

# Wait, that's possible?

June, Tobias Hofmann

# Über mich



## Beruf

Studium: Mannheim

Leben: bis 2017 in Rio de Janeiro



## Technologien

SAP ECC & S/4HANA

ABAP, Fiori UX, Fiori Elements, UI5, BTP

JavaScript, Java, non-SAP wie AWS / Azure



## Veranstaltungen

Sprecher: SAP TechEd, ASUG, DSAG, SAP Inside Tracks

Orga: SAP Inside Tracks, FioriConf

ABAPConf: die Full-Stack Konferenz für SAP Developer



## Projekte

Einführung SAP und S/4HANA

Mobile Apps im SAP-Umfeld

Einführung Fiori: UX und Apps



## Tobias Hofmann

SAP Architekt

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*SAP Architekt und Entwickler.*

*ABAP, UI5 & Fiori*

*Kontakt mit SAP seit 1998 und in  
Fiori und S/4HANA Projekten seit  
2013.*

# Key Facts

Was es über uns zu sagen gibt



## Branche

IT-Partner des öffentlichen Sektors



## Leistungsspektrum

Full-Service: von der Idee bis zur fertigen Lösung



## Kernkompetenz

Digitalisierung von Fachverfahren und Prozessen



## Vision

Wir machen die Verwaltung einfach, schnell und effizient



## Dependance

Einsatzorte in Karlsruhe, Mainz und Saarbrücken



## Gründung

2008 gegründet als IT-Tochter der VBL



## Gesellschafter

VBL, BAnst PT und das Land Rheinland-Pfalz



## Mitarbeiter\*innen

250 engagierte Fachkräfte und Expert\*innen

# Unternehmen

## Was uns auszeichnet



### **Pioniergeist**

Als digitaler Vorreiter arbeiten wir seit über 15 Jahren erfolgreich an der Digitalisierung der öffentlichen Verwaltung.



### **Fachexpertise**

Als führender IT-Dienstleister bündeln wir das Know-how von über 250 Fachexpert\*innen.



### **Branchenerfahrung**

Als Tochter der VBL und Partner des LDI und der BAnst PT kennen wir den öffentlichen Sektor und wissen, worauf es ankommt.



### **Innovationstreiber**

Als Digitalisierungsexperte treibt uns an, dass wir Neues schaffen und etwas bewegen wollen.





# Partner

## Für wen wir arbeiten



### Öffentlicher Dienst

Durch die langjährige Zusammenarbeit mit Institutionen des Bundes und der Länder wissen wir um deren Belange.



### Versorgungskassen

Als Branchenexperte helfen wir Versorgungskassen bei der Automatisierung ihrer Abläufe und Prozesse.



### Verwaltung

Wir sind spezialisiert auf die Digitalisierung und Automatisierung von Verwaltungsabläufen und Fachverfahren.



### Bund & Länder

Als IT-Dienstleister des Bundes und der Länder betreuen wir die Systeme von Ministerien, der Justiz und der Polizei.



**1**

# **The other IT Universe**

# Non-SAP Events

## AWS re:event

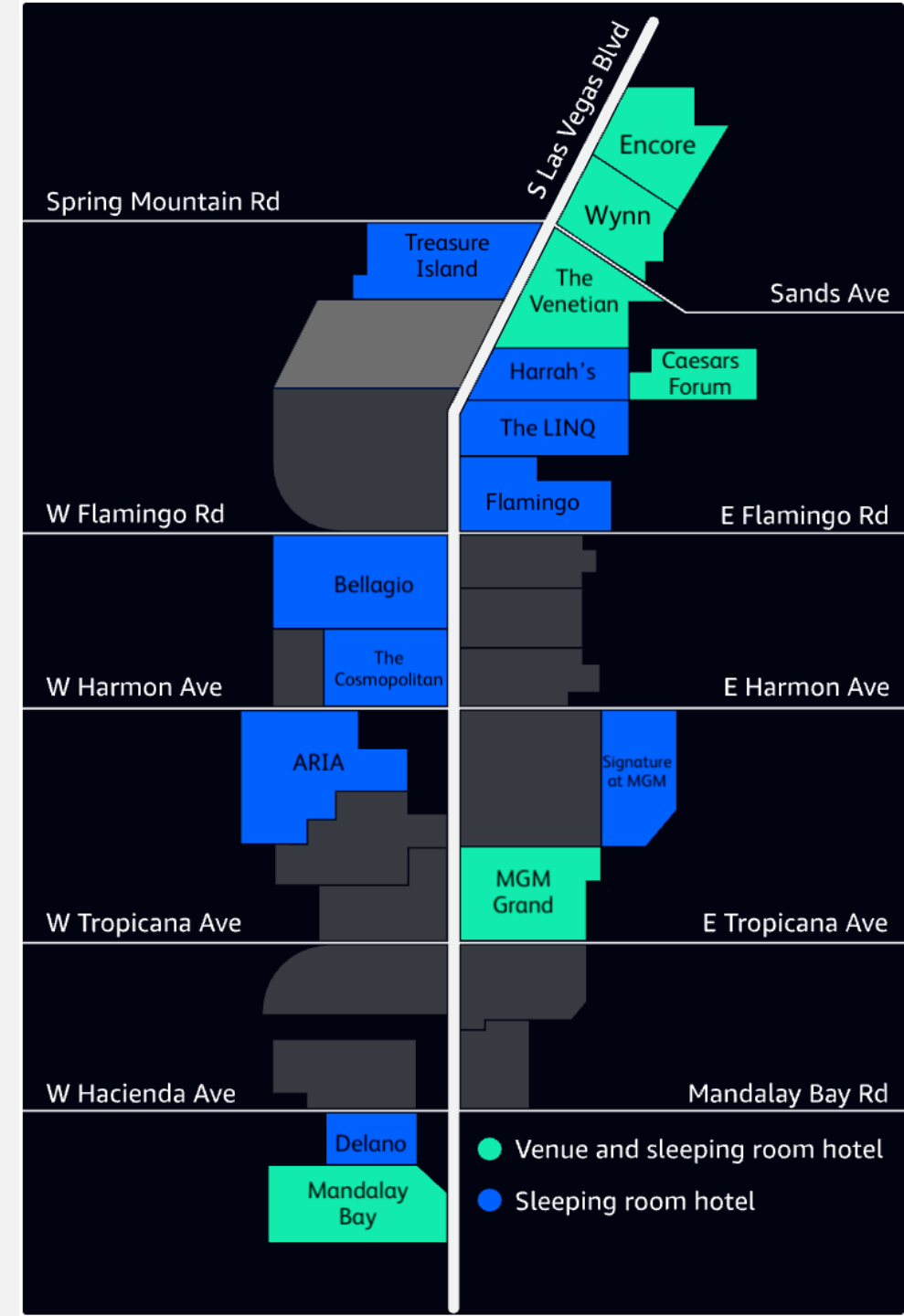
Location: Las Vegas

The Venetian, Mandalay Bay, MGM Grand, Wynn

2,000 sessions

60,000+ on-site attendees

Online: 400,000 attendees



# Non-SAP Events

## Microsoft Ignite

600+ sessions

4,000 on-site

350,000 online

## Microsoft Build ([2024](#))

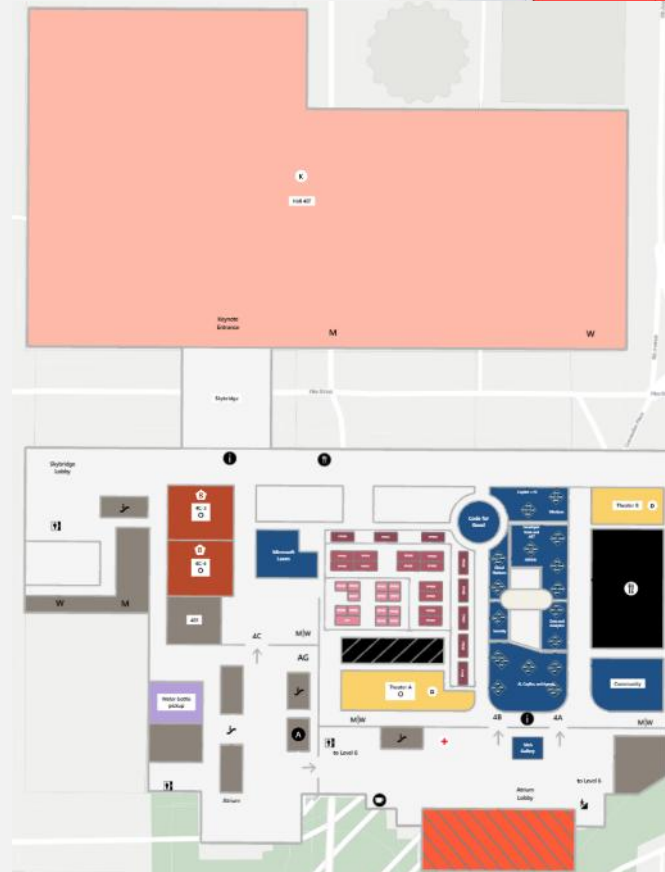
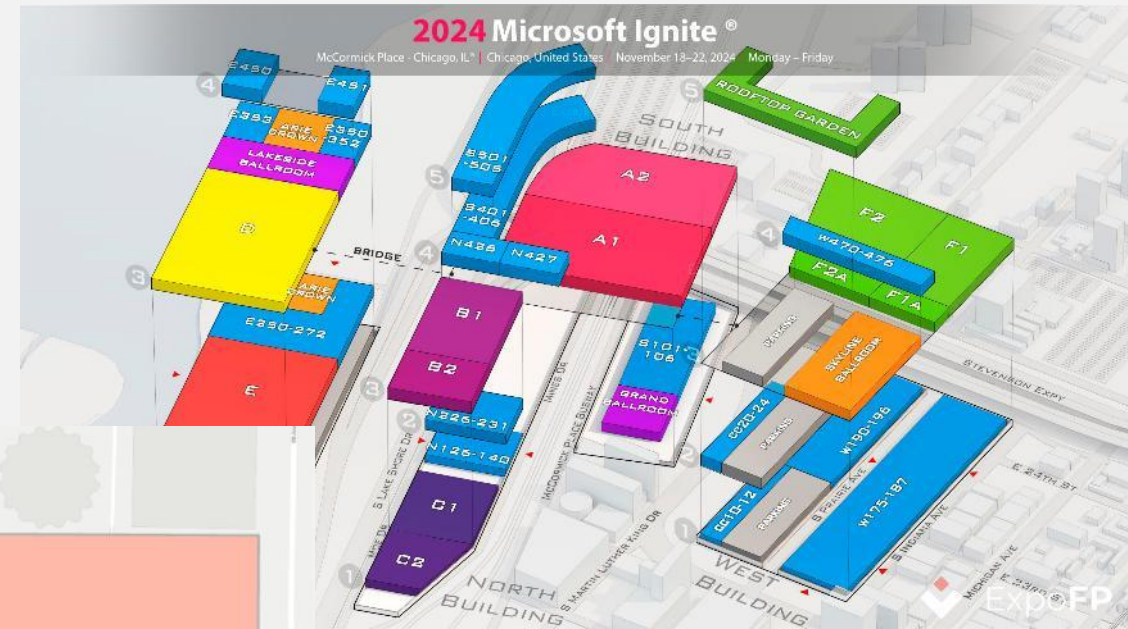
4,000 on-site

