How AI Growth Will Drive HBM Demand Beyond 2025: Shaping Product Evolution and Market Dynamics

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TrendForce

FMS the Future of Memory and Storage

CONTENT

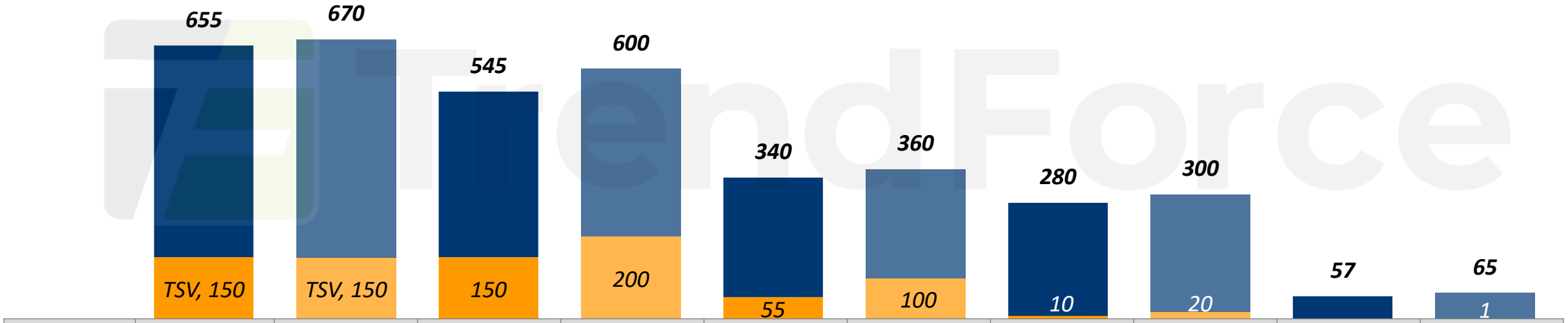
- Supply
- Demand
- ASP and Revenue

Supply

Suppliers Will Concentrate on HBM in Their Capacity Expansions in 2026

- *Competition for HBM market share will intensify during 2025; HBM4 will be the key for 2026.*
- *The ratio of TSV over global capacity is expected to increase from around 19% at the end of 2025 to around 23% at the end of 2026.*
- *CXMT leads in DRAM capacity expansion, but its presence in the HBM market will remain small due to challenges related to R&D.*

