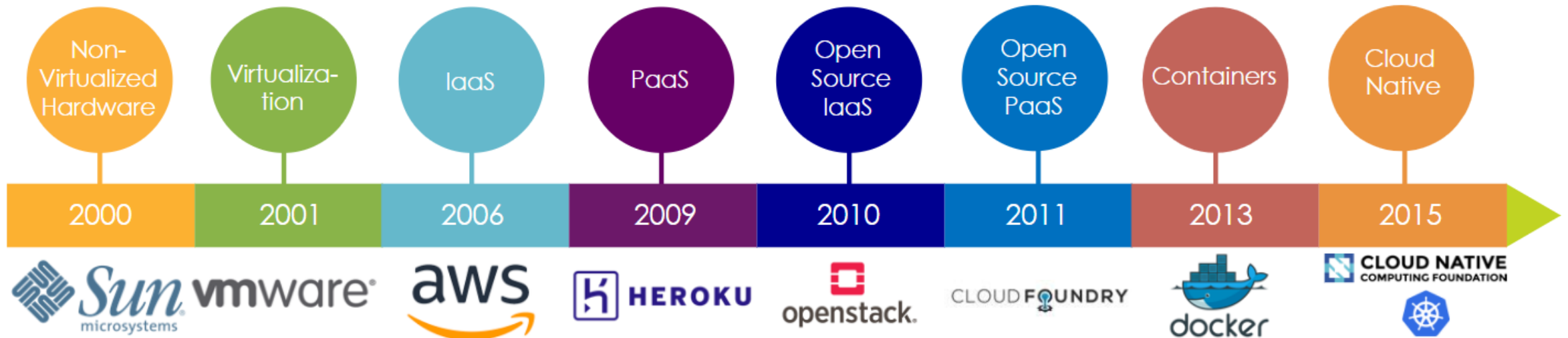
# CaaS vs. PaaS



# Cloud Native: CNCF (2015)



- Cloud native computing uses an open source software stack to:
  - segment applications into *microservices*,
  - package each part into its own *container*
  - and dynamically *orchestrate* those containers to optimize resource utilization



## Cloud Foundry Distributions

# Certified Distributions<sup>7</sup>

Certified Provider distributions use the same core Cloud Foundry software and are portable across cloud application platforms in a multi-vendor, multi-cloud environment.

See All 7 Distribution Partners 



Atos Cloud Foundry

CERTIFIED PROVIDER



Fujitsu Cloud Service K5

CERTIFIED PROVIDER



Huawei FusionStage

CERTIFIED PROVIDER



IBM Cloud Foundry

CERTIFIED PROVIDER



Pivotal Cloud Foundry

CERTIFIED PROVIDER



SAP Cloud Platform

CERTIFIED PROVIDER

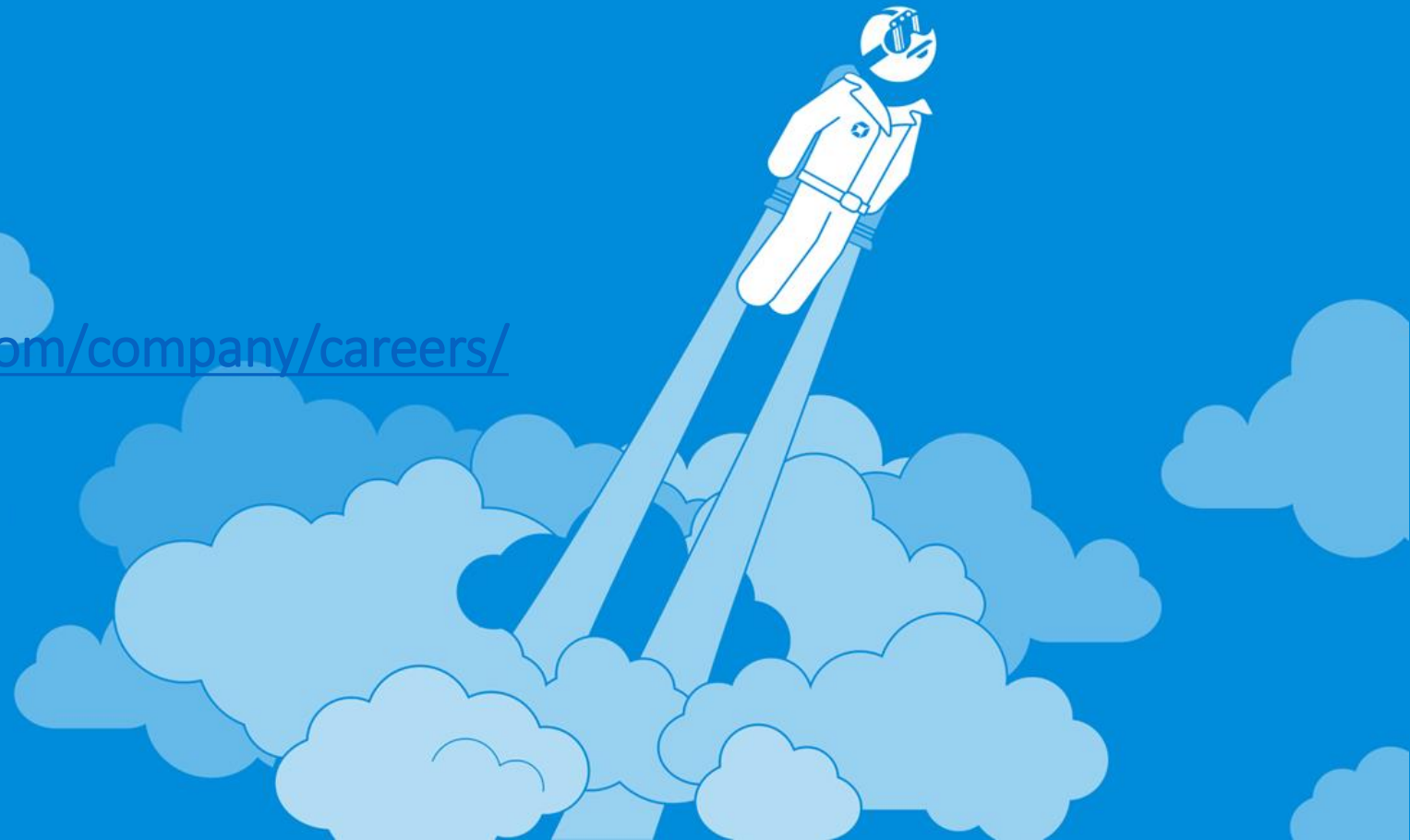


Swisscom Application  
Cloud

CERTIFIED PROVIDER

# Dynatrace offers

- Master Thesis Topics and Assistance
  - Samples:
    - SuperDump for Linux
    - G1 GC Analyzer
    - Smart Test Selection
- Internships
- Jobs
  - <https://www.dynatrace.com/company/careers/>





Visit us @ [www.dynatrace.com](https://www.dynatrace.com)

and start your [Free Trial](#)





[www.dynatrace.com](https://www.dynatrace.com)