200,000 online

## Microsoft Events

1,700+ events

Virtual Training Days (600+, 7 languages)





# Non-SAP Events

## Google I/O

5,000+ attendees

[Google I/O 2024, 109 Videos](#)

[Google I/O 2023, 122 Videos](#)

## Apple WWDC

2022: 23 million viewers

2023: Keynote ([YT](#)): 20 million

2024: Keynote 819,000 peak viewers

On-site: 5,000 (limit)

## Samsung Developer Conference

2024: 3,000 on-site

2023: 5,000 on-site

## KubeCon

2022: 7,000 on-site

2023: 10,000 on-site

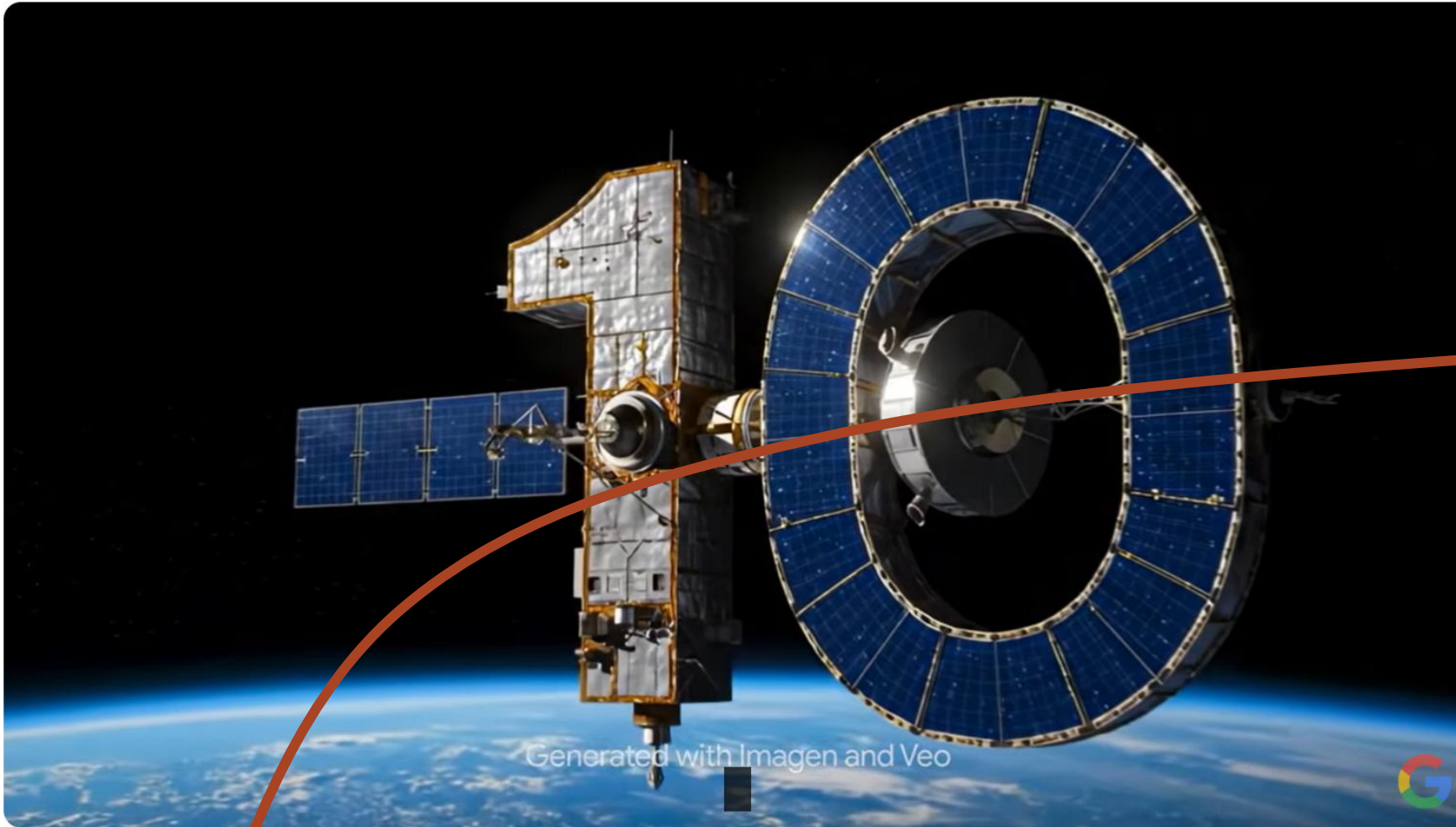
2024: 12,000 on-site

2025: 12,000 on-site

## EclipseCon

2024: 14,000 (total)

2021: 2,186 (on-site), 8,898 (total)




Generated with Imagen and Veo



## Google I/O '25 Keynote


 Google ✓  
13,1 Mio. Abonnenten

Abonnieren

 26.269



 Teilen

 Produkte kaufen



5.978.293 Aufrufe vor 17 Stunden gestreamt #GoogleIO

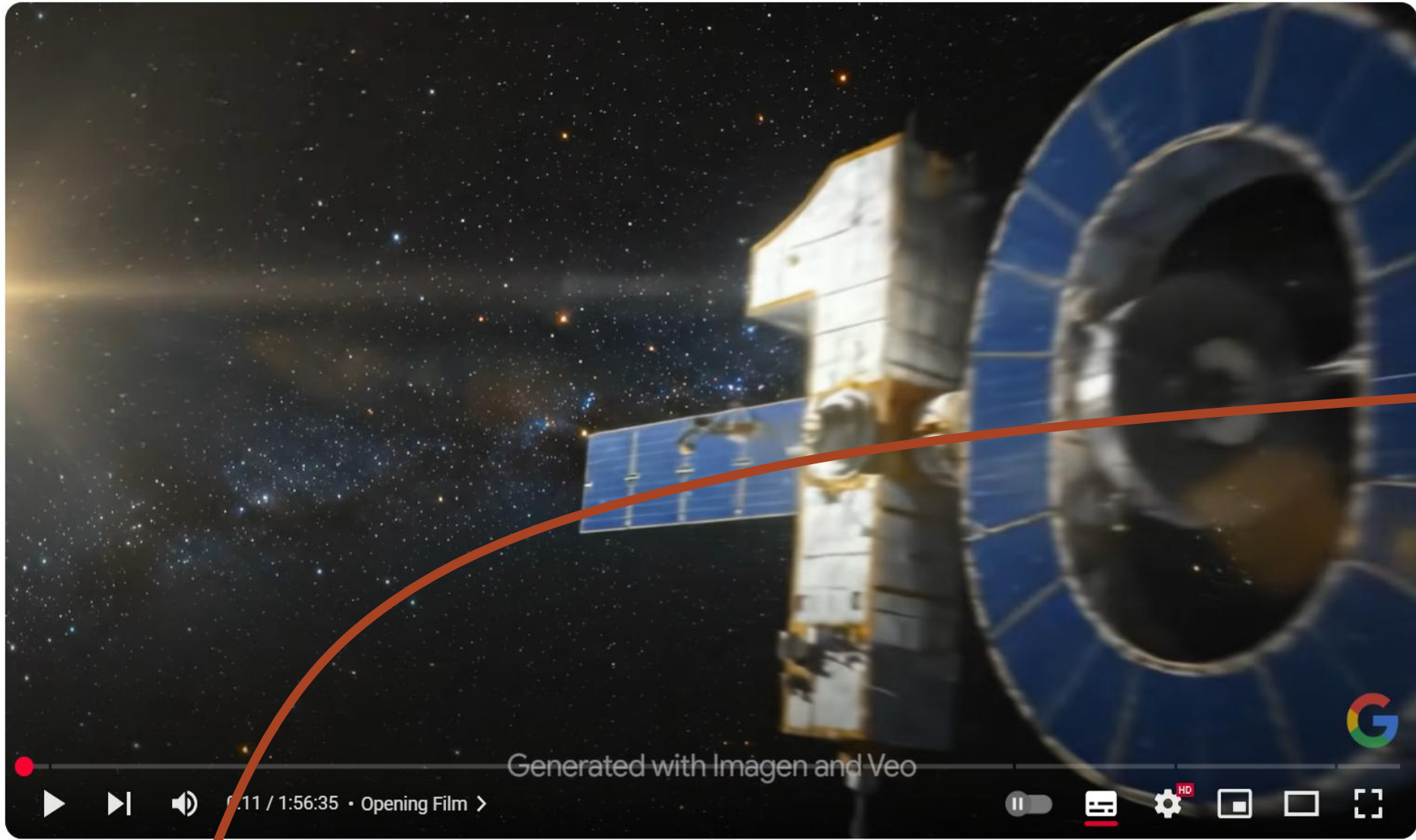
It's time to I/O! Tune in to learn the latest news, announcements, and AI updates from Google.

