

# Asia Independent Research Conference

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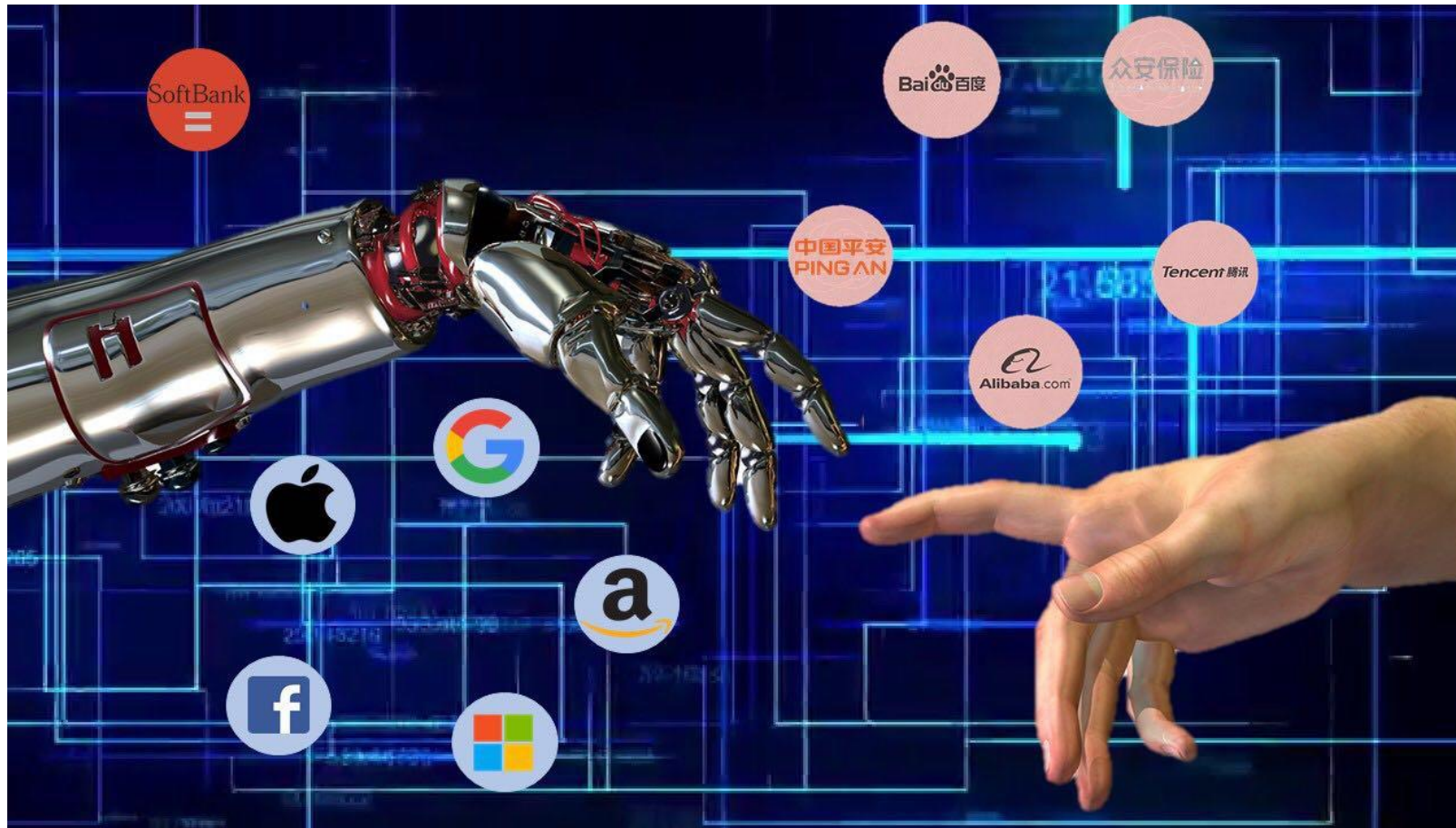
# Paul Schulte

## Schulte Research

Schulte Research is an independent research service founded in 2014 by Paul Schulte who has 27 years' experience as an analyst. It focuses on banks, bank credit, corporate solvency and emerging "FinTech".

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# A new model of AI: The birth of the digital conglomerate: When more data is better.



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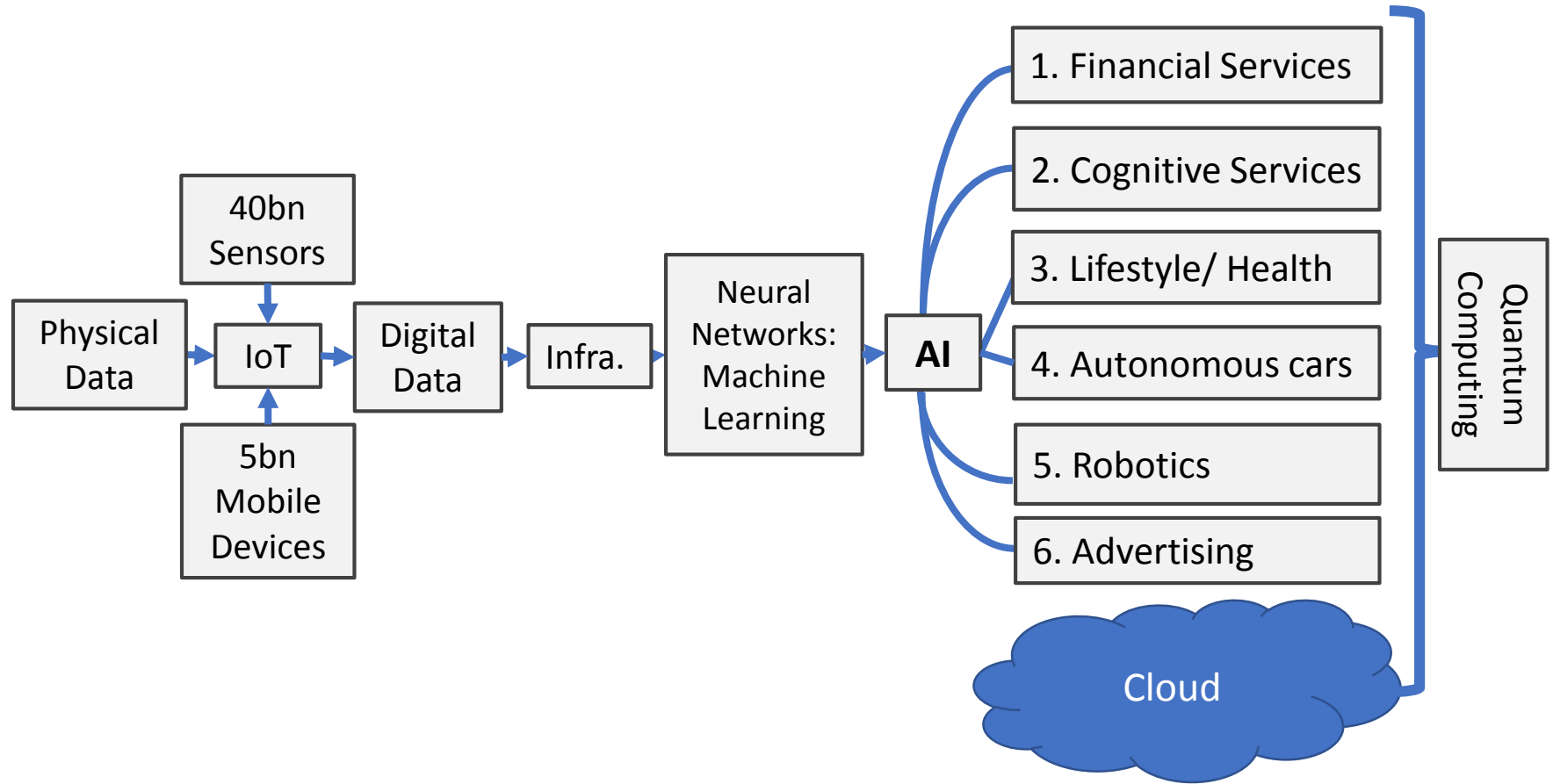


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# Artificial Intelligence Described on a Single Chart



# Project Conclusions

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## Chinese Firms Conclusions

1. PRC firms are better at monetizing technology for mass use.
2. PRC has a long term, coherent plan for AI. The US has no plan.
3. Chinese are more willing to surrender data.
4. Alibaba and Ping An are much further into new territory than anyone else.
5. Integration of finance and lifestyle is welcomed and encouraged by PRC.
6. PRC has a clear national policy of proliferating credit to individuals and SMEs.

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Source: Schulte Research



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# Project Conclusions

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## Reasons for China's Success over US

1. US heavily entrenched incumbents & lobbying groups.

2. Regulators who were on the warpath.

3. Many of the PRC companies learned to “eat dirt”.

4. China succeeded because there was no “there there”.

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Source: Schulte Research



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# AI Financial Services Comparison:

## Alibaba way ahead. Ping An and Tencent also dominate

	Company	Payment	Insurance	Personal Loans	SME Loans	Credit Rating	Money Market	Wealth Mgmt	Crowd-funding	Currency Exchange
	Alibaba	AliPay (400mn) (51.8% ms)	Ant Zhong An	Personal loans - Ant	SME loans – Ant SME Service	Zhima Credit	Yue’bao (CNY1.2tn)	Ant Financial, AliPay	ANTSDAQ	AliPay
	Tencent	WePay (300mn) (38.3% ms)	Zhong An	Weilidai	Weilidai	WeBank		WeBank	JD.com	
	Ping An	Ping An Bank	Ping An Insurance	Ping An Bank	Ping An Bank	Ping An Insurance	Ping An Asset Mgmt	Ping An Asset Mgmt	Lufax	Ping An Bank
	Baidu	Baidu Wallet (100mn)				Yes		Yes		
	Amazon		Electronic Damage Insurance (UK)		USD\$3bn SME loans (Amazon Lending)					
	Microsoft	MSFT Wallet								
	Google	Google Wallet, Android Pay								
	Apple	Apply Pay (85mn, 450%YOY)								
	Facebook	Messenger Pay								

There is a whole lot of nothing going on here!



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Source: Schulte Research



# Chinese firms have implemented quicker and jettisoned quicker. China dropped duds & created financial empires. US firms stopped their efforts.

	Company	Duds	Successful Replacements
	Alibaba	Lai Wang, Alibaba.com (HK)	Ant Financial, AliPay, Taobao, Tmall, Alibaba Cloud, PAI 2.0, Zhima Credit, ANTSDAQ, Yue'bao, Youku, Weibo, etc.
	Tencent	Pai Pai, E-commerce	WePay, Weilidai, WeBank, JD.com, WeChat, Didi, Tencent Cloud, etc.
	Ping An	Ping An Good Car	Ping An Bank, Ping An Insurance, Ping An Asset Mgmt, Ping An Health, etc.
	Baidu	O2O Wai Mai	Baidu Wallet
	Microsoft	Microsoft Wallet	Skype
	Google	Google Hangout	Android Pay
	Facebook	Messenger Pay	/
	Apple	Apple Pay	/
	Amazon	Amazon Lending Amazon Insurance	/

Duds with no replacement

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Source: Schulte Research





*\*China had duds but morphed quickly and pivoted effectively*





# AI Data Source Comparison.

## Alibaba may leapfrog all with PAI, Ding Talk, and Tmall Genie. This puts Alibaba in its own league with Tencent very close.

	Company	Intentional Data	Un-intentional Data	IoT/Car	Cognitive Service	Cloud
	Alibaba	AliPay, Taobao, Tmall, Alibaba.com, Alibaba Express, Yue'bao, Tmall, Alibaba Cloud (750mn)	Youku, Weibo, UCWeb, Cainiao Logistics, Yahoo! China, SCMP, AliWangWang, LaiWang, PAI, Ding Talk	"Connected Car" with SAIC, AutoNavi, Ali Health, KFC	Platform for Artificial Intelligence (PAI 2.0), Tmall Genie	Ali Cloud
	Tencent	WeChat Pay, 3 <sup>rd</sup> Party Providers (JD.com, Didi, etc.)	WeChat (938mn), QQ (700mn), Qzone, WeChat Ecosystem, Gaming	Didi, Dianping review site	WeChat Voice/ Image, Tencent Video	Tencent Cloud
	Ping An	Ping An Bank, Ping An Insurance, Ping An Asset Mgmt (350mn)	Ping An Health, Ping An Securities	Ping An Auto Owner, Wanjia Clinics	Facial recognition, Voice print	Ping An Health Cloud
	Baidu	Baidu Search, Baidu Wallet	Baidu Search	Food Delivery Service, Project Apollo	Little Fish	Baidu Cloud
	Amazon	E-commerce (B2C, C2C)	Shopping search	Echo, Kindle, Whole Foods, Amazon Books, Logistics	Alexa, Rekognition, Polly, Lex, Amazon Video	AWS
	Google	Google Play Store, Google Search	Google Search, Android OS, G-mail, Maps, Chrome, Snapchat (166mn MAU), Youtube, Waymo	Android OS, Waymo	Health, Translation, Google Assistant, Google Face, Deep Mind	Google Cloud
	Apple	iTunes (800mn), Apple Music, Apple Pay (85mn)	iOS, Safari	iPhone (1bn), iPad, iPod, Mac, Apple Watch	Siri, Face Recognition	iCloud
	Microsoft	Xbox, Microsoft Wallet (small)	LinkedIn, Office, Skype, Bing, IE	Kinect, Microsoft Surface, Windows Phone	Zo, Computer vision/ Speech/ Language API	Azure
	Facebook	Messenger Pay	Facebook, Facebook Messenger (1.96bn), Whatsapp (1.3bn)	Oculus, Project Titan	Deep face, Deep text, Translation	/

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Source: Schulte Research



# AI Cognitive Services Comparison: Microsoft Winner.

There is a “me too” attitude. Microsoft has made a wide and deep mark. But, Alibaba PAI is deeper and broader than anyone else.

	Company	Image Recognition	Facial Recognition	Voice	Natural Language Understanding	Video
	Alibaba	Document recognition, image search+, PAI	Identity authentication, Alipay	Customer service AI, voice->text service, etc., PAI	Real-time translation services, PAI	Video analysis, broadcast service, PAI
	Tencent	Fashion trend analysis	Identity authentication	WeChat Voice/Image	Translation	Tencent Video
	Baidu	xPerception, Pixlab API, WICG Shape Detection API	Baidu Facial Recognition (99.7% accuracy)	Voice Search, Text-Speech Converter, Deep Voice (97% accu.)	Translation, Speech Recog., Kitt.AI, RavenTech	/
	Amazon	Amazon Rekognition	Emotion recog., Face Comparison	Alexa, Lex	Alexa, Echo, Polly	Amazon Video
	Microsoft	Image understanding, Celebrities/Landmark recog.	Face API, Emotion, Verification, Detection	Speech Verification, Text-Speech Converter	Translation, Text Analytics, LUIS	Video analysis, Video Indexer
	Google	Image searching	Google Face	Google assistant	Translation AI, Text Analytics	YouTube
	Apple	Classification/ Detection/ Checking	Facial Rec.	Siri	Siri	/
	Facebook	Text recognition, translation	Deep Face	Oculus VR Voice Recog.	Translation, Deep Text	/

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Source: Schulte Research



# AI Lifestyle Comparison:

## Tencent + Alibaba Winner. Microsoft + Baidu falling behind.

	Company	Media	Food	Travel	Entertainment	Interaction	Search	Education	Health
	Alibaba	Live media, news production, media interaction, etc.	KFC China, Koubei, Ele.me	Air/train tickets, hotel booking	Audio/video solutions, video game services, e-commerce, Youku, AGTech	Online shopping support	Personalized search, direct marketing service, big data analytics	Media education services	Utilities payment, Hospital-patient comm., smart diagnosis
	Tencent	QQ music, Joox, Tencent Video/ News	Meituan Dianping	LY.com	E-commerce, video games	WeChat	WeChat Search, Sogou	Koo Learn, Ke.qq	WeChat Intelligent Hospital
	Baidu	Book recomm.	/	Ctrip	/	/	Search engine (76% market share), personalized search, data marketing	Baidu Education (Jiaoyu)	Health Search
	Amazon	Books, music, TV streaming	Whole Foods, Amazon Fresh	/	TV streaming, Amazon Studio	/	Search recomm.	Amazon Inspire	/
	Microsoft	/	/	/	X-box/gaming	Skype, LinkedIn	Bing	MSFT Education	MSFT Health
	Google	Google Videos	/	Google Flights	YouTube	Snapchat, Gmail, Google+	Search engine, personalized search, data marketing	Google for Education	Google Health, Google Fit
	Apple	iTunes	/	/	Apps, App Store, Game development kits	Messages	/	/	Health apps
	Facebook	Facebook newsfeed	/	/	Facebook games	Facebook, Whatsapp, Instagram	Internal Search Function	/	/

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Source: Schulte Research



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# AI Cloud Comparison:

## Amazon Big Winner. Alibaba Leader in Asia.

	Company	Market Share (in respective markets)	Comments
	Alibaba	41%	Leader in Asia, >100 newly developed AI services Services in storage, networking, healthcare, logistics, lifestyle, media, business enhancements, and etc.
	Tencent	7%	#3 in Chinese Market, services in public/private storage for personal/business use
	Baidu	1%	Small cloud service
	Amazon	47%	Amazon AWS: Global & US leader
	Microsoft	10%	Fastest Growth Rate, 97% YOY Azure & Office 365
	Google	4%	Fast growing, 45 teraflops of data (45 trillion bytes/second) Services include AI APIs', storage, search history, e-mail, etc. 71,000 searches/second New quantum computer
	Apple	1%	Small cloud service, primarily strong in private data collection Services in location, storage, and security

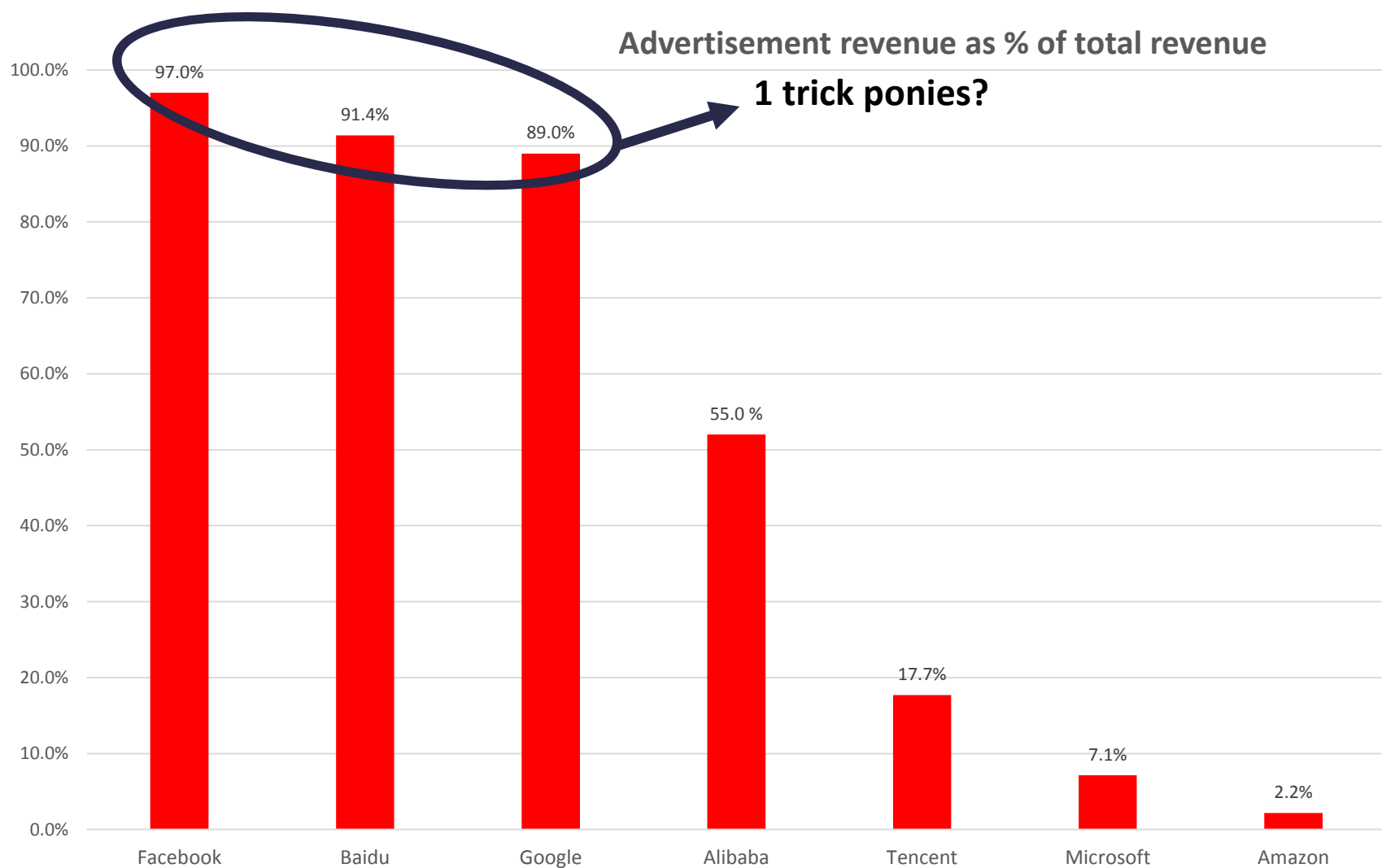
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Source: Schulte Research



