THE SUNDAY TIMES OF MALTA
SUNDAY, JUNE 26, 2016

DIGITAL BUSINESS

- Why Malta?
- Investing in start-ups
- Zest: digital business event of the year

Official Zest Publication

Practically everything that can be digitised and connected will be.

Economy 4.0

Digital transformation is disrupting most industries, economies, jobs and lives faster than most people realise, **Reinhold Karner** says.

Reinhold Karner

Technology and society are evolving faster than businesses can adjust. Such is the pace of innovation that it has become a challenge to any leadership – it's an adapt or die situation.

Smartphones, apps, digital media, photos and maps, social web, video games, the cloud, drones and robotics, nearly accurate weather forecasts: these are just a few examples of the life-changing tools made possible by the reliable, exponential law of growth in the power of computer chips over the past five decades.

Gordon Moore, the Intel co-founder behind Moore's Law, observed in 1965 that transistors were shrinking so fast that every year twice as many could fit onto a chip without increasing costs. In 1975, he adjusted the pace to double every two years.

Although Moore's law was originally not expected to remain valid for long – in fact, every decade someone comes along to claim that the law will soon be defunct – it is still valid today and no one really knows when it will finally end.

This power of constant doubling for nearly all digital electronics is strongly linked to Moore's law: quality-adjusted microprocessor prices, memory capacity, sensors and even the number and size of pixels in digital cameras, the speed of data transmission and its result into an avalanche of data generation. Eron Kelly from Microsoft predicted: "In the next five years, we'll generate more data as humankind than we generated in the previous 5,000 years."

Following this constant doubling, 30 exponential footsteps take you not just 30 metres but 26 trips around the world. According to MIT professor Andrew McAfee, using 1958 as a starting point where information technology was first noted by the US BEA, we are at exponential footstep 39. That would take us 13,750 times around the world – just to illustrate the staggering and exponential speed of development of this major disruptive force.

So since the 21st century we definitely arrived at the digital age and its digital economy with a vast ever and exponential growing number of use-cases.

What we can learn from anthropologist Ian Morris's research is that in history so far, nothing bent the curve of human history more than the first industrial revolution. For thousands of years humanity was on a slow upward trajectory. Progress was almost invisible. But when steam power arrived in the 18th century, this was soon followed by other technology innovations such as mechanical engineering, chemistry, metallurgy, electricity and the combustion engine. This meant that, in just 200 years, this fast progress bent the curve of human history – of population and social development – nearly vertically.

According to Prof. Morris the ability to generate massive amounts of mechanical power was so important that it "made mockery of all the drama of the world's earlier history."

"As most analogue revenues flatten or even decline in many industries, businesses are shifting to a new source of growth: digital revenue"

digital

Prof. McAfee's lesson is clear and right: now computers and other digital advances are doing for mental power what the steam engine and its descendants did for muscle power.

Digital transformation is disrupting most industries, economies, jobs and lives faster than most people realise. But this is not only about digital start-ups – it's every industry. Global digital commerce now generates over €1 trillion annually. In the private sector nearly 25 per cent of revenue comes from digital and in five years, this is predicted to be more than 40 per cent.

Digital business is now growing fast across all industries. As most analogue revenues flatten or even decline in many industries, businesses are shifting to a new source of growth: digital revenue from digital business, including the digitalisation of things.

Digital business blurs the digital and physical worlds and makes it possible for a variety of industries to participate seamlessly in the same value stream process composed of people, businesses and things. This is beyond IT and the control of any one company and creates new revenue opportunities in its wake.

Digital business will break down traditional barriers between industry segments, creating completely new value chains and business opportunities. It will also challenge existing industry boundaries and the dominance of leading players in an industry, and will cause them to rethink the businesses they are in.

There is another unique economic property of digital information: such information is non-rival and has close to zero marginal cost of reproduction. This means that it is not finite and is cheap to reproduce.

To compete in a digital world, enterprises must digitalise their models, in which products, services, markets, channels and processes are transformed through digital technologies.

Gartner Inc., the world's leading information technology research and advisory company, believes that, "Digital business is the essence of digitalisation as it disrupts existing business models, even those that were born of the internet and e-business eras. As the presence of the internet-of-things grows, the things' ability to generate new types of real-time information and to actively participate in an industry's value stream will also grow".

Practically everything that can be digitised and connected will be. Every piece of equipment, anything of any value will have embedded sensors and be connected to the internet.

Cisco's executive chairman and former CEO John Chambers said that 500 billion devices will be connected to the internet by 2025. He sees a global $19-trillion internet-of-everything opportunity and sees the next decade as a period of explosive growth, not seen since the 1990s.

> "Digital business will break down traditional barriers between industry segments, creating completely new value chains and business opportunities"

This year, investments in internet-of-things hardware will exceed €2.3 million every minute. Within five years, one million new devices will come online every hour, leading to approximately 50 billion connected things in 2020.

Also, 3D printing and industry 4.0 will change production and logistics. 3D printers will soon be able to simultaneously print multiple materials such as plastics, calcium phosphate, graphene, conductive ink, glass, advance nickel alloys, electronics, food, bio-inks, pharmaceuticals, carbon fibre, kevlar and fibreglass.

But we should also consider that as