00:00:00 Opening Film ...mehr

17 hours after start

5,978,293 viewers

CONITAS



23 hours after start

6,073,859 views

31. May

6,7 million views

# Google I/O '25 Keynote

 Google   
13.1 Mio. Abonnenten

Abonnieren

 28.328   Teilen  Produkte kaufen 

6.073.859 Aufrufe vor 23 Stunden gestreamt #GoogleIO

It's time to I/O! Tune in to learn the latest news, announcements, and AI updates from Google.





Global Keynote: Your Best. Made Real. No Matter What Lies Ahead. | SAP

SAP 133.000 Abonnenten Abonnieren

51 Aufrufe vor 35 Minuten #SAPSapphire #BusinessAI #Joule  
Change isn't going anywhere, but the right strategy can help you bring out your best. Watch the SAP Sap  
we're bringing together AI, data, and applications to help you work smarter, scale faster, and build resilie  
...mehr

51 in 35 minutes to  
1,471 in 15 hours



Global business is always on. Ideas generate strategies.

Global Keynote: Your Best. Made Real. No Matter What Lies Ahead. | SAP Sapphire 2025

SAP 133.000 Abonnenten

Abonnieren

35

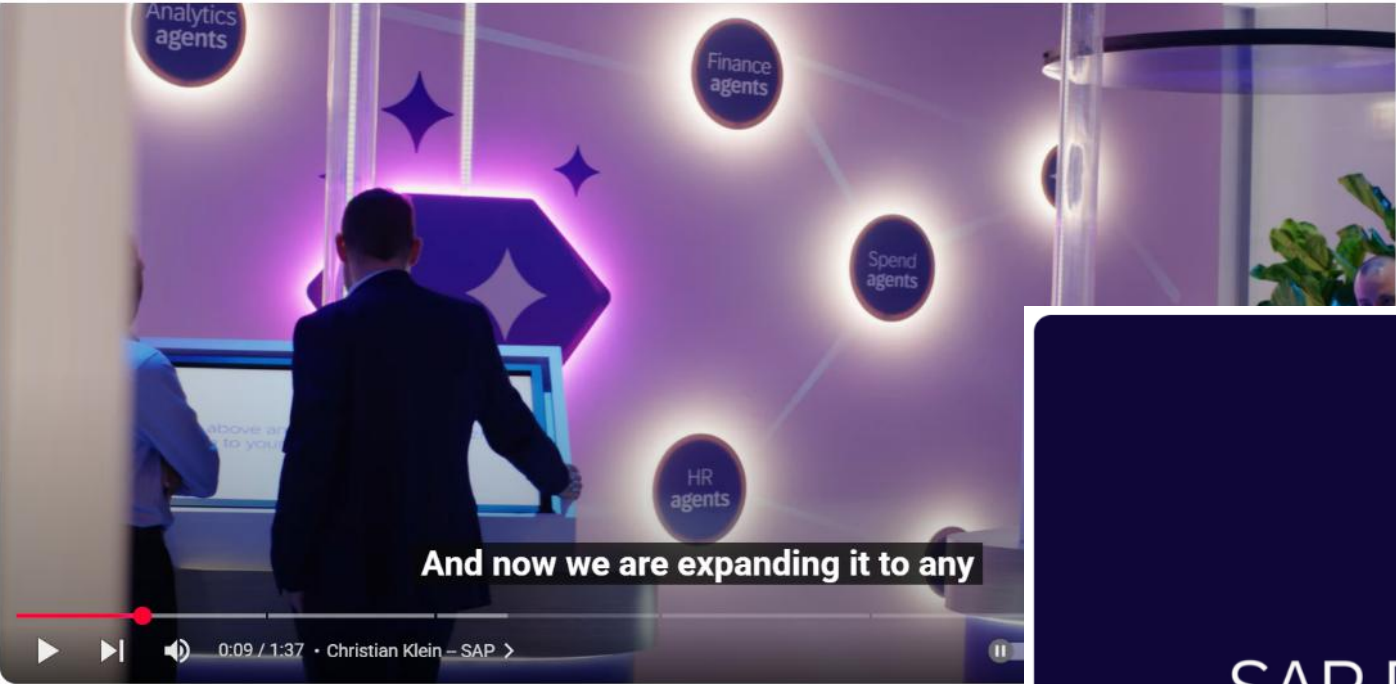
Teilen

Herunterladen

1.471 Aufrufe vor 15 Stunden #SAPSapphire #BusinessAI #Joule

Change isn't going anywhere, but the right strategy can help you bring out your best. Watch the SAP Sapphire 2025 Global keynote replay and discover how  
we're bringing together AI, data, and applications to help you work smarter, scale faster, and build resilience.  
...mehr

31. May  
11,635 views



SAP Reimagines How Enterprises Run With Business AI

SAP 133.000 Abonnenten Abonnieren

5

94 Aufrufe vor 1 Stunde  
At its annual SAP Sapphire conference, SAP unveiled innovations and partnerships that revolutionize enterprise software. From an omnipresent Joule co-pilot to an expanded network of AI agents that work across systems and lines of business, SAP heralds a new era that democratizes access to Business AI and drives productivity gains. Hear from SAP's Christian Klein, Muhammad Alam, Dominik Asam and Costco's Bob Kaila and Irreplacable with AI's Pascal Borneo.

94 in 60 minutes to  
410 in 16 hours



SAP Reimagines How Enterprises Run With Business AI

SAP 133.000 Abonnenten Abonnieren

9 Teilen Herunterladen

410 Aufrufe vor 16 Stunden  
At its annual SAP Sapphire conference, SAP unveiled innovations and partnerships that revolutionize enterprise software. From an omnipresent Joule co-pilot to an expanded network of AI agents that work across systems and lines of business, SAP heralds a new era that democratizes access to Business AI and drives productivity gains. Hear from SAP's Christian Klein, Muhammad Alam, Dominik Asam and Costco's Bob Kaila and Irreplacable with AI's Pascal Borneo.



# Non-SAP Events

## Java

Devnexus (2,500)

JavaOne

JavaLand (1,200)

Spring I/O (1,200)

## Other

RSA Conference (44,000)

SXSW (35,000)

BlackHat (22,000)

WebSummit Rio (34,000)

GITEX (200,000)

MWC (100,000)

CES (170,000)



AWS: 400,000

Microsoft Build: 200,000

Microsoft Ignite: 350,000

Apple keynote: 819,000 live viewers

## Groß- und Mittelstädte nach Einwohnerzahl [\[ Bearbeiten \]](#) [\[ Quelltext bearbeiten \]](#)

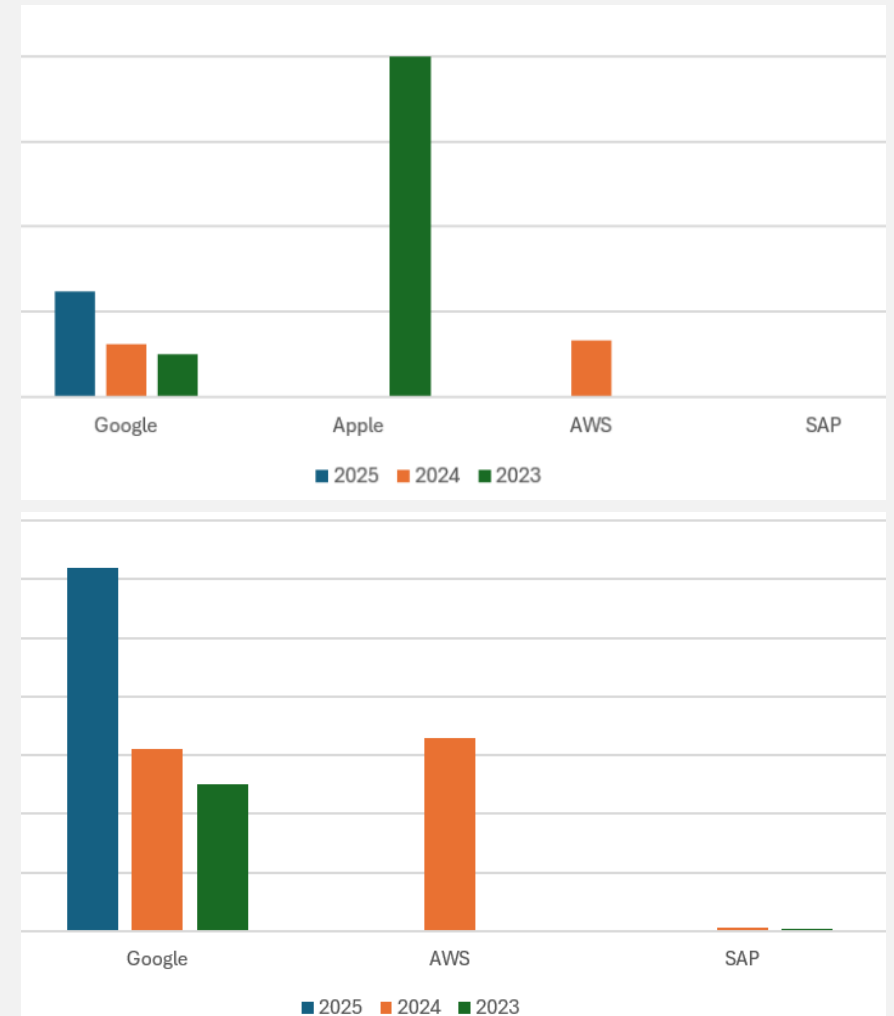
In der nachfolgenden Tabelle sind alle Städte und Gemeinden Deutschlands aufgelistet, die am 31. Dezember 2023 gemäß den Fortschreibungen der Statistischen Landesämter mindestens 20.000 Einwohner hatten.

