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# Entrepreneurship mit “Generativer KI”: (K)ein Jack-of-all-Trades



Prof. Dr. Hannes Rothe

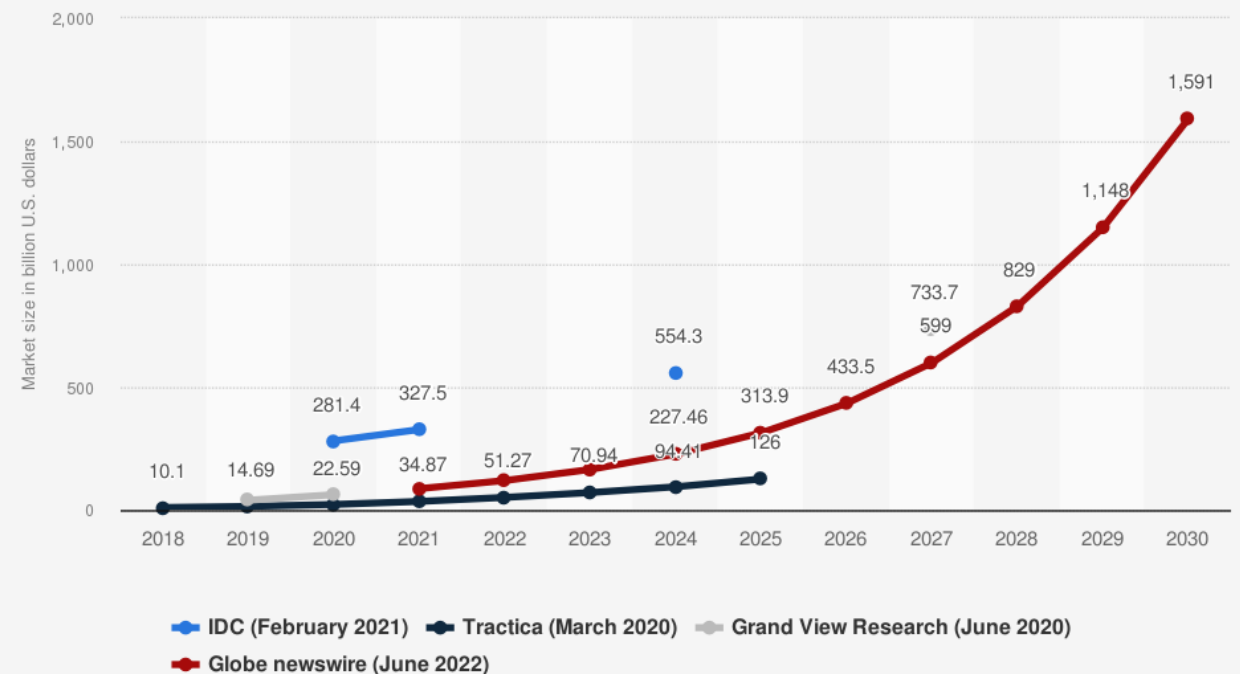
AI is considered a  
**generative technology**  
with unprecedented  
growth potential

(Bresnahan and Trajtenberg 1995, Iansiti and Lakhani 2020)

for scale (Burström et al. 2021)

and scope (Brynjolofsson et al. 2018)

Market size and revenue comparison for artificial intelligence worldwide from 2018 to 2030 (in billion U.S. dollars)



#### Sources

IDC; Tractica; Grand View Research; Statista;  
GlobeNewswire  
© Statista 2023

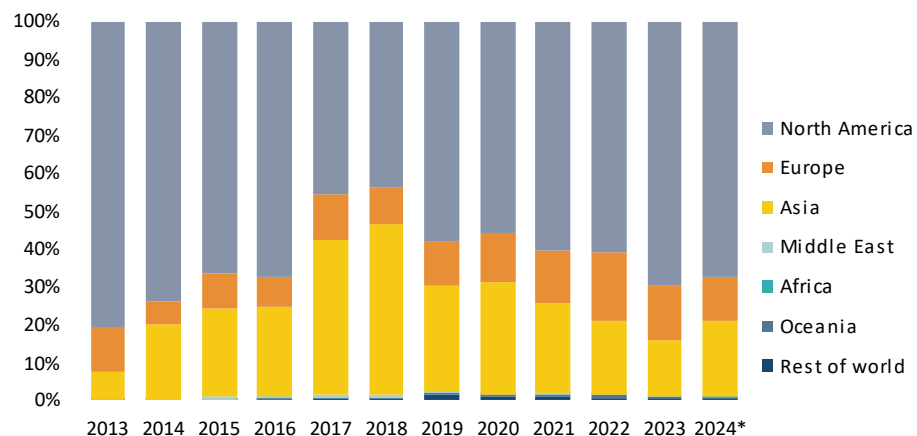
#### Additional Information:

Worldwide; Statista; 2022

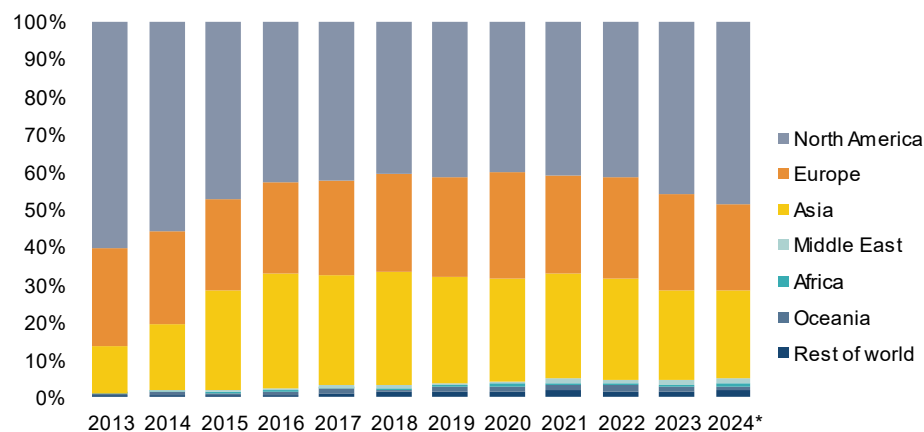
# AI Venturing: Status Quo (Investments)