# Advertisement: Facebook is leading, other data rich firms have the potential to expand the revenue source



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Source: Schulte Research



# Alibaba AI: a truly common man's bible – access to virtually any and all data dumps of all of China.



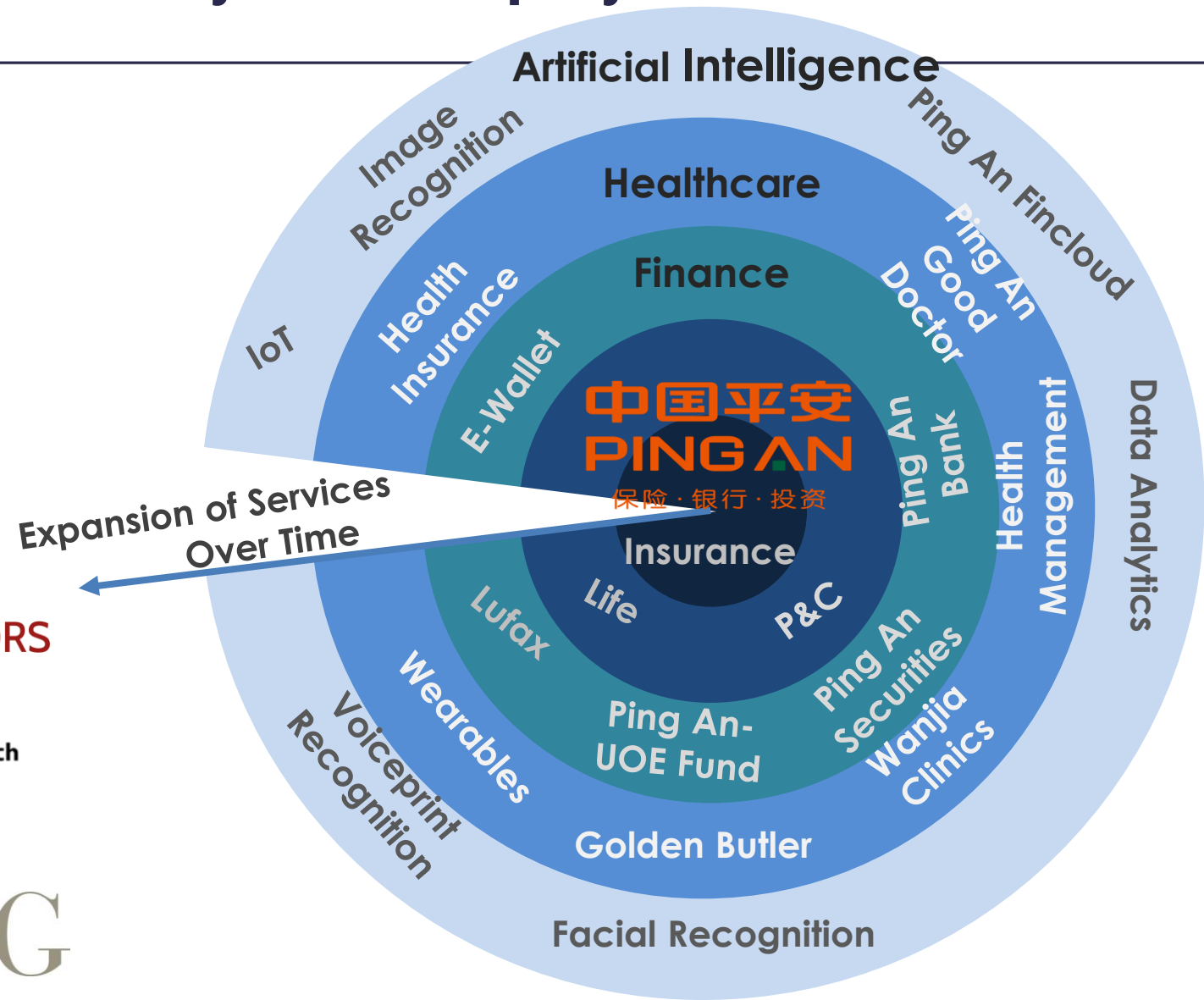
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# Ping An has made greater strides into becoming an autonomous financial ecosystem than any other company



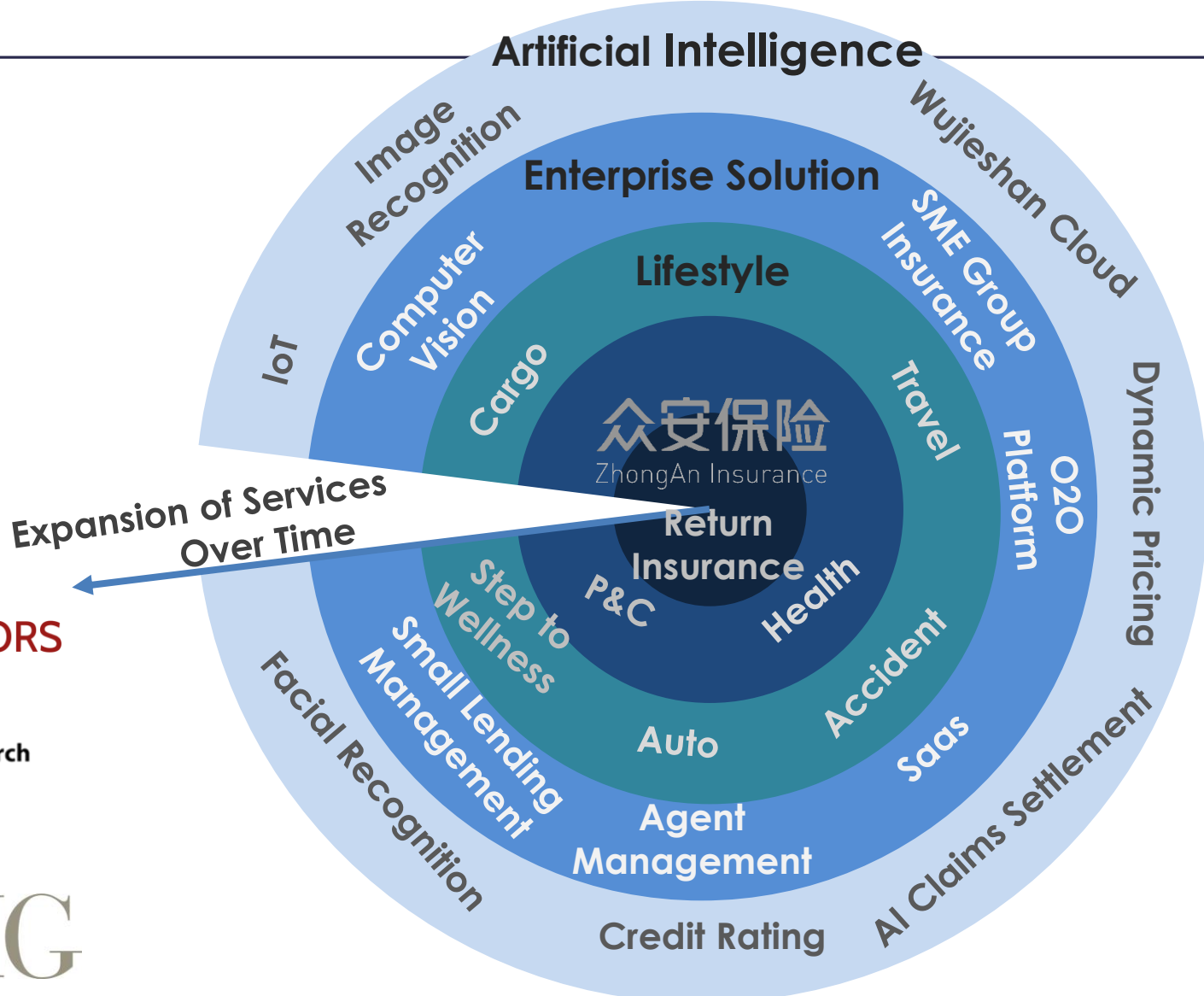
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Source: Schulte Research



# Zhong An: only 3 years old, the largest pure online, cloud-based insurance company globally.



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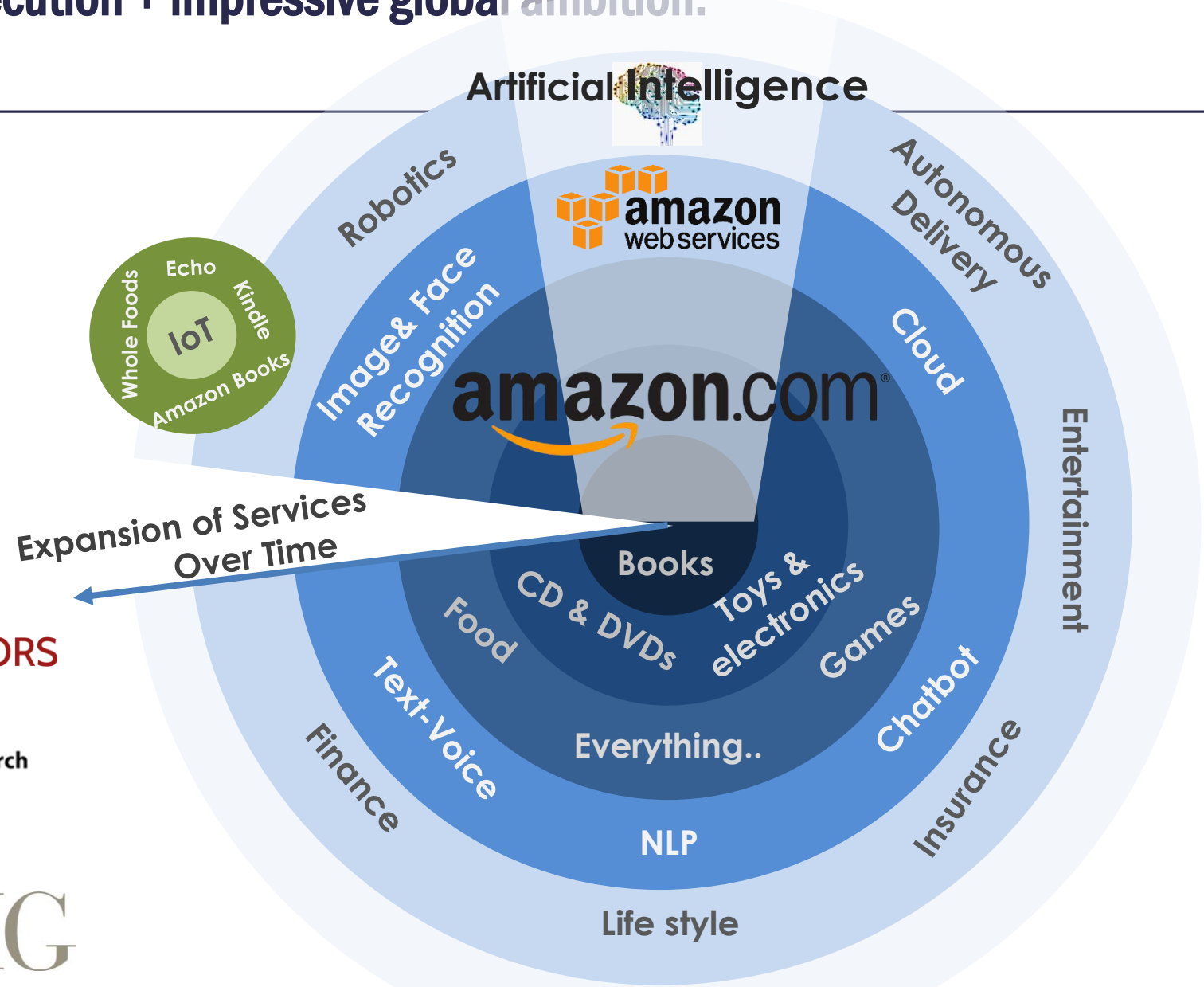


Source: Schulte Research





Amazon: online bookstore for 3 years to #1 global player in almost everything, including Cloud, Enviabale execution + impressive global ambition.