Rang ↕	Name ↕	1970 ↕	1980 ↕	1990 ↕	2000 ↕	2010 ↕	2020 ↕	2023 ↕	Bundesland ↕
1.	<a href="#">Berlin</a>	3.208.719	3.048.759	3.433.695	3.382.169	3.460.725	3.664.088	3.662.381	Berlin
2.	<a href="#">Hamburg</a>	1.793.640	1.645.095	1.652.363	1.715.392	1.786.448	1.852.478	1.851.596	Hamburg
3.	<a href="#">München</a>	1.311.978	1.298.941	1.229.026	1.210.223	1.353.186	1.488.202	1.488.719	Bayern
4.	<a href="#">Köln</a>	849.451	976.694	953.551	962.884	1.007.119	1.083.498	1.024.408	Nordrhein-Westfalen
5.	<a href="#">Frankfurt am Main</a>	666.179	629.375	644.865	646.550	679.664	764.104	749.596	Hessen
6.	<a href="#">Düsseldorf</a>	660.963	590.479	575.794	569.364	588.735	620.523	616.319	Nordrhein-Westfalen
17.	<a href="#">Bochum</a>	343.809	400.757	396.486	391.147	374.737	364.454	357.024	Nordrhein-Westfalen
18.	<a href="#">Bielefeld</a>	168.609	312.708	319.037	321.758	323.270	333.509	331.519	Nordrhein-Westfalen
38.	<a href="#">Oberhausen</a>	246.199	228.947	223.840	222.151	212.945	209.566	213.510	Nordrhein-Westfalen
39.	<a href="#">Rostock</a>	198.636	232.506	248.088	200.506	202.735	209.061	204.948	Mecklenburg-Vorpommern
40.	<a href="#">Kassel</a>	214.785	195.912	194.268	194.766	195.530	201.048	197.065	Hessen

# SAP numbers vs. Non-SAP numbers

YouTube views #

Sapphire 2024 keynote	33,000
Teched 2024 keynote	21,000
Sapphire 2023 keynote	32,000
TechEd 2023 keynote	12,000
TechEd 2022 keynote	14,000
Google I/O 2025 keynote	6,200,000
Google I/O 2024 keynote	2,300,000
Google I/O 2024 Developer keynote	736,000
Google I/O 2023 keynote	2,300,000
Google I/O 2023 Developer keynote	232,000
AWS re:Invent 2024 – Vogels	2,100,000
AWS re:Invent 2024 – CEO	1,200,000
Apple WWDC 2023	20,000,000



# IT is just another bubble

## 1. Bundesliga Germany

Attendees in 2024/2025: **11,830,600**

Top 3 largest stadiums: BVB: **81,000** | Bayern: **75,000** | VfB: **60,000**

## Tour de France

150,000,000 viewers in Europe

3,500,000,000 viewers worldwide

12,000,000 viewers in-person, onsite

## Marathon

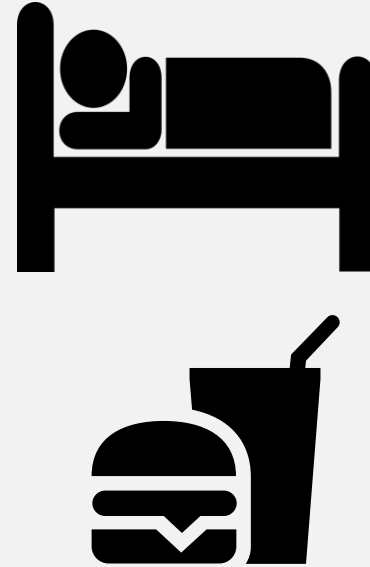
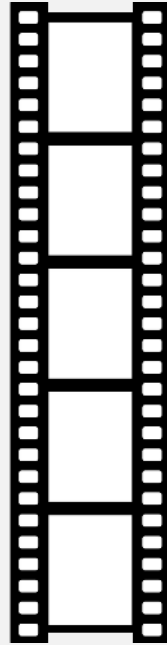
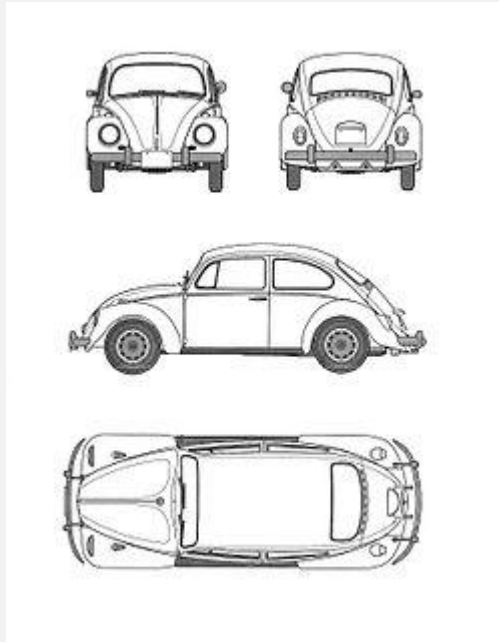
Berlin: 54,154 finishers, 250,000+ applicants (lottery)

London: 53,877 finishers, 1,133,813 applicants

NYC: 55,500 finishers, 200,000+ applicants

**Smartphones sold 2023: 1,260,000,000 total | 3,400,000 per day**

# Products for people





# SAP is not the center of the universe



# SAP is not the center of the universe

Found it!

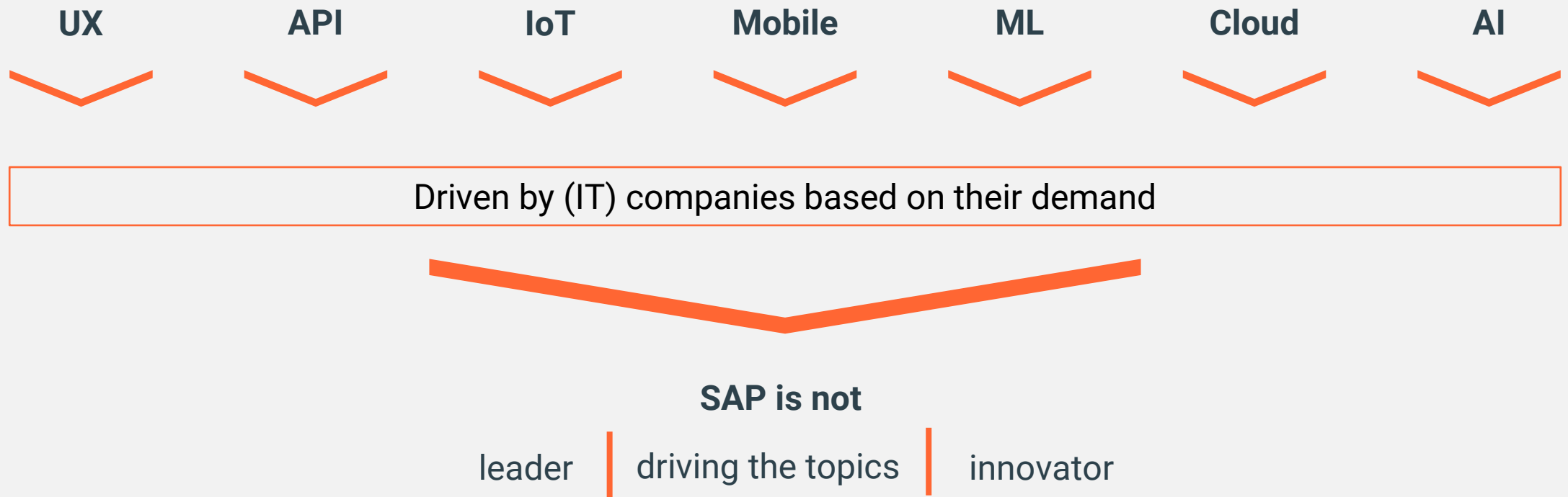


# B2B

**2**

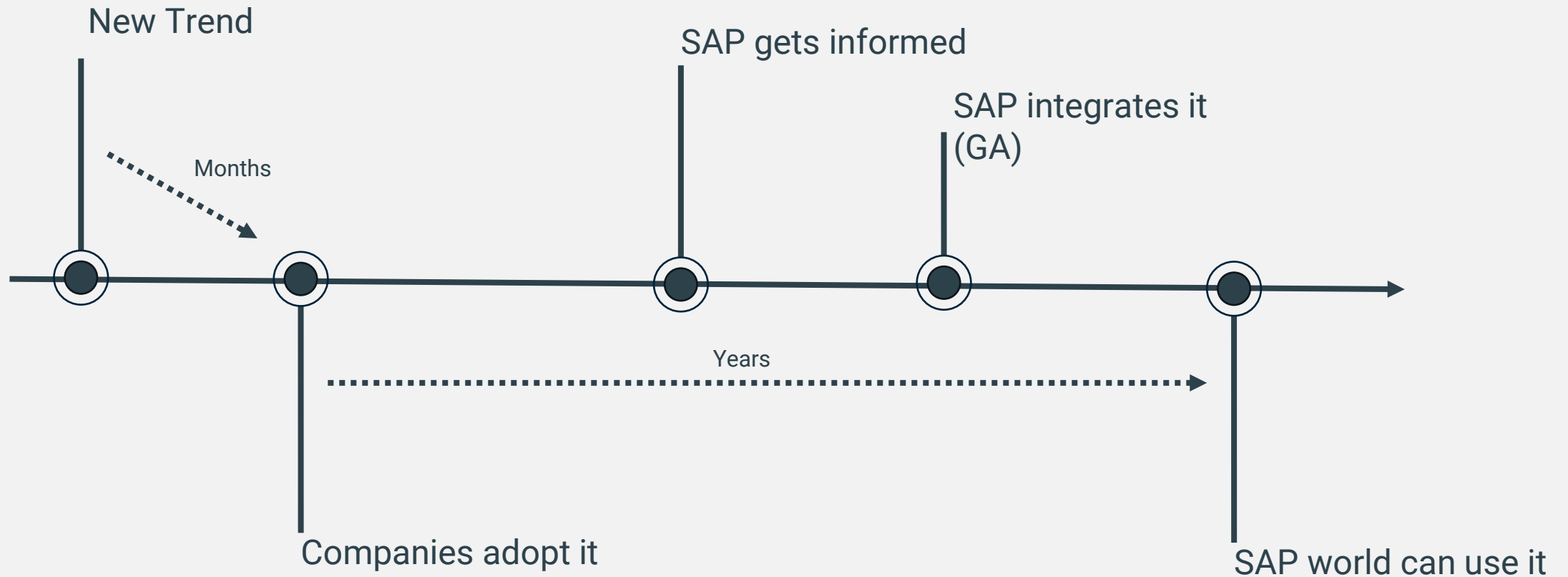
**What is the  
difference?**

# Trends of recent years












# SAP is not the center of the universe














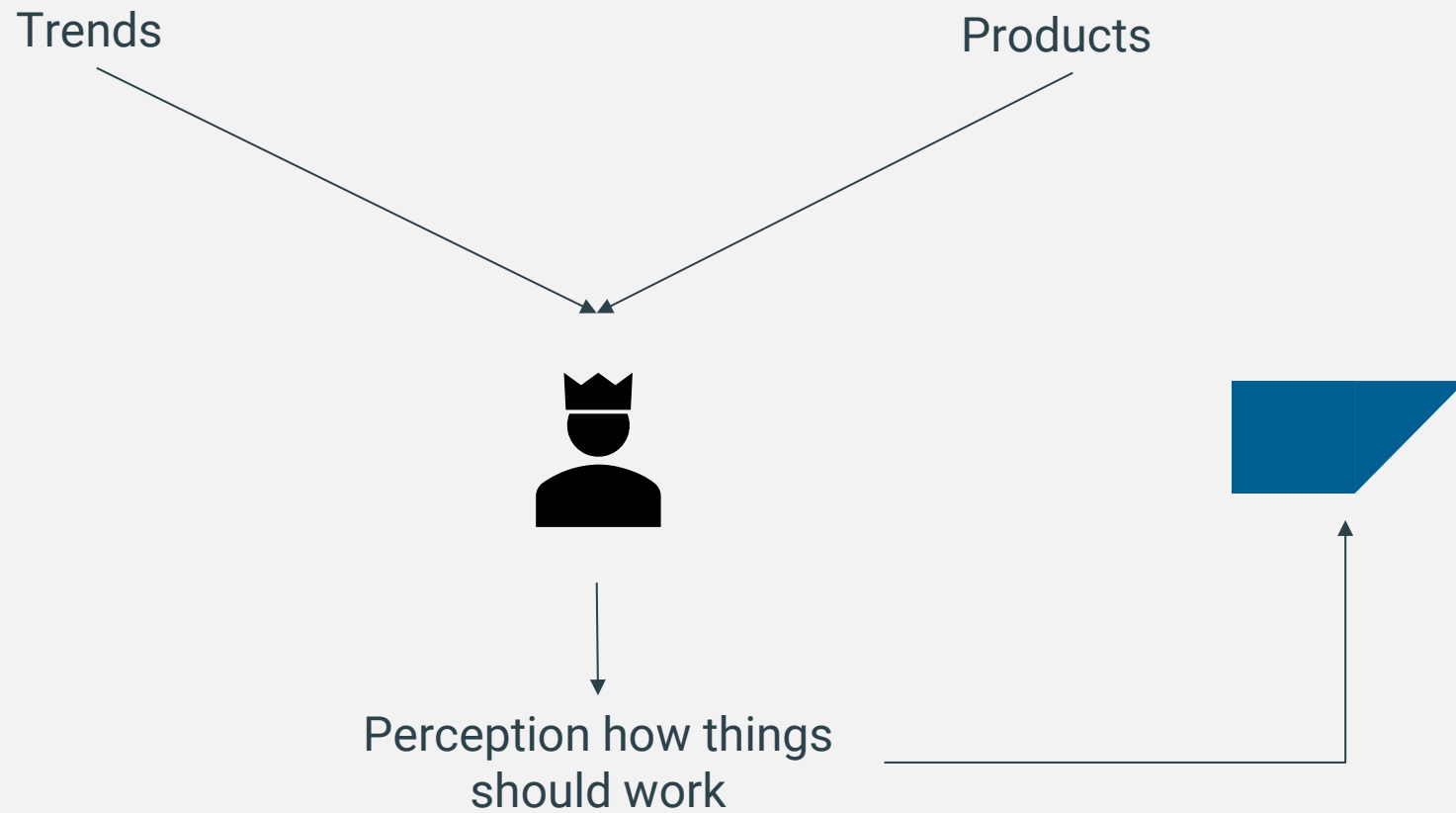
# Others build other things differently

AI for coding?		Adopted. Part of development and apps
Cloud native apps?		Apps are build for cloud, for Kubernetes
API first?		Everything is an API
Documentation as code?		Widely used
Git?		Everything is in git
Mobile first?		Developing for one device is the exception
SaaS?		Best of breed
Release dates?		Pipelines: continuous delivery

# Others have a different mindset

Scope?		One specific use case for app
Lifetime?		Months
Support?		Redo app
Frameworks?		Try out and use
Time to go live?		Short living environments
Stable?		Move fast and break things
Coolness?		Adopt and see if it works, e.g. AI
Focus?		End user experience
Product?		Pay

# Result





# Example

<https://www.questionai.com/>

60. What is the matrix product  $\begin{bmatrix} 3 & 5 \\ 6 & 8 \end{bmatrix} \begin{bmatrix} w & x \\ y & z \end{bmatrix}$ ?

F.  $\begin{bmatrix} 3w & 5x \\ 6y & 8z \end{bmatrix}$

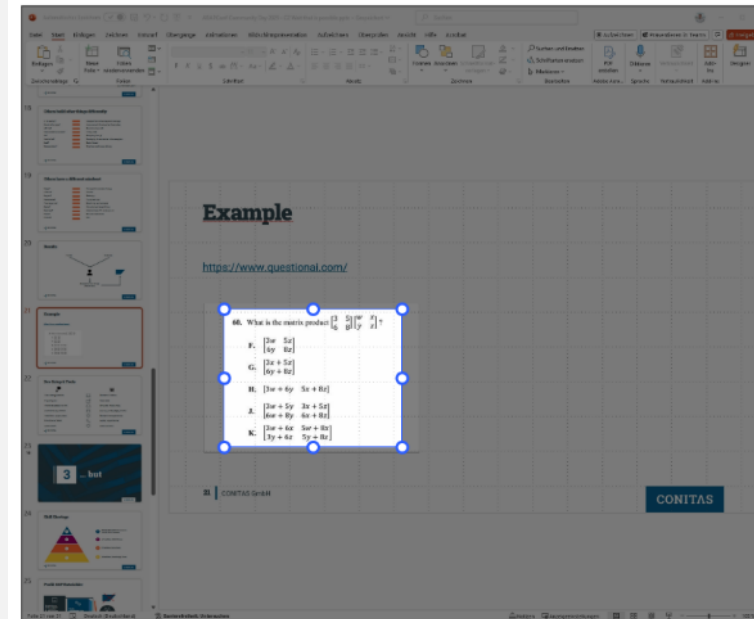
G.  $\begin{bmatrix} 3x + 5x \\ 6y + 8z \end{bmatrix}$

H.  $\begin{bmatrix} 3w + 6y & 5x + 8z \end{bmatrix}$

J.  $\begin{bmatrix} 3w + 5y & 3x + 5z \\ 6w + 8y & 6x + 8z \end{bmatrix}$

K.  $\begin{bmatrix} 3w + 6x & 5w + 8x \\ 3y + 6z & 5y + 8z \end{bmatrix}$

Crop the complete question



Add Info

Send Now

## Question

60. What is the matrix product  $\begin{bmatrix} 3 & 5 \\ 6 & 8 \end{bmatrix} \begin{bmatrix} w & x \\ y & z \end{bmatrix}$ ?

## Answer

The product of two matrices is found by multiplying the elements of each row of the first matrix by the corresponding elements of each column of the second matrix and then adding the products. So, the product of the given matrices is

$$\begin{bmatrix} 3 & 5 \\ 6 & 8 \end{bmatrix} \begin{bmatrix} w & x \\ y & z \end{bmatrix} = \begin{bmatrix} 3w + 5y & 3x + 5z \\ 6w + 8y & 6x + 8z \end{bmatrix}.$$

Therefore, the answer is **(J)**.

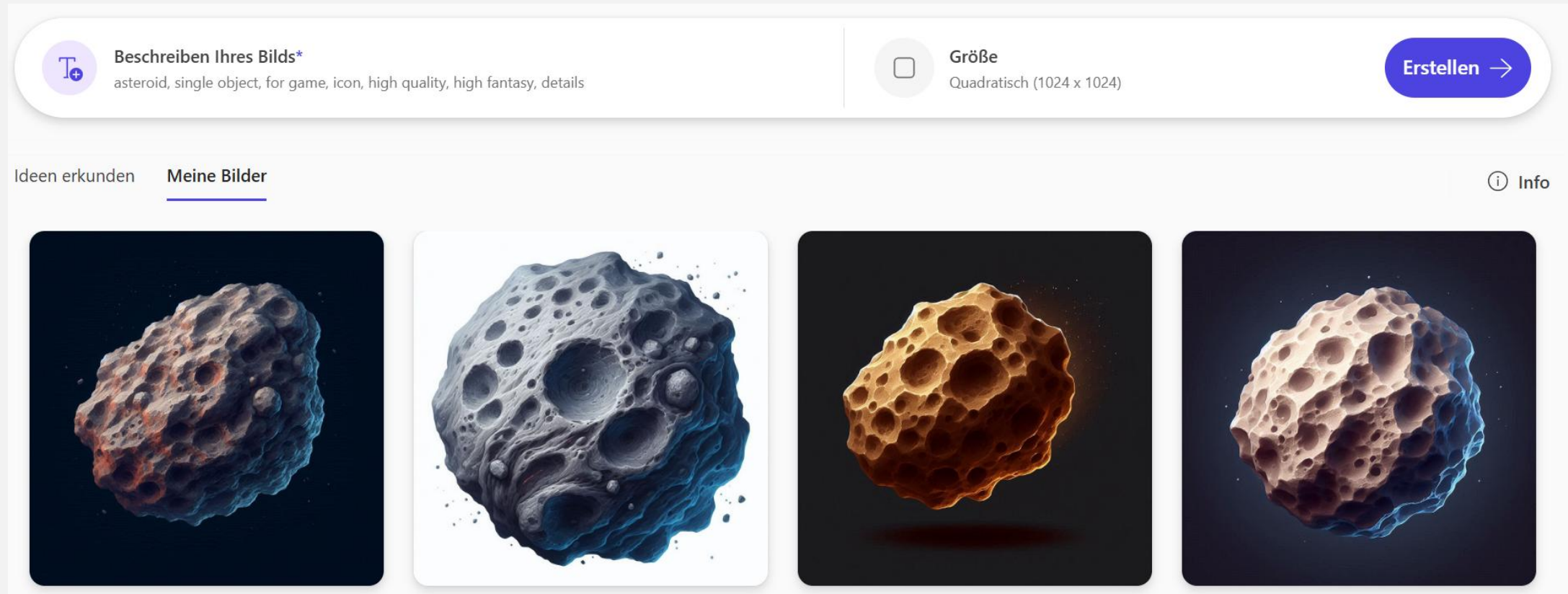
Explain it



# Oh, you are also AI?





**Prompt:** asteroid, single object, for game, icon, high quality, high fantasy, details



<https://create.microsoft.com/en-us/features/ai-image-generator>

**Prompt:** spaceship, single object, for game, icon, high quality, high fantasy, details


 **Beschreiben Ihres Bilds\***  
spaceship, single object, for game, icon, high quality, high fantasy, details





 **Größe**  
Quadratisch (1024 x 1024)

**Erstellen →**

Ideen erkunden

Meine Bilder

 Info



<https://create.microsoft.com/en-us/features/ai-image-generator>



## Prompt:

write p5.js code for Asteroids where you control a spaceship with the mouse and shoot asteroids with the left click of the mouse. If your spaceship collides with an asteroid, you lose. If you shoot down all asteroids, you win! I want to use my own textures for the spaceship and for asteroids.

ChatGPT ▾

🔗 Gemeinsam nutzen

write p5.js code for Asteroids where you control a spaceship with the mouse and shoot asteroids with the left click of the mouse. If your spaceship collides with an asteroid, you lose. If you shoot down all asteroids, you win! I want to use my own textures for the spaceship and for asteroids.

Here is a complete p5.js implementation of an **Asteroids** game where:

- You control the spaceship with the mouse
- You shoot with the left click
- You lose if you collide with an asteroid
- You win when all asteroids are destroyed
- It uses your own textures (image placeholders used in the code)

### ✅ Instructions Before Running:

1. Prepare two images:
  - `spaceship.png` — your spaceship texture
  - `asteroid.png` — your asteroid texture
2. Place them in the project folder or load them from URLs.

### 🔥 Full p5.js Code:

```
javascript Kopieren Bearbeiten

let spaceshipImg, asteroidImg;
let spaceship;
let asteroids = [];
let bullets = [];
let gameOver = false;
let gameWon = false;

function preload() {
  spaceshipImg = loadImage('spaceship.png'); // Replace with your spaceship texture
  asteroidImg = loadImage('asteroid.png'); // Replace with your asteroid texture
}
```

```
hits(spaceship) {
  let d = dist(this.pos.x, this.pos.y, spaceship.pos.x, spaceship.pos.y);
  return d < this.size / 2 + spaceship.size / 2;
}

class Bullet {
  constructor(pos) {
    this.pos = pos;
    this.vel = createVector(0, -5);
    this.size = 8;
  }

  update() {
    this.pos.add(this.vel);
  }

  display() {
    fill(255);
    noStroke();
    ellipse(this.pos.x, this.pos.y, this.size);
  }

  hits(asteroid) {
    let d = dist(this.pos.x, this.pos.y, asteroid.pos.x, asteroid.pos.y);
    return d < asteroid.size / 2;
  }
}
```

### 🎮 How to Use:

- Move your **mouse to steer** the spaceship.
- **Left-click** to fire bullets.
- Avoid colliding with asteroids.
- Destroy all asteroids to **win!**



# Most difficult task

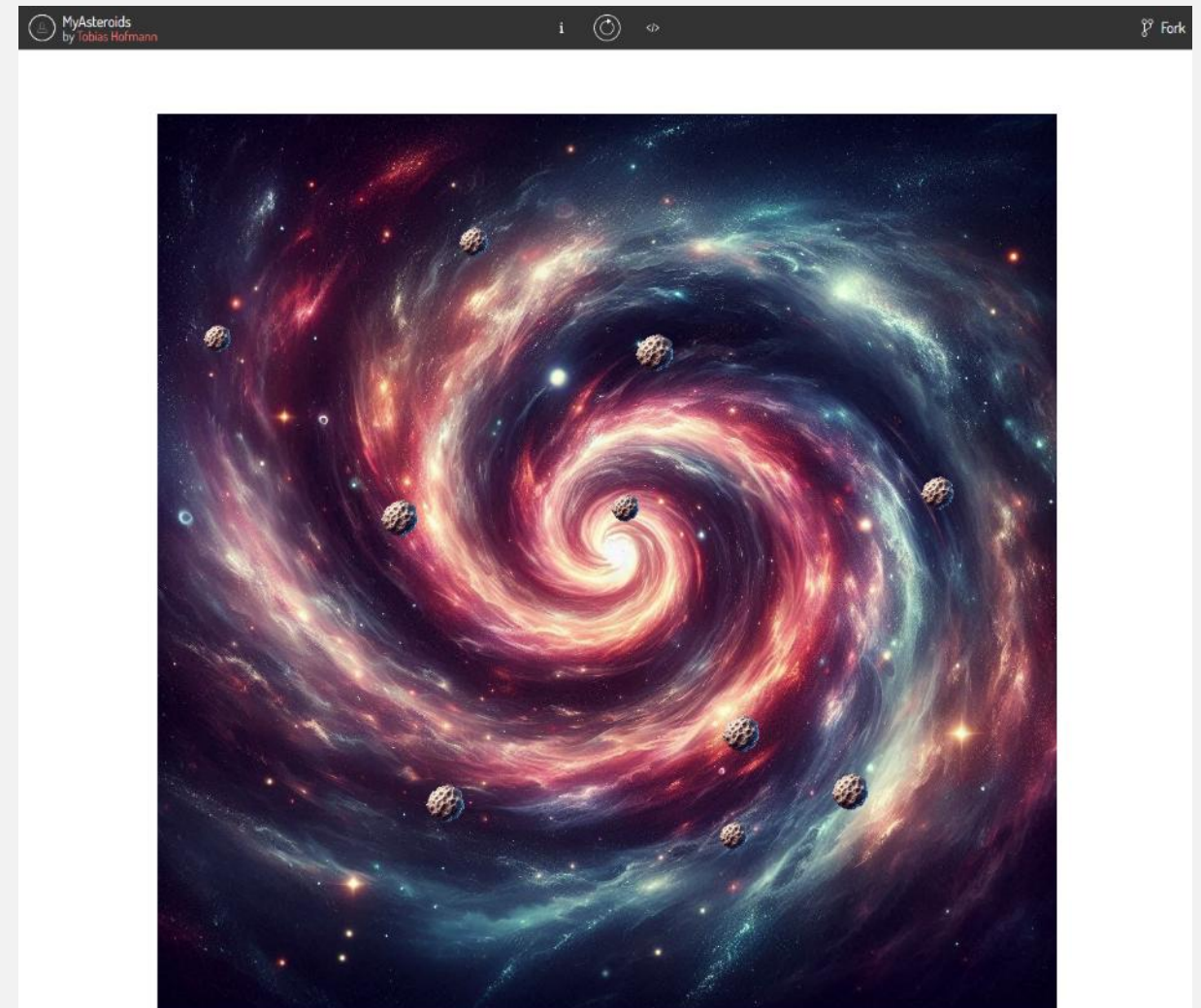
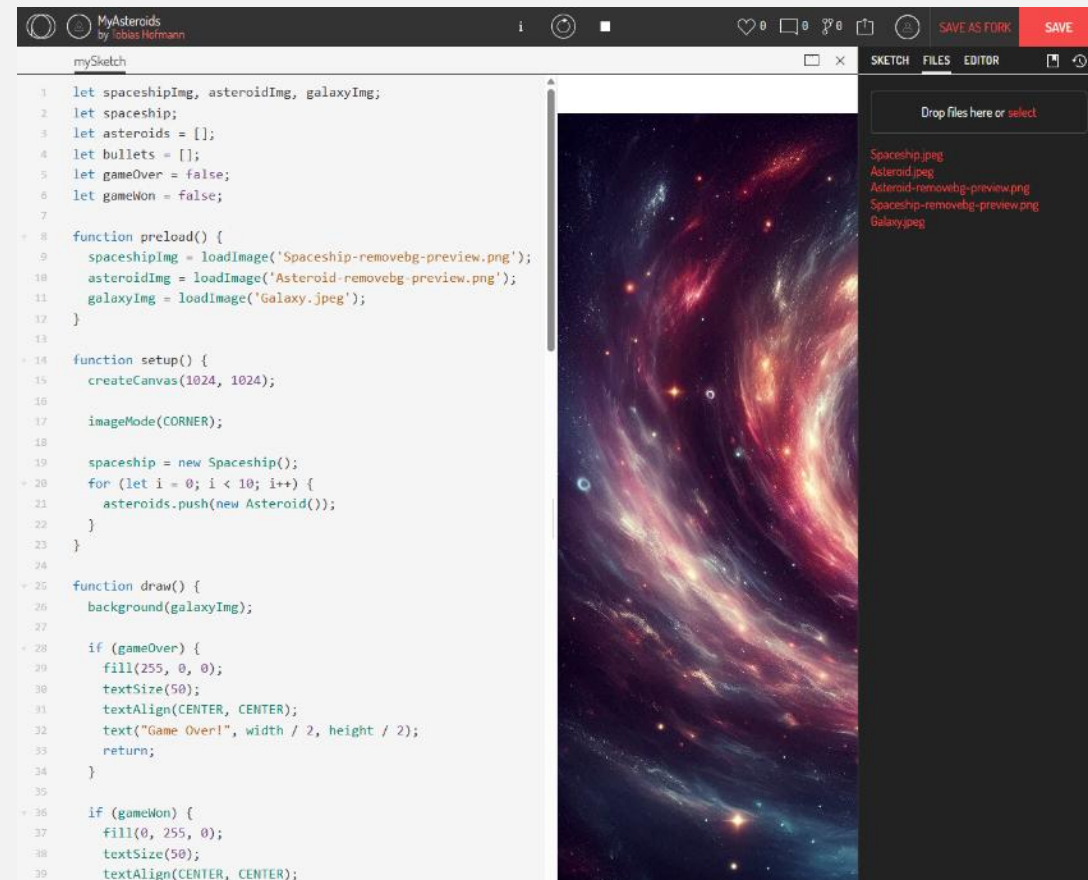
1. Find a website to make the background of Asteroid and Spaceship transparent
2. Come up with a prompt for the background galaxy

**Prompt:** galaxy, with vortex, mystic light, background, dark, void, stars



# The Game

<https://openprocessing.org/sketch/2654379/embed>



# HTML App

**Prompt:** write p5.js code for Asteroids where you control a spaceship with the mouse and shoot asteroids with the left click of the mouse. If your spaceship collides with an asteroid, you lose. If you shoot down all asteroids, you win! I want to use my own textures for the spaceship and for asteroids.

## How to Use:

- Move your **mouse** to **steer** the spaceship.
- **Left-click** to fire bullets.
- Avoid colliding with asteroids.
- Destroy all asteroids to **win**!

If you want to add:

- **Explosion effects**
- **Sounds**
- **More asteroid waves**

I can help extend it. Want to package this into a full HTML file or add touch controls?



## Full HTML + p5.js Code

html

 Kopieren

 Bearbeiten

```
<!DOCTYPE html>
<html>
<head>
  <meta charset="UTF-8">
  <title>Asteroids Game</title>
  <style>
    body { margin: 0; overflow: hidden; }
    canvas { display: block; }
  </style>
</head>
<body>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/1.9.0/p5.min.js"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/p5.js/1.9.0/addons/p5.sound.min.js"></script>
  <script>
    let spaceshipImg, asteroidImg;
    let shootSound, explodeSound;

    let spaceship;
    let asteroids = [];
```

# Next hard step: sound

Get sounds to make HTML App work

<https://pixabay.com/sound-effects/search/wav%20explode/>

<https://pixabay.com/sound-effects/search/wav%20shoot/>

```
shootSound = loadSound('shoot.mp3', () => {}, () => {}); // optional  
explodeSound = loadSound('explode.mp3', () => {}, () => {}); // optional
```

# Next: escalate

## Add health bar

### ✓ Code Changes:

You'll only need to modify/add to the existing HTML + p5.js code. Below are the **new and modified parts only**.

### 📁 Step 1: Add a `health` property to the spaceship

Replace the `Spaceship` class with this version:

```
javascript
class Spaceship {
  constructor() {
    this.pos = createVector(width / 2, height / 2);
    this.size = 60;
    this.health = 3;
    this.invincible = 0; // frames of invincibility after being hit
  }

  update() {
    this.pos.x = mouseX;
    this.pos.y = mouseY;
    if (this.invincible > 0) this.invincible--;
  }
}
```

## Add health pickups and power-ups

### 1. 📁 Add Power-Up Class

Place this **after** the `Particle` class:

```
javascript
class PowerUp {
  constructor(type, pos) {
    this.type = type; // 'health' or 'shield'
    this.pos = pos.copy();
    this.size = 30;
    this.lifespan = 600; // lasts for 10 seconds
  }

  update() {
    this.lifespan--;
  }

  display() {
    noStroke();
    if (this.type === 'health') {
      fill(255, 100, 100); // red heart
      ellipse(this.pos.x, this.pos.y, this.size);
    }
  }
}
```

...

### ✓ Done!

You now have:

- Smooth floating labels for power-ups 🎮
- Colors matching the type (red for health, blue for shield)
- A polished, responsive feel

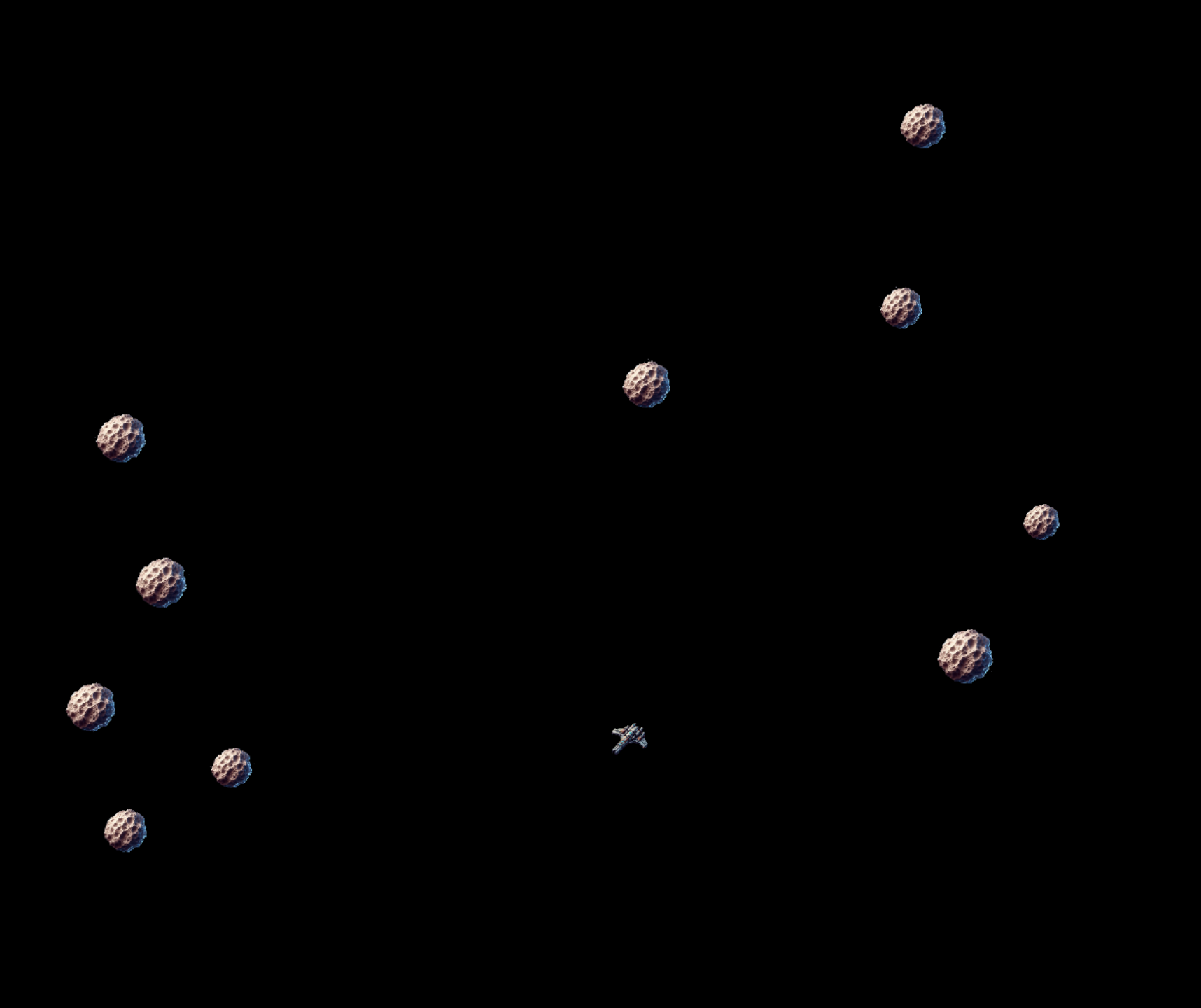
Want to also show:

- Damage text like "-1 HP" when hit?
- Combo or score multipliers?
- Other player feedback like "Nice shot!" or "Wave cleared!"?

Let me know!

📄 👍 🗣️ 🔊 📌 🔄





<https://abapconf.org/abapconf2025/asteroids/asteroids.html>



THE ANTS WILL SOON BE  
HERE. AND I, FOR ONE,  
WELCOME OUR NEW INSECT  
OVERLORDS.

# Dev Setup & Tools



Mac: latest generation

Single Sign-on

Worldwide access via VPN

Client: Browser, Chrome

Installation: plugins, tools

Smartphone, Tablet

Leidenschaft



Standard: Windows

Passwords

Citrix, RSA Token, Proxy

SAP GUI, NWBC, Edge, Chrome

Standard: managed device

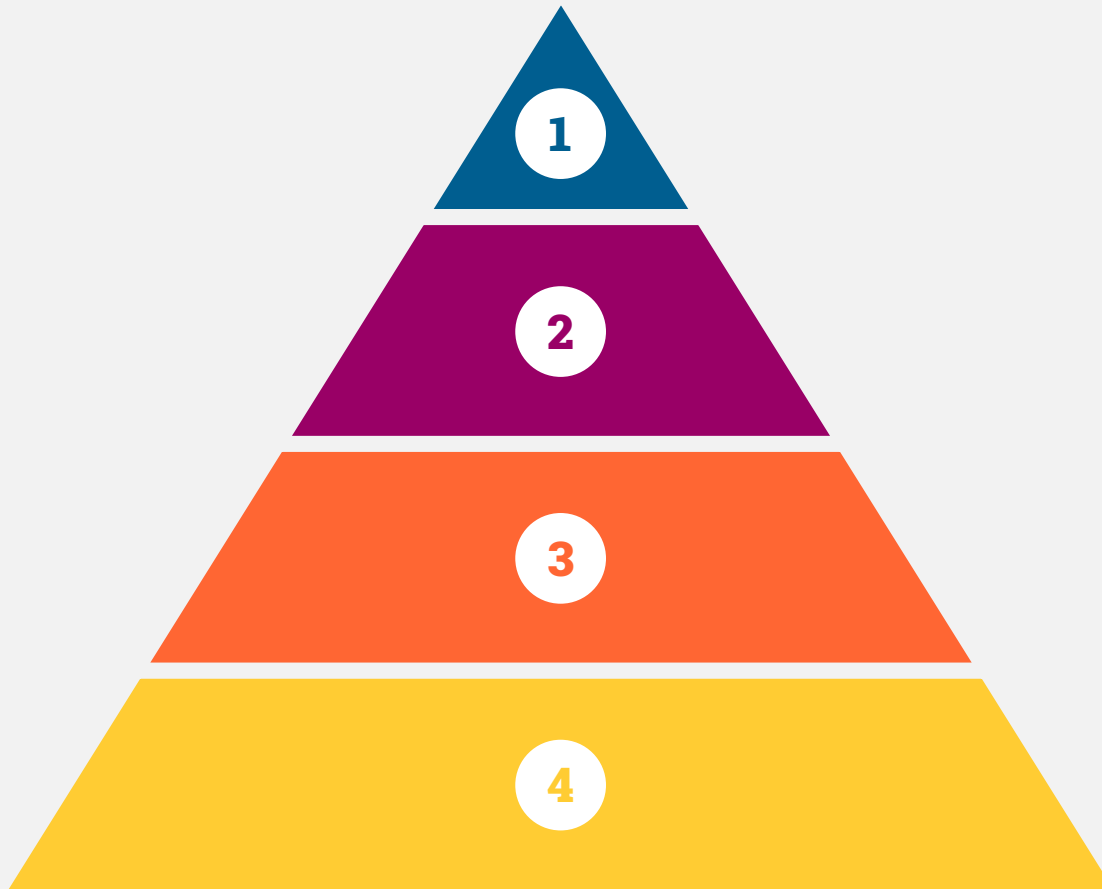
Laptop, rugged device

Leiden schaffen

3

... but

# Skill Shortage



**1** 35.000 SAP ECC Customers  
24.000 SAP Partner

**2** „5“ million ABAP Devs

**3** 17 million Java Devs

**4** 20 million JavaScript Devs

# Profil: SAP Developer



## Project Team

Roles and Tasks

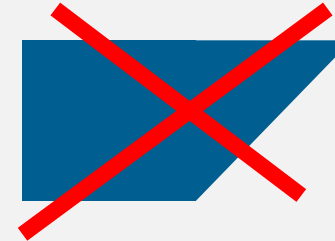
- » Project Manager
- » Product Owner
- » Frontend-Dev
- » Backend- Dev
- » Business Analyst
- » Security
- » Testing
- » Basis / DevOps
- » Documentation



## Tools

Supporting Tools

- » Git
- » Continuous Integration
- » Continuous Deployment
- » Automated Tests
- » Telemetry
- » ...





# Profil: SAP Entwickler



## Project Team

Roles and Tasks

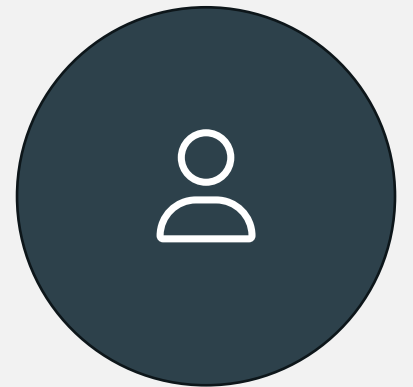
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## Tools

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# The non-SAP IT world



# The classical SAP world

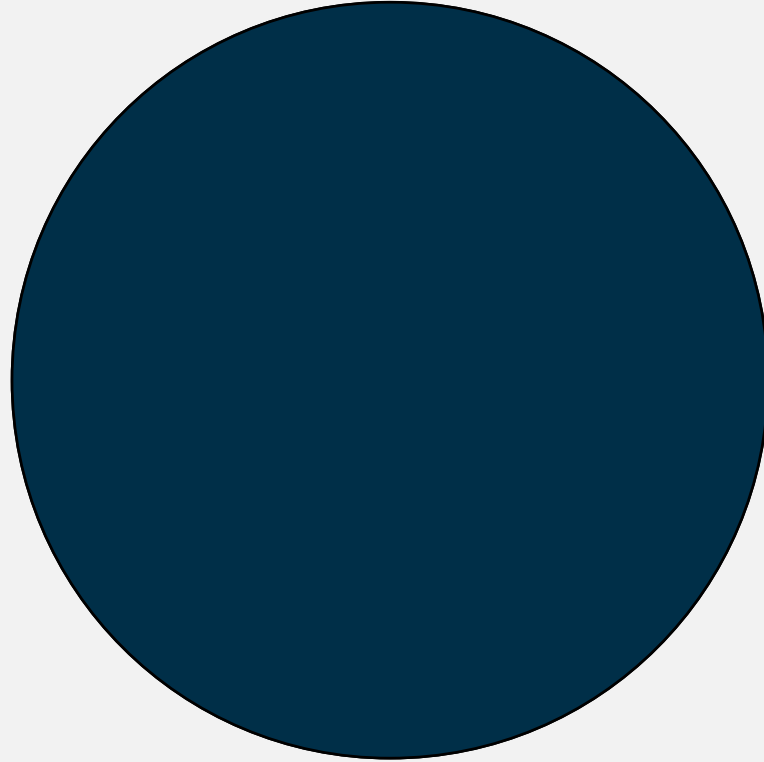


**ABAP**



**WDA**

# SAP world & IT world: what they have in common



# Cool stuff, backed by SAP



**SCHWARZ**



SAP BRIM

SAP Emarsys Customer Engagement (CRM)

SAP Customer Checkout App (POS)

SAP Customer Activity Repository







