circuits" (ASICs). These are meant to do inference in all kinds of connected devices, from smartphones to sensors, known as the "edge". The processors come with trained AI models baked in, for instance to let a video camera recognise faces without having to upload the entire footage.

Big cloud-computing providers have also joined the fray, deeming AI chips important enough to develop their own. In May Google launched the third generation of its Tensor Processing Units (TPUs), the previous versions of which already power many of its services, including search and Street View. Amazon, Facebook and Microsoft, too, are developing processors. Apple, for its part, ships its iPhone X with an AI chip that helps the device recognise the owner and read his facial expressions.

Firms that ruled the world of hyenas, notably Intel, are now acquiring designers of cheetahs. It has spent billions in recent years buying AI-related startups, including Nervana Systems and Mobileye. The idea, says Gadi Singer, in charge of the firm's AI products, is to have an entire portfolio of processors, each with its own specialisation—for neural networks, for self-driving cars and for inference at the edge.

If the history of other semiconductor markets, such as networking processors, is any guide, the new field of AI chips could consolidate before too long, perhaps with one or two processor architectures winning the day. There is already talk that big cloud-computing firms, such as Amazon, are interested in buying startups, including Cerebras and Graphcore. And incumbents are trying to catch up. Intel has developed a program that ties together all its AI chips; Nvidia has tweaked the architecture of its processors, which is said to now match the performance of Google's TPUs.

But there are forces that push toward fragmentation. Specialisation in AI chips can go very far, just as with animals (cheetahs are the only large cats whose claws do not retract, so they are ready to accelerate and catch a gazelle at all times). Pierre Ferragu of New Street says that ever more demanding AI workloads needing special treatment, fast-evolving algorithms, and tech giants designing their custom chips all may lead to a world in which lots of processor architectures thrive.

China, too, is likely to inject more diversity. The government has plans to spend tens of billions to create a national semiconductor industry in an effort to be less dependent on Western imports. According to some estimates, hundreds of firms are developing ASICs. Alibaba has announced that it is working on its own AI chip, called Ali-NPU (which stands for neural processing unit). Cambricon, a startup based in Shanghai, recently unveiled a chip that is similar to Graphcore's and Cerebras's. The chip kingdom is unlikely to become a dull monoculture again anytime soon. ■

Microsoft

Homecoming Death Star

Buying GitHub is taking the world's biggest software firm back to its roots

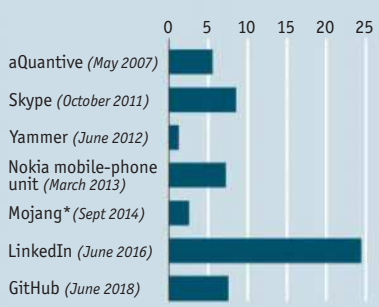
ALMOST to the day 17 years ago Steve Ballmer, then boss of Microsoft, the world's biggest software firm, called Linux a "cancer", meaning that the open-source operating system would spell the death of proprietary software. On June 4th, his successor, Satya Nadella, announced that the firm would take over GitHub, the main source of such tumours today, for $7.5bn. The deal is yet another sign of Microsoft's startling recent metamorphosis.

GitHub is no household name, but among programmers it is as important as Facebook—which explains the impressive price tag for a firm that earned only an estimated $200m of revenues last year. More than 28m developers globally keep their code on the website, which offers all kinds of tools and services. Most important of these is allowing software projects, whether open-source or not, easily to pull together code from different contributors.

For Microsoft the deal is a homecoming. It used to be a kind of GitHub itself. When Windows, its flagship operating system, ruled computing in the 1990s, developers flocked to it. But the firm lost its role as the main hub for programmers when it got a late start on the internet, fought open-source and missed mobile computing. Microsoft kept pushing Windows everywhere though the world had moved on. This only changed when Mr Nadella took the helm in 2014. He has re-established Microsoft as a firm of platforms, but on a higher level. One such is cloud computing, where it is now a strong number two behind Amazon. LinkedIn, which Microsoft took over in 2016, is another. The social network provided it with access to the range of connections between professionals (the "social graph" in geek) and lots of data.

Collector's items

Microsoft, selected acquisitions, $bn



Source: Bloomberg *Minecraft

GitHub has to be seen in the same light. Microsoft already uses the service for much of its own software and developers may now be more inclined to write software for the firm's cloud, Azure.

Although Microsoft has promised that GitHub will stay independent and maintain its status as an open platform, many developers, an opinionated group, are not amused. They still see Microsoft as the "Death Star" space station in the "Star Wars" films that kills everything in its sight. But they have got it the wrong way around. The deal is final proof that the rebel forces have won. In most big software markets, open source is now the default.

The deal has given Microsoft a push in the race among tech giants to become the first company worth $1trn. Its share price jumped by 1% on the news—investors believe in Mr Nadella's rationale. In late May its market capitalisation had already briefly passed that of Alphabet, Google's parent. The winner on current trends will most likely be Apple, but Microsoft and Amazon are now at the same level—not bad for a firm that by tech-industry standards is as old as the hills. ■

The Algosaibi affair

Bankers' bane

CAIRO

A judge blames all parties in the Gulf's biggest-ever corporate scandal

THE glitzy Gulf states take pride in superlatives. They have the world's tallest building, the biggest shopping mall, even (for a time) the most expensive cocktail. To that list, add a slightly less glamorous entry: what a judge has called one of the largest Ponzi schemes in history. On June 1st a court in the Cayman Islands issued a verdict in the long-running saga of Ahmad Hamad Algosaibi & Brothers Company (AHAB), a conglomerate. When the Saudi company defaulted in 2009, its creditors scrambled to recoup billions in losses. The effective bankruptcy touched off lawsuits from Saudi Arabia to Switzerland. At last, after the longest trial in Cayman Islands' history, it is one step closer to resolution.

No one emerged from court looking good. Central to the case was whether the founding Gosaibi family knew about fraud carried out by Maan al-Sanea, one of their firm's executives. Born to a Kuwaiti family, Mr Sanea married into the family in 1980 and soon took charge of AHAB's financial-services division. Then he started borrowing. The Money Exchange, one of the firms he oversaw, took out more than $120bn in loans between 2000 and 2009. Much of it was "name lending", unsecured credit ex-