Unit: Average k Wafers/Month



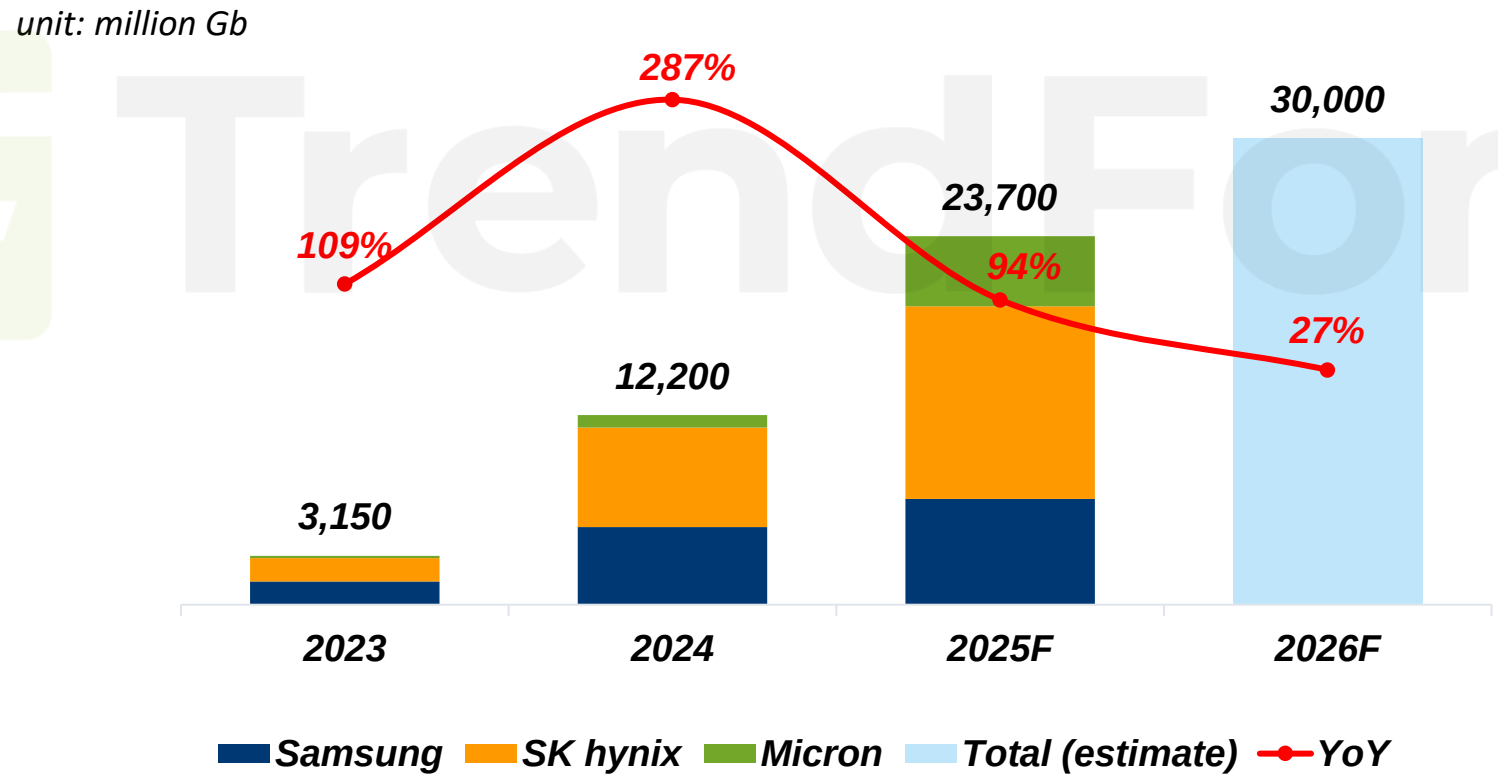
The end of	2025	2026	2025	2026	2025	2026	2025	2026	2025	2026
Wafer %	23%	22%	28%	33%	16%	28%	3%	6%	0%	2%
	SAMSUNG		SK hynix		micron		CXMT		NANYA	

Source: TrendForce

SK hynix and Micron Are Major Contributors to HBM Supply Growth

- *Suppliers are actively expanding HBM shipment bits for 2025 by investing in TSV and stacking capacities.*
- *After an explosive growth in 2024, the HBM market will likely see a milder growth rate for shipment bits in 2025 and 2026.*
- *SK hynix continues to lead the HBM market in terms of supply, while Micron's market share is expected to reach the high teens by 2025.*

HBM Shipment Bits and Annual Growth Rate



Source: TrendForce

Demand

NVIDIA vs. AMD – AI Chip Roadmaps and HBM Specifications

Company	AI Chip	2024				2025F				2026F			
		1Q24	2Q24	3Q24	4Q24	1Q25	2Q25	3Q25	4Q25	1Q26	2Q26	3Q26	4Q26
NVIDIA	H100	HBM3 8hi 80GB (16GB*5)											
	GH200 (CPU+GPU)	HBM3e 8hi 141GB (24GB*6)											
	H20	HBM3/3e 8hi 96GB/144GB (16GB*6/24GB*6)											
	H200			HBM3e 8hi 141GB (24GB*6)									
	B200				HBM3e 8hi 192GB (24GB*8)								
	GB200 (CPU+GPU)				HBM3e 8hi 192/384GB (24GB*8 /192GB*2)								
	B300						HBM3e 12hi 288GB (36GB*8)						
	GB300 (CPU+GPU)						HBM3e 12hi 288/576GB (36GB*8/288GB*2)						
	R100									HBM4 12hi 288GB (36GB*8)			
AMD	MI200	HBM2e 8hi 128GB (16GB*8)											
	MI300X	HBM3 12hi 192GB (24GB*8)											
	MI325X				HBM3e 12hi 256GB (36GB*8)								
	MI350						HBM3e 12hi 288GB (36GB*8)						
	MI375								HBM3e 12hi 288GB (36GB*8)				
	MI400												HBM4 12hi 288GB (36GB*8)

Source: TrendForce

CSP's Respective Progress in Development of In-House Chips

- *Google and AWS are among the first CSPs to adopt in-house designed AI chips.*

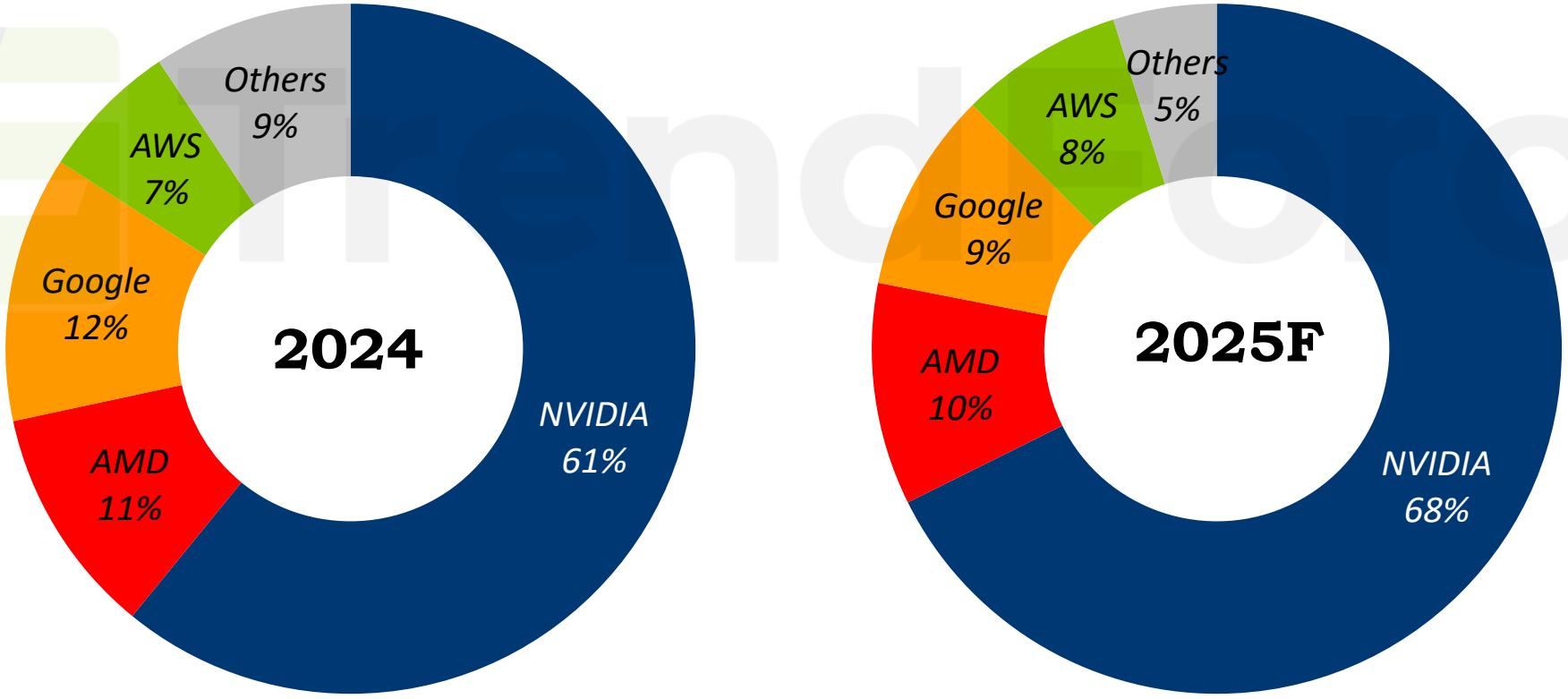
CSPs	AI Chip Name	Partner	Memory Type	Capacity per Chip (GB)	Chip QTY	Total Capacity	Launch
Google	TPU v3/v4	Broadcom	HBM2	4	2	8	
	TPU v3/v4	Broadcom	HBM2	8	4	32	
	TPU v5 Inference	Broadcom	HBM2e	8	2	16	2H23
	TPU v5 Training	Broadcom	HBM2e	16	6	96	2H23
	TPU v6 Inference	Broadcom	HBM3	16	2	32	2H24
	TPU v6 Training	Broadcom	HBM3e	24	8	192	1H25
	TPU v7 Inference	MTK	HBM3e	36	6	216	After 2026
	TPU v7 Training	Broadcom	HBM3e	36	8	288	After 2026
aws	Inferentia v1	Alchip	DDR4	4	2	8	
	Trainium v1	Alchip	HBM2e	16	2	32	
	Inferentia v2	Alchip	HBM2e	16	2	32	2H23
	Trainium v2	Marvell	HBM3/HBM3e	24/36	4	96/144	1H25
	Trainium v3	Alchip	HBM3e	36	6	216	2H25
Microsoft	Maia v1	GUC	HBM2e	16	4	64	In 2024
	Maia v2	Marvell/GUC	HBM3e	24	4	96	After 2026
Meta	MTIA v1	Broadcom	LPDDR5	8	16	128	In 2024
	MTIA v2	Broadcom	LPDDR5	16	16	256	After 2025

Source: TrendForce

NVIDIA Accounts for Largest Share of HBM Consumption Due to Superior Performances of Its Products

- *NVIDIA is striving to enhance product performance and widen the gap against its competitors by taking the lead in HBM qualifications.*
- *AMD has a substantial procurement volume, but an analysis of its product shipments shows that its share of overall HBM consumption remains relatively small.*
- *CSPs continue to develop AI ASICs , with Google being the most proactive in terms of efforts.*

Distribution of HBM Demand Among AI Chip Makers, Based on Chip Shipments



Source: TrendForce

ASP and Revenue

Projection on HBM Prices, 2022-2025

- *HBM prices are negotiated annually.*
- *The rise in blended ASP (average selling price) was mainly driven by the rising proportion of HBM3e in 2024.*
- *Currently in 2025, the mass production of HBM3e 12hi will drive up the proportion of HBM3e, thus leading to a YoY increase of 20.8% in blended ASP.*

	HBM Price (USD/Gb)			
	2022	**2023**	**2024**	**2025F**
HBM Blended ASP	1.40	1.38	1.49	1.80
YoY	--	-1.3%	8.0%	20.8%

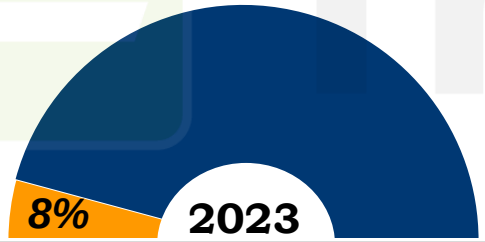
Note: Calculations consider HBM demand from AI chips and procurements related to inventory preparation.

Source: TrendForce

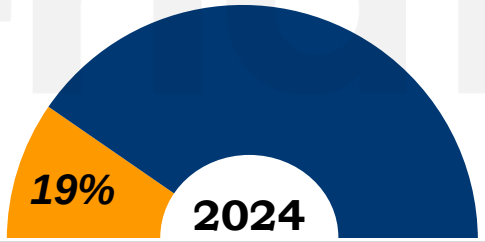
Driven by AI, Strong HBM Growth Expected to Continue into 2025

- *Samsung has not yet proven to be a reliable supplier for HBM3e. AI chip makers tend to purchase more HBM than their real consumption so as to secure enough supply. Therefore, HBM supply will remain tight during 2025.*
- *HBM output is expected to double, and the ASP is anticipated to rise with increased HBM3e penetration. Hence, revenue from HBM is projected to make up more than 30% of the total DRAM revenue for 2025.*
- *Delay in Samsung's HBM3e qualification has led to a milder growth in both HBM bit output and revenue for the year 2025, reflecting a downward revision to our initial projections made in early 2025.*

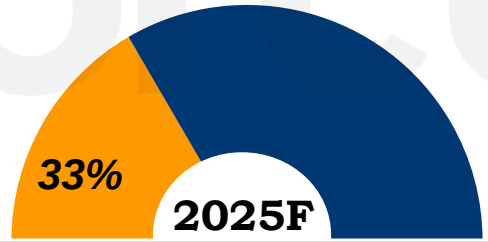
Percentages Held by HBM Products in Total DRAM Bit Output and Total DRAM Revenue, 2023-2025



HBM Out of Total DRAM	
Revenue	Output
8%	2%



HBM Out of Total DRAM	
Revenue	Output
19%	5%



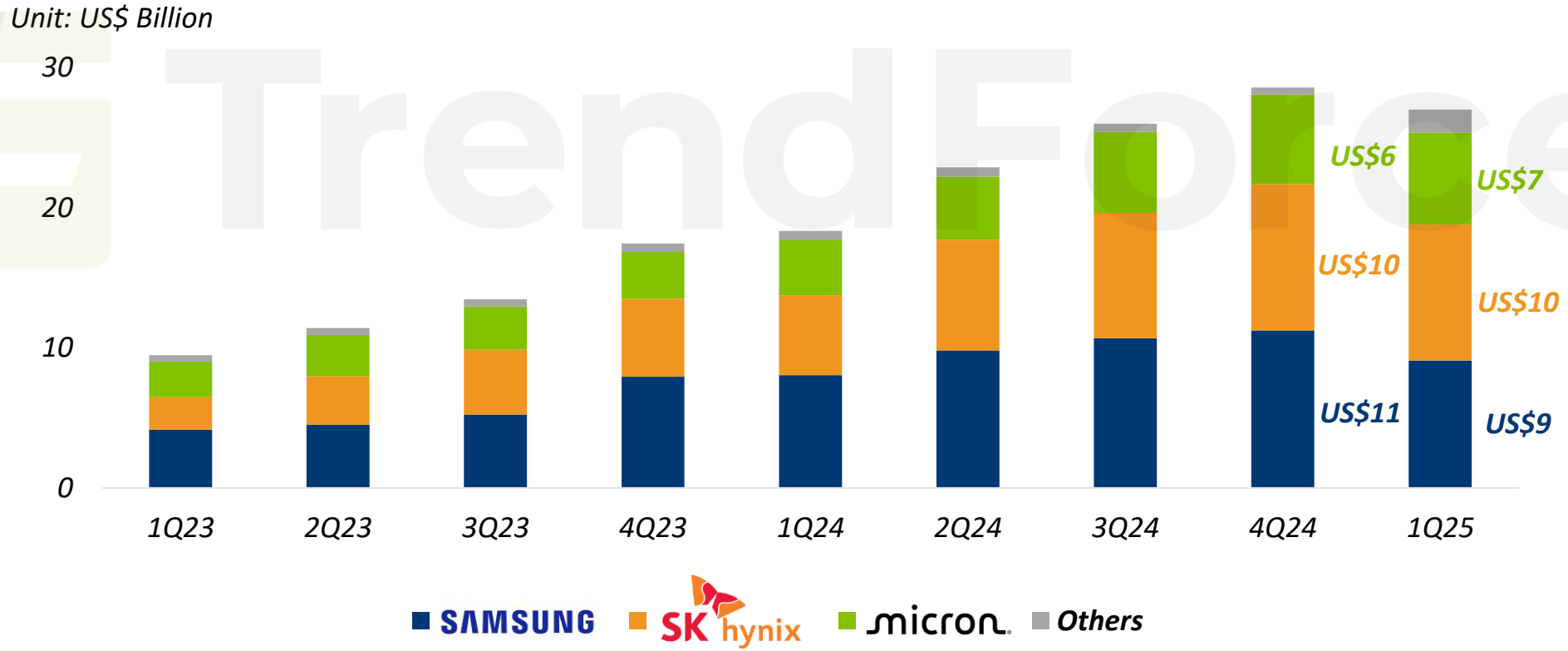
HBM Out of Total DRAM	
Revenue	Output
33%	8%

Source: TrendForce

HBM Revenue Contribution Reshapes the DRAM Market Share

- *Thanks to the contributions from HBM sales, the top three DRAM suppliers have seen significant revenue growth over the past two years.*
- *Although Samsung had long been the DRAM revenue leader due to the scale of its production capacity, SK hynix managed to overtake Samsung in 1Q25 and has risen become the industry's leader in terms of revenue market share. SK hynix's achievement is attributed to the continuous growth of HBM-related revenue.*

Distribution of Quarterly Total DRAM Revenue by Supplier



Source: TrendForce

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