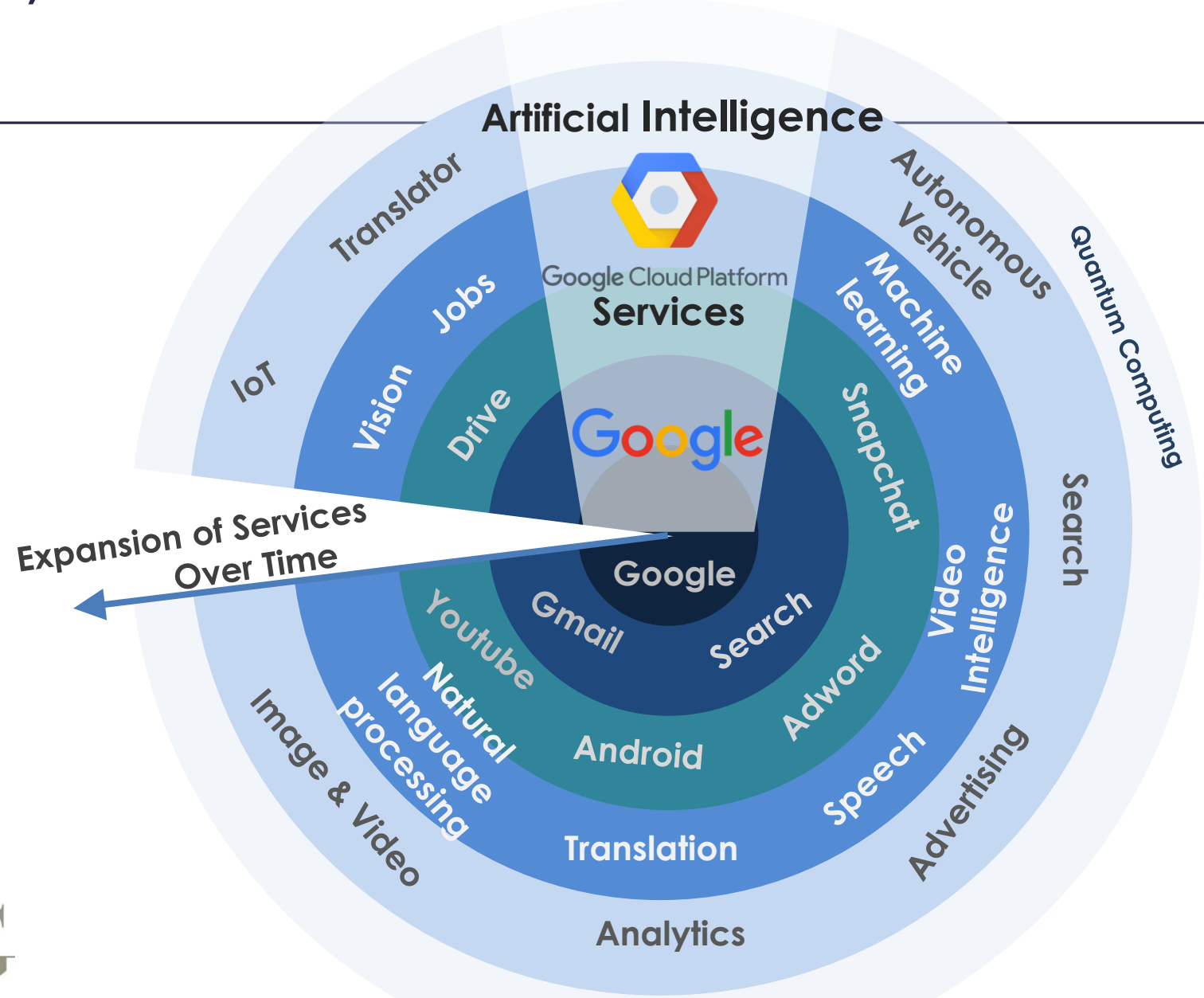
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Source: Schulte Research



Google: from #16 in search engine, Google has used AI to become advertising behemoth. But, it is not on the radar screen in finance.



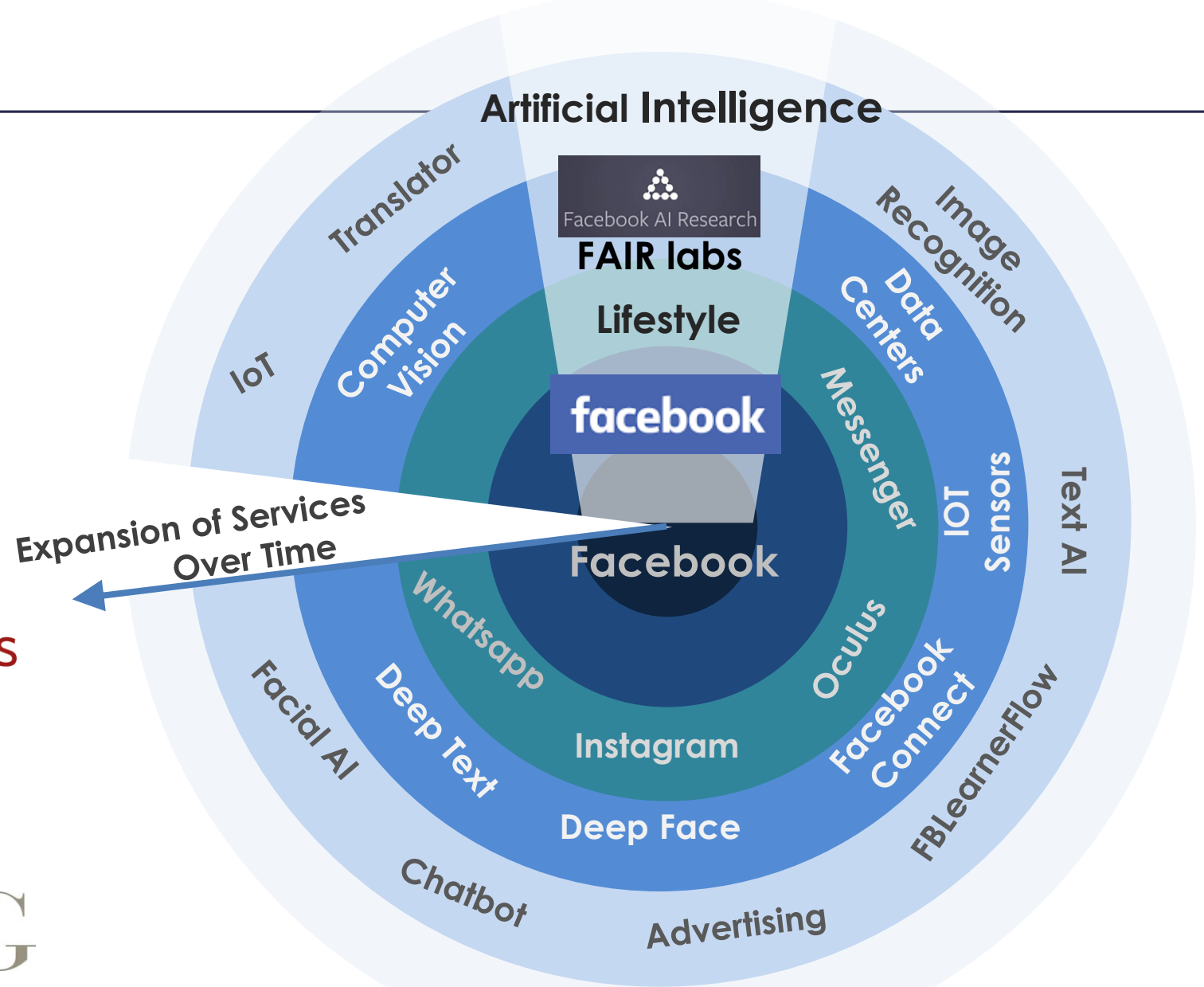
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Source: Schulte Research



Facebook: the greatest 1 trick pony ever. They control the social network + people think this is important – but for it's own sake? One of the worst scores.



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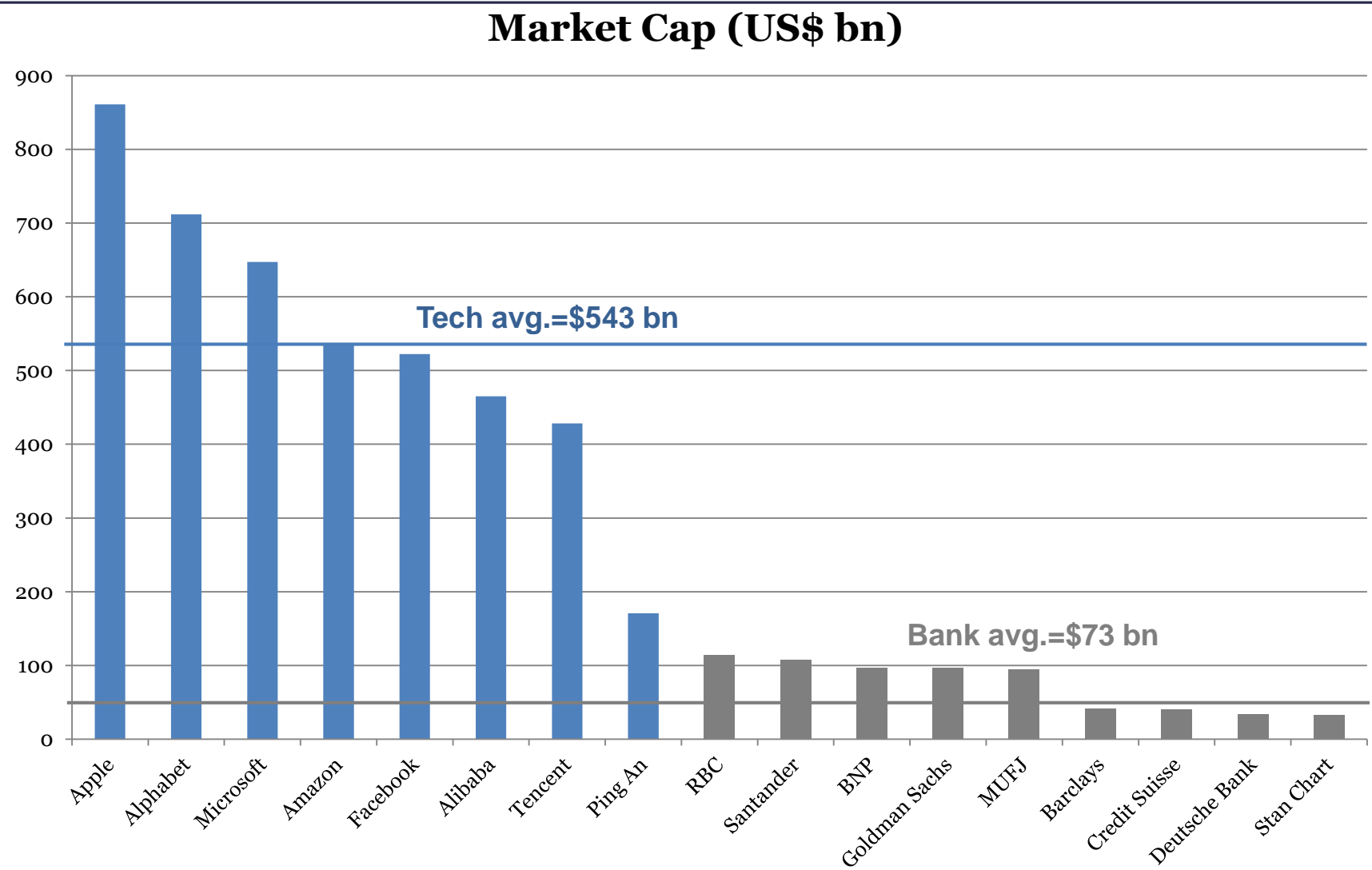


Source: Schulte Research



# Market Cap:

Tech companies are a gathering force in market cap. They dominate capital markets now. Banks can't hold a candle to tech spending



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Source: Schulte Research

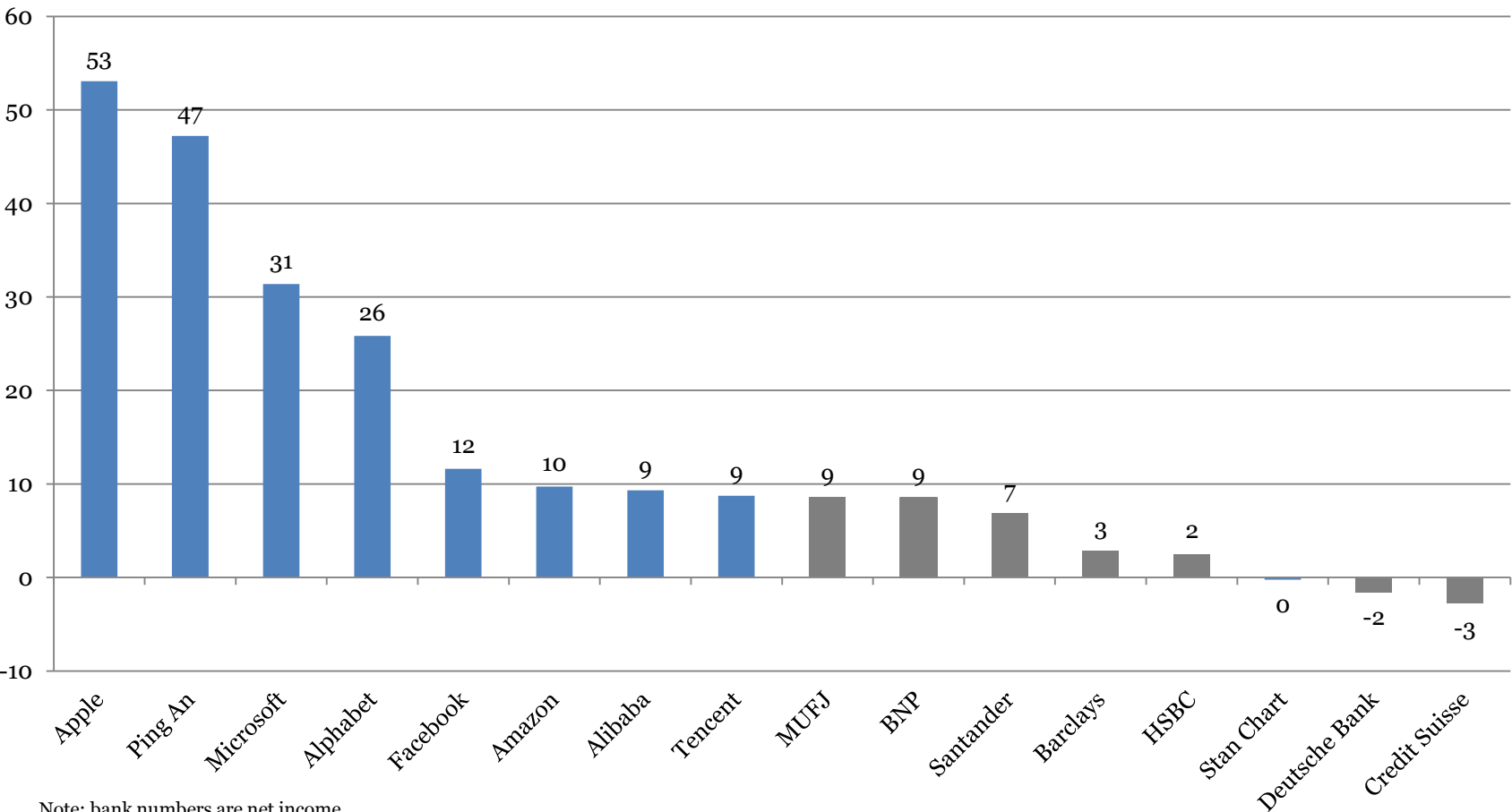


# Free Cash Flow:

## Cash flows from operations – investment in operating capital (mostly fixed assets)

Tech companies blow away banks in cash flow ('different' numbers but you get the point!)

Free Cash Flow (USD bn) (2016)



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Source: Bloomberg, Citi, HSBC



Note: bank numbers are net income

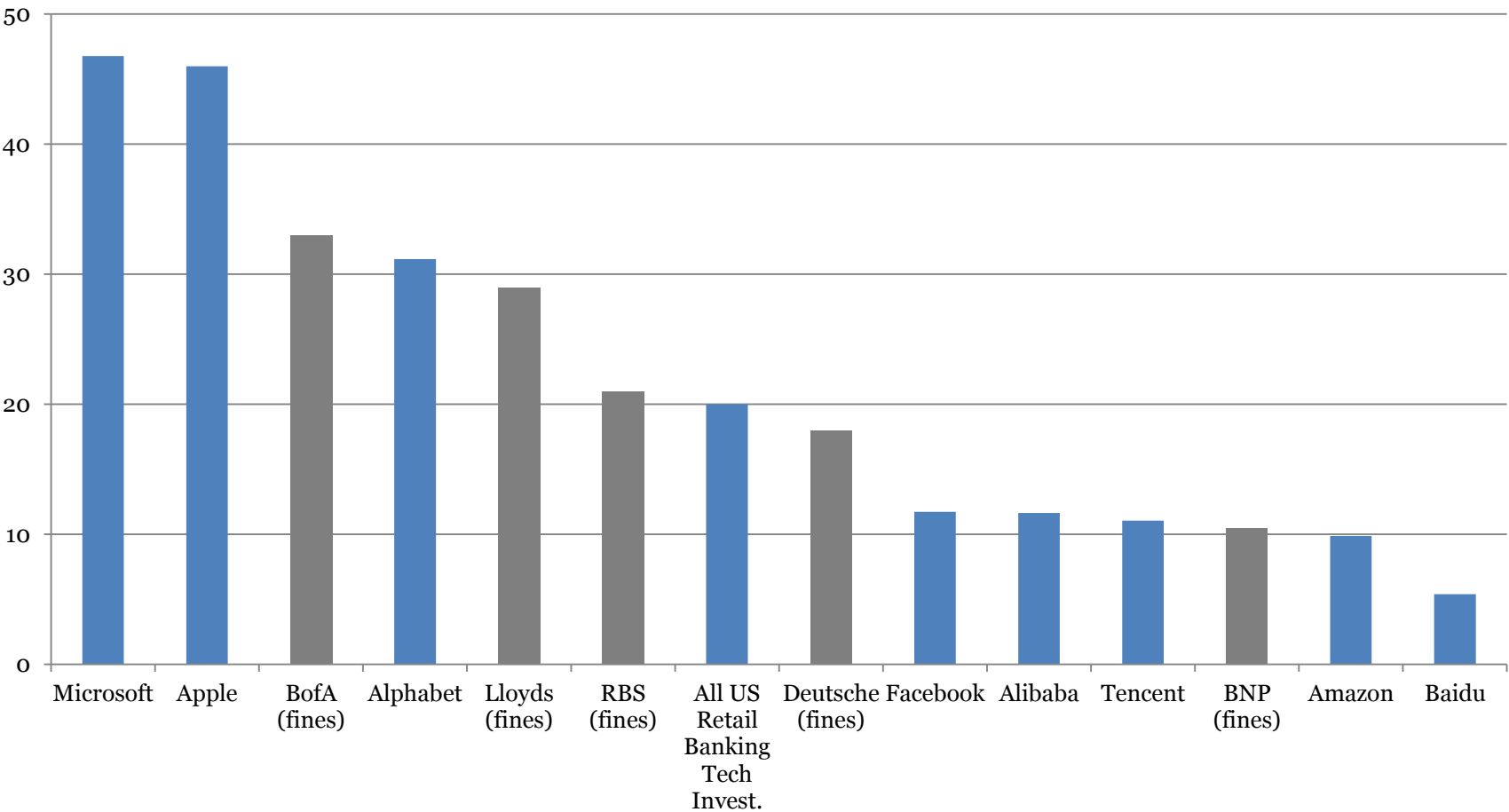


# Investment Cash Flow

## (net spending in PP&E, Capex, M&A)

US\$300bn in “conduct costs” for banks is that much more that can’t be used for investment. Plus, current R/D spending is woefully under invested.

Investment Cash Flow (USD bn) (2016)



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Source: Schulte Research, Bloomberg



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