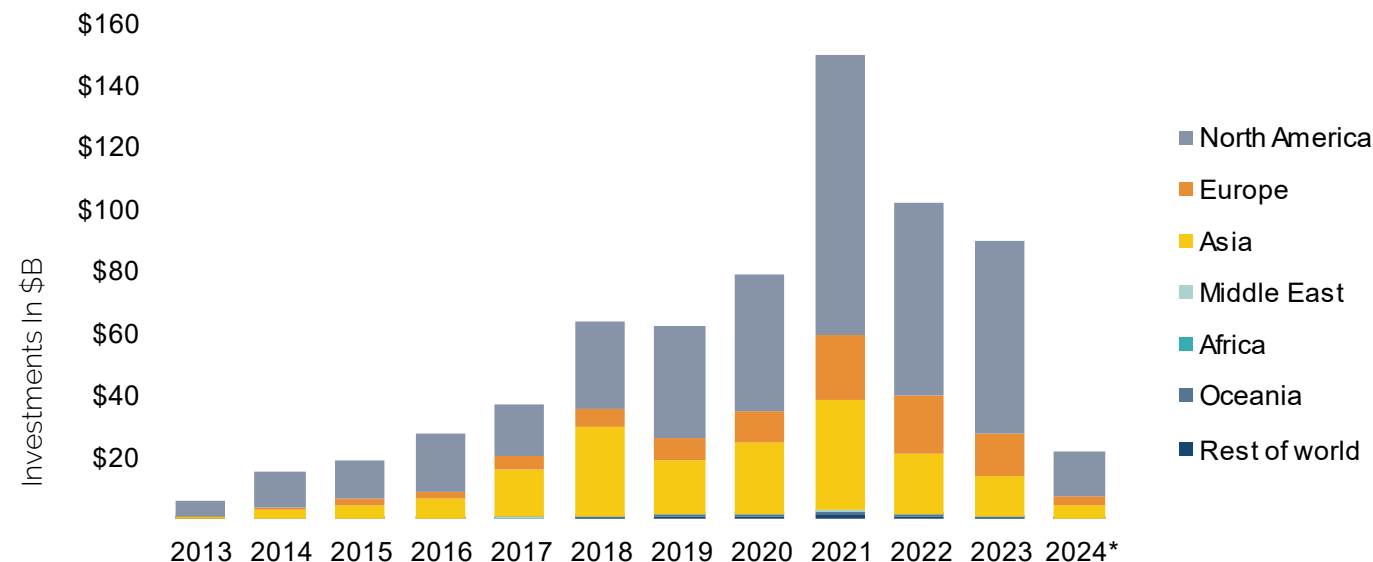
## AI&ML VC deal **value** (\$B) by region



## AI&ML VC deal **count** by region

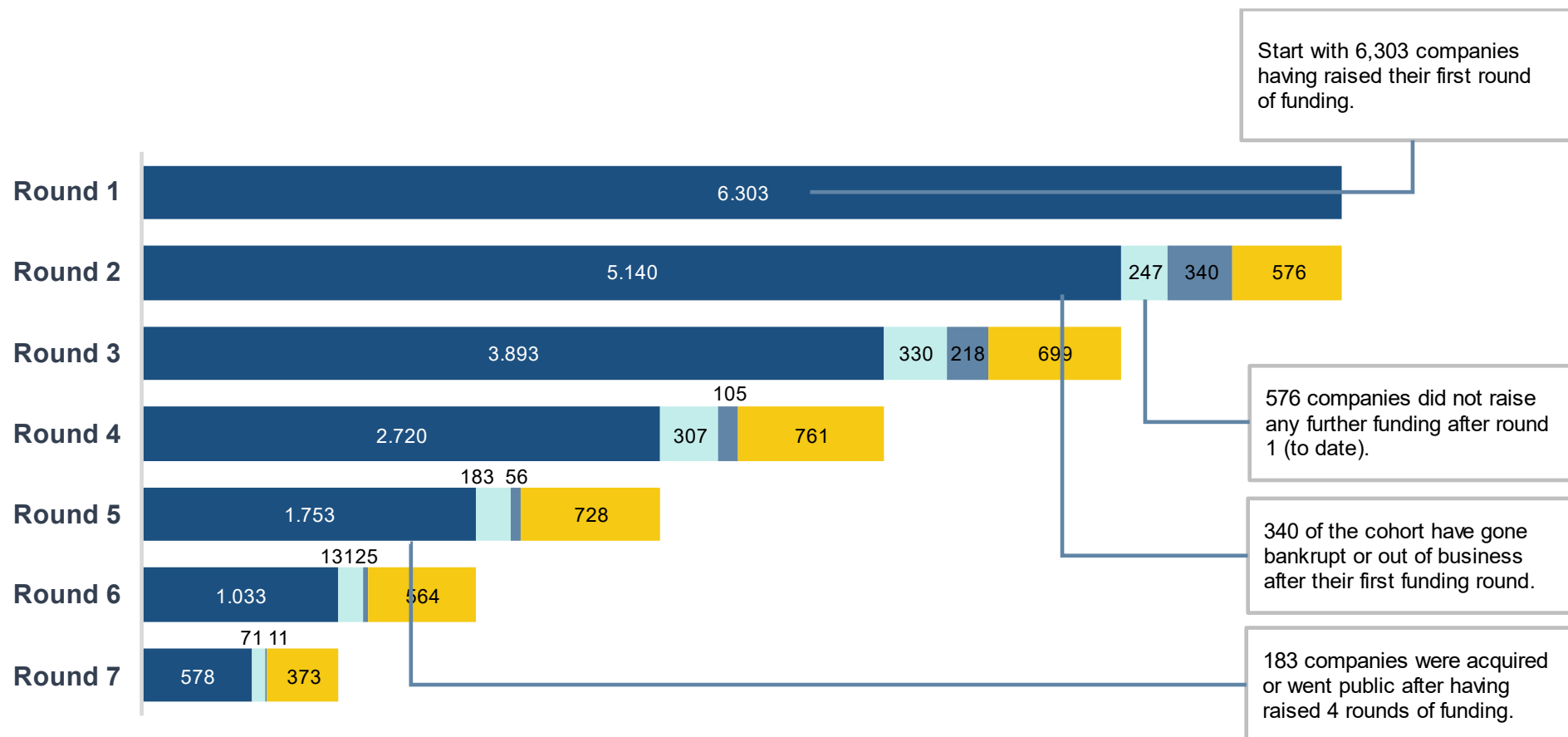


AI remains **hot**



in Europe:  
we have more deals, but less valuation

# AI Venturing: Status Quo (Funnel)

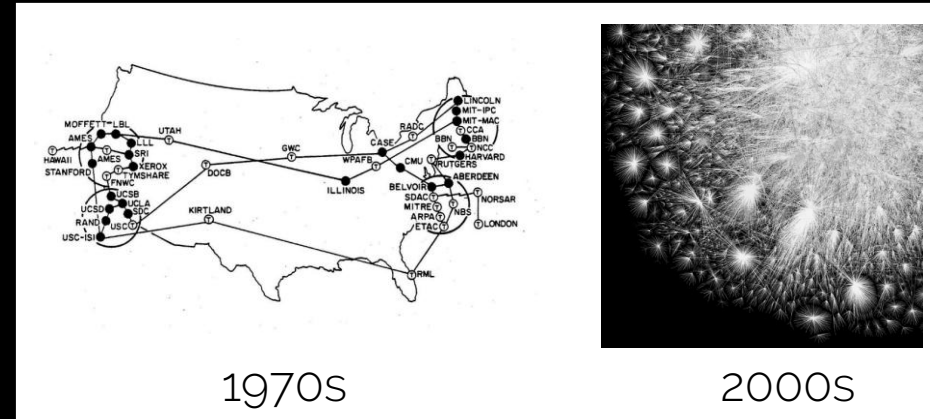


- Raised a VC Round,
- Acquired/Buyout/Public Listing,
- Out of Business/Bankruptcy,
- Did Not Advance/Self-Sustaining

~67.89 % survival rate (either follow up round or self-sustaining)

Some technologies have the “*capacity to produce unprompted change driven by large, varied, and uncoordinated audiences*”

(Zittrain, 2006, p. 1980)



# Generative AI: Text to Text Transformation



what is the most surprising fact about Essen, Germany?

One of the most surprising facts about **Essen**, Germany, is that it was once one of the most **heavily industrialized cities in Europe**, but today, it is recognized as one of the **greenest cities in the country**.

Essen was historically the heart of Germany's coal and steel industries, home to the massive **Zollverein Coal Mine Industrial Complex**, a UNESCO World Heritage Site. This mine was so significant it was once dubbed the "**most beautiful coal mine in the world**" due to its striking Bauhaus architecture. However, after the decline of heavy industry in the late 20th century, Essen undertook a massive transformation. By 2017, the city was honored as the **European Green Capital** for its impressive environmental and urban renewal efforts.

This drastic shift—from a hub of pollution and heavy industry to a modern green city with extensive parks, restored waterways, and innovative urban spaces—is a surprising and inspiring turnaround.

Gemini **Advanced** ▾  
1.5 Pro

**Essen is one of the greenest cities in Germany.** Despite its industrial heritage, Essen has transformed itself into a leader in urban sustainability. ▾

Here's why this is so surprising:

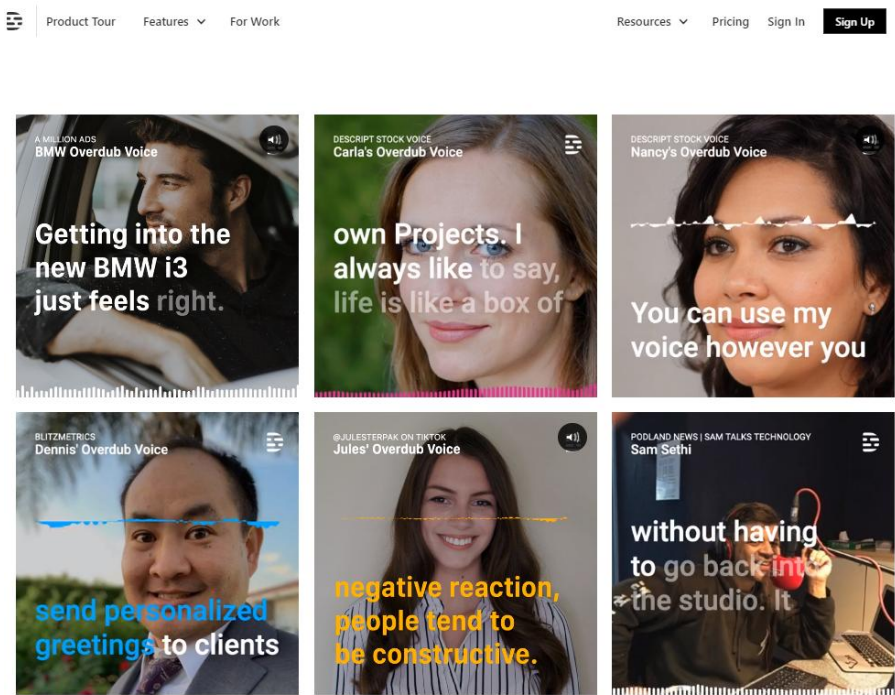
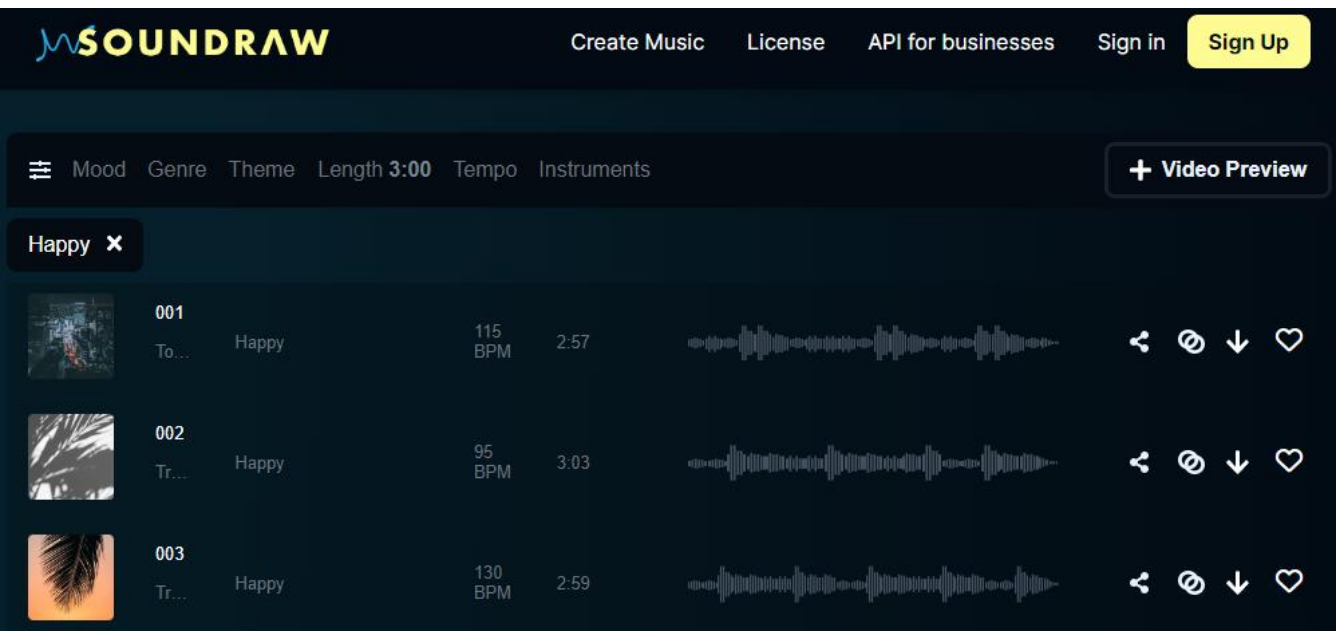
- **Industrial Past:** Essen was a major center for coal mining and steel production. This typically leaves a legacy of pollution and environmental damage. ▾
- **Green Transformation:** Today, Essen boasts extensive parks, green spaces, and a commitment to sustainable practices. They even won the European Green Capital award in 2017. ▾

This transformation highlights how cities can overcome their industrial past and embrace a greener future. It's a testament to Essen's dedication to environmental sustainability and innovation. ▾

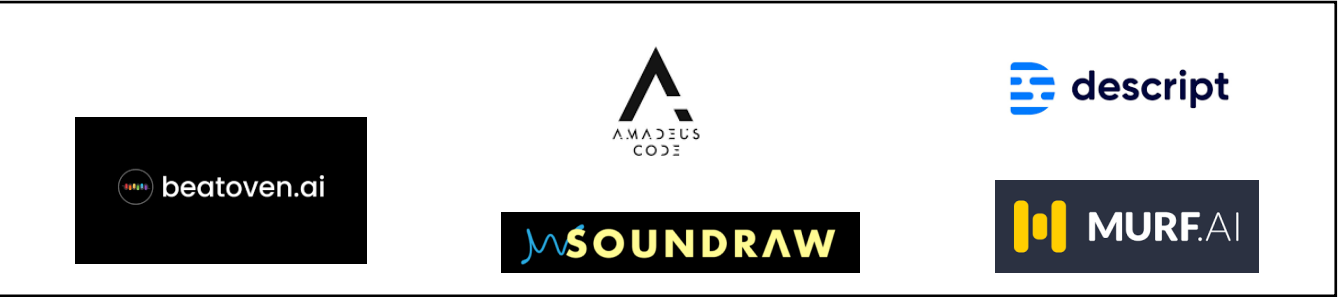




# Generative AI: Text to Sound Transformation



Text to Sound



Sound to Text



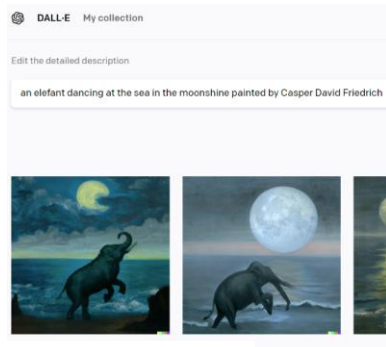
# Generative AI: Text to Image Transformation



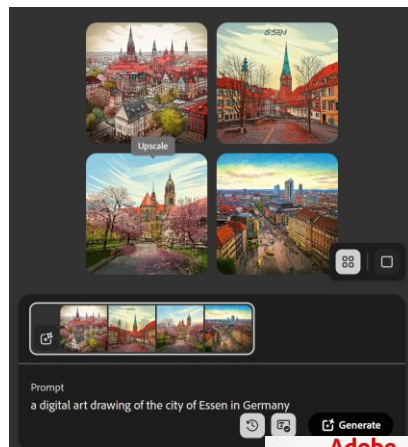
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OpenAI



The New York Times

THE SHIFT

## An A.I.-Generated Picture Won an Art Prize. Artists Aren't Happy.

"I won, and I didn't break any rules," the artwork's creator says.

Give this article 1.5K





# Generative AI: 2d Image to 3d Image Transformation



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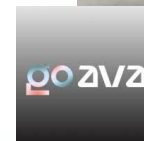
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[www.generio.app](http://www.generio.app)  
(a venture from UDE)



[www.goava.ai](http://www.goava.ai)  
(a venture from Essen)



# EXAMPLES OF HORIZONTAL PLATFORMS



Capability	Benchmark	Description	GEMINI 1.5 FLASH May 2024	GEMINI 1.5 FLASH Sep 2024	GEMINI 1.5 PRO May 2024	GEMINI 1.5 PRO Sep 2024
General	MMLU-Pro	Enhanced version of popular MMLU dataset with questions across multiple subjects with higher difficulty tasks	59.1%	67.3%	69.0%	75.8%
Code	Natural2Code	Code generation across Python, Java, C++, JS, Go . Held out dataset HumanEval-like, not leaked on the web	77.2%	79.8%	82.6%	85.4%
Math	MATH	Challenging math problems (incl. algebra, geometry, pre-calculus, and others)	54.9%	77.9%	67.7%	86.5%
	HiddenMath	Competition-level math problems, Held out dataset AIME/AMC-like, crafted by experts and not leaked on the web	20.3%	47.2%	28.0%	52.0%
Reasoning	GPQA (diamond)	Challenging dataset of questions written by domain experts in biology, physics, and chemistry	41.4%	51.0%	46.0%	59.1%
Multilingual	WMT23	Language translation	74.1	73.9	75.3	75.1
Long Context	MRCR (1M)	Diagnostic long-context understanding evaluation	70.1%	71.9%	70.5%	82.6%
Image	MMMU	Multi-discipline college-level multimodal understanding and reasoning problems	56.1%	62.3%	62.2%	65.9%
	Vibe-Eval (Reka)	Visual understanding in chat models with challenging everyday examples. Evaluated with a Gemini Flash model as a rater	44.8%	48.9%	48.9%	53.9%
	MathVista	Mathematical reasoning in visual contexts	58.4%	65.8%	63.9%	68.1%
Audio	FLEURS (55 lang)	Automatic speech recognition (based on word error rate, lower is better)	9.8%	9.6%	6.5%	6.7%
Video	Video-MME	Video analysis across multiple domains.	74.7%	76.1%	77.9%	78.6%
Safety	XSTest	Measures how often models refuse to respond to safe/benign prompts. The score represents how frequently models correctly fulfill requests	86.9%	97.0%	88.4%	98.8%



# Many views and „tales“ on „Artificial Intelligence“



Today

Conscious    Intelligent

Sentient

Aligned

Biased

Humanized

Framed

Friendly

**Scalable**

Oppressive

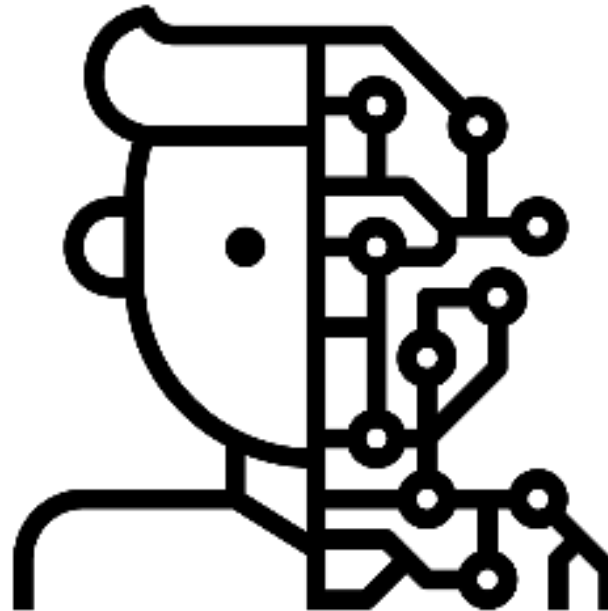
Owned

Generative

Sovereign

Explainable

Emergent



# EXAMPLES OF HORIZONTAL PLATFORMS



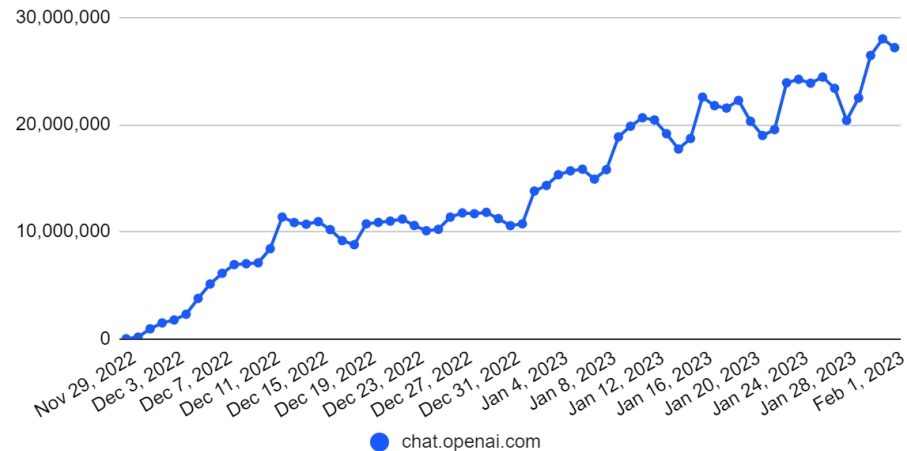
## ChatGPT sets record for fastest-growing user base - analyst note

By Krystal Hu

February 2, 2023 4:33 PM GMT+1 · Updated 4 months ago

Feb 1 (Reuters) - ChatGPT, the popular chatbot from OpenAI, is estimated to have reached 100 million monthly active users in January, just two months after launch, making it the fastest-growing consumer application in history, according to a UBS study on Wednesday.

Daily Visits, Desktop & Mobile Web, Worldwide



## Time to Reach 100M Users

Months to get to 100 million global Monthly Active Users



Source: UBS / Yahoo Finance

@EconomyApp

APP ECONOMY INSIGHTS



## „Generative Systems“

such as the Internet (Zittrain 2008,2009 ; Hanseth and Lyytinen 2010),

open-source online communities (Faraj et al. 2011, 2016; Shaikh and Vaast 2016),

data infrastructures (Blotenberg et al. 2022),

or digital platforms (Constantinides et al. 2018, Foerderer et al. 2018, Hein et al. 2020),

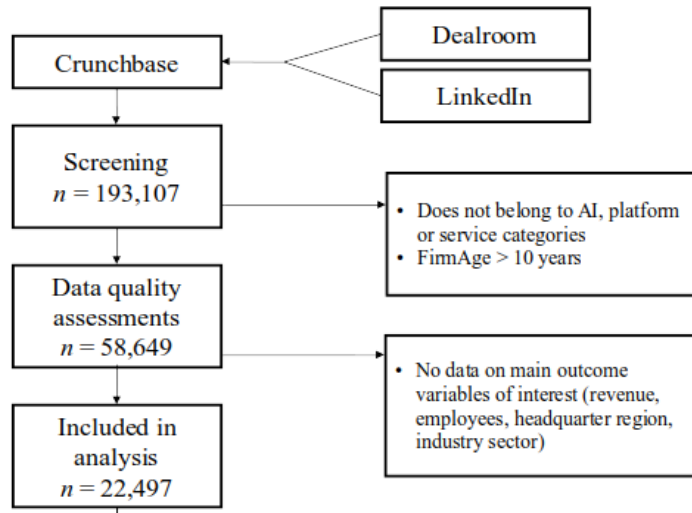


# produce unbounded growth.

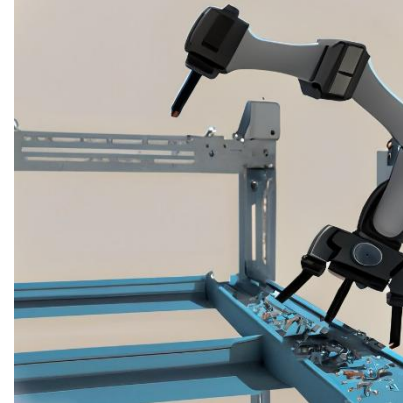
# From Fairy Tale to Real World Data



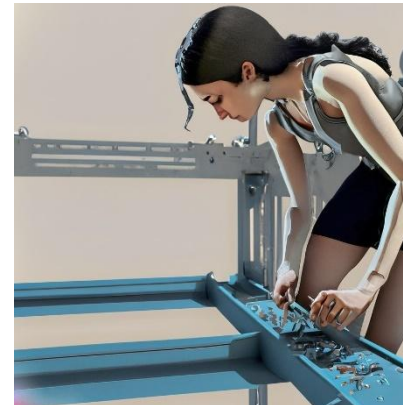
Focusing on the marginal impact of AI  
on scaling platform or service ventures  
(Gu et al. 2022)



AI-enabled  
platform  
(2,376)



Non-AI  
platform  
(13,125)



AI-enabled  
service  
(606)



Non-AI  
service  
(4,396)



# From Fairy Tale to Real World Data



OLS regression results

Indep. Vars.	Scaling Intensity	95% CI	Adj. $R^2$	Obs.
<b><i>Empl</i></b>				
<i>AI-enabled platform</i>	0.32	[0.30, 0.35]	0.14	2,235
<i>non-AI platform</i>	0.28	[0.26, 0.31]	0.12	2,235
<i>AI-enabled service</i>	0.32	[0.27, 0.37]	0.17	510
<i>non-AI service</i>	0.25	[0.19, 0.30]	0.1	510

*Note.* Observations were matched via NNM, resulting in the same number for each start-up group. Standardized scaling intensity coefficients and 95% confidence intervals are reported. The estimated intensities are used to create estimates of their marginal effects on start-up *Rev.*

Results remain robust, controlled for regions, sectors, and different size metrics

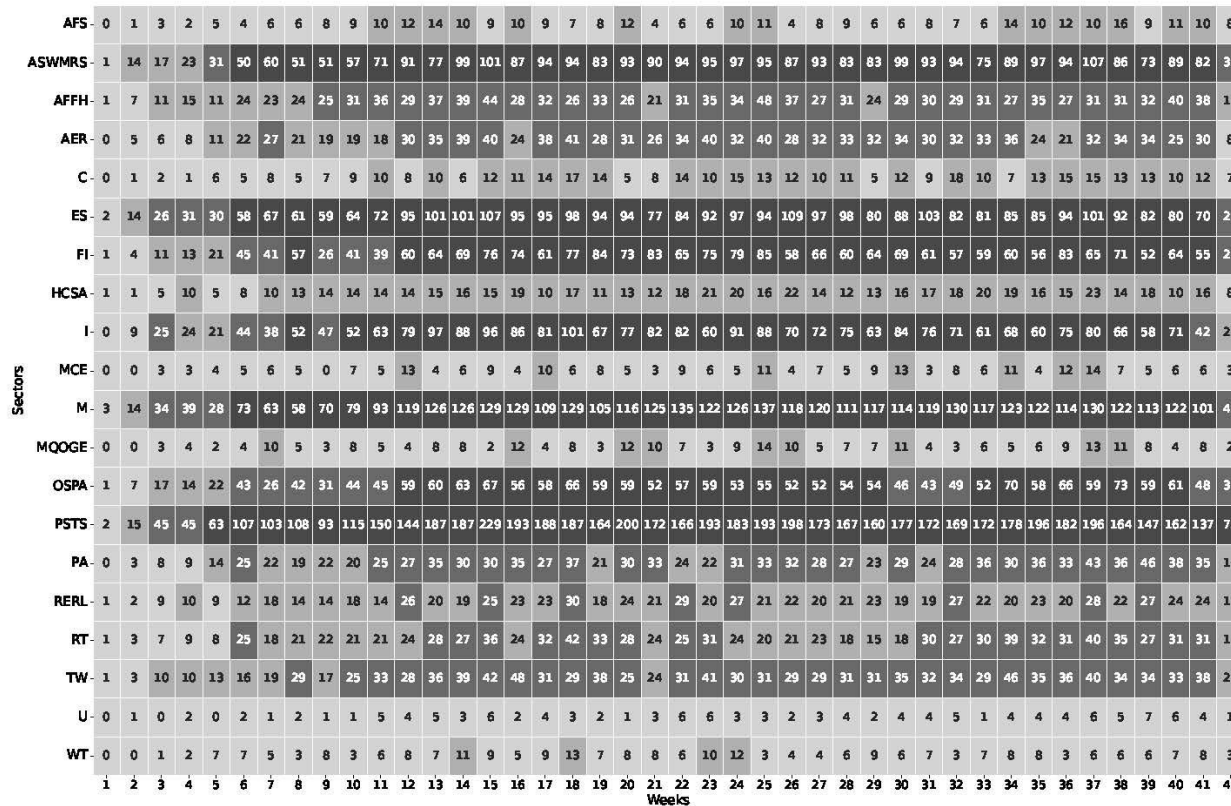
AI-enabled ventures have higher scaling intensities,  
but *confidence intervals overlap*

AI ventures **do not** significantly scale better than other digital ventures

Maybe platforms are not generative,  
because users do not „use them broadly“?



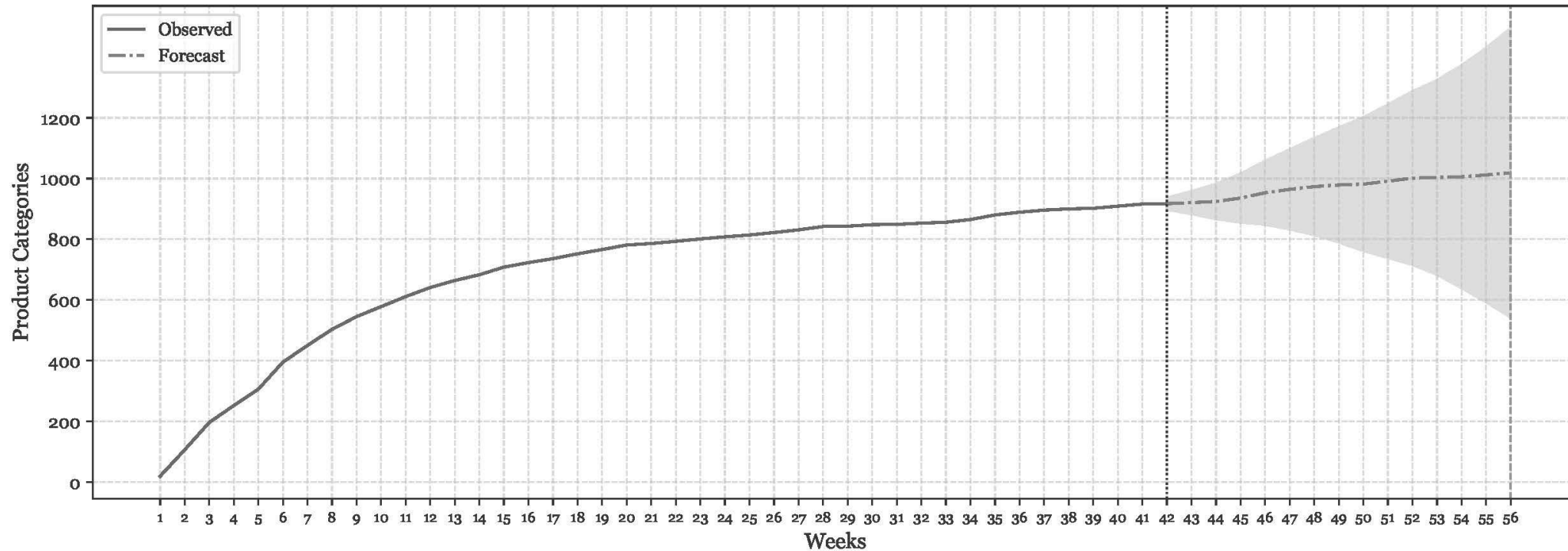
# Maybe LLM platforms are not horizontal?



AFS:	Accommodation and Food Services
ASWMRS:	Administrative and Support and Waste Management and Remediation Services
AFFH:	Agriculture, Forestry, Fishing and Hunting
AER:	Arts, Entertainment, and Recreation
C:	Construction
ES:	Educational Services
FI:	Finance and Insurance
HCSA:	Health Care and Social Assistance
I:	Information
MCE:	Management of Companies and Enterprises
M:	Manufacturing
MQOGE:	Mining, Quarrying, and Oil and Gas Extraction
OSPA:	Other Services (except Public Administration)
PSTS:	Professional, Scientific, and Technical Services
PA:	Public Administration
RERL:	Real Estate and Rental and Leasing
RT:	Retail Trade
TW:	Transportation and Warehousing
U:	Utilities
WT:	Wholesale Trade

Few types of uses cases seem to dominate LLM platform use (in b2b contexts)

# Maybe LLM platforms are not horizontal?



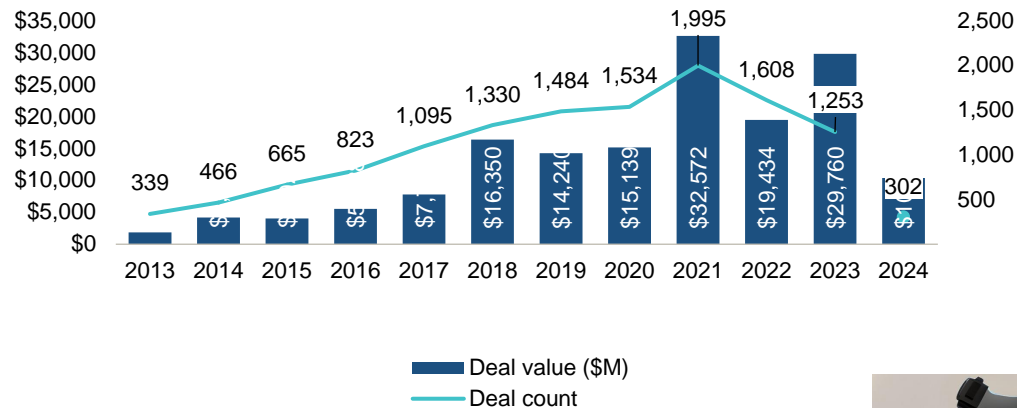
No („exponential“) growth of new use cases (in b2b contexts)

Maybe platforms are not generative,  
because investors do not „invest right“?

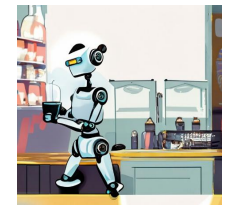
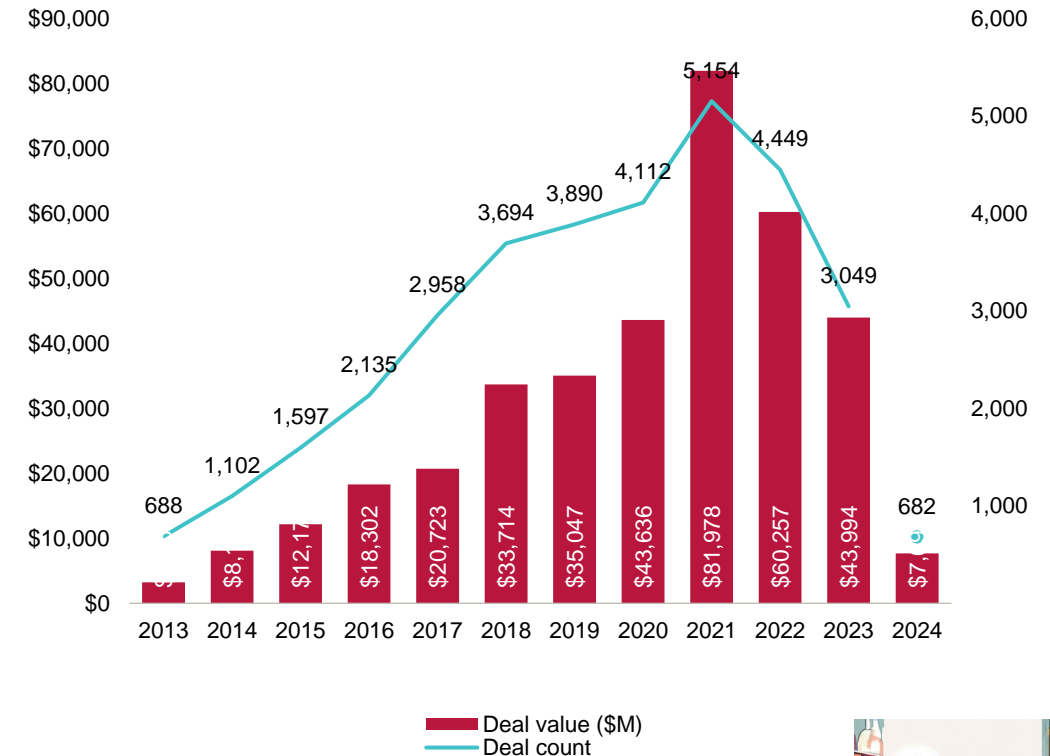
# Horizontal vs. Vertical AI platforms



## VC deals: horizontal AI platforms



## VC deals: vertical AI Services



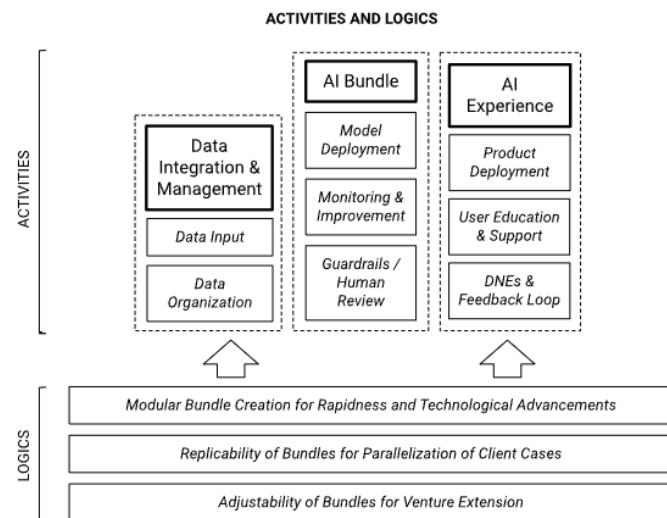


Maybe platforms are generative,  
but we we have to get it „right“?

# Learnings from 4 rounds of Accelerator Batches



Dissimilar to regular platforms, **you create the use cases** – not your broad audience



## Build your platform with Business & Code Templates

- How to collect, manage, integrate your data
- How you deploy, evaluate, improve your models
- How you deploy your product and include feedback data

for  
quick testing of various use cases  
(verticals)

## Some key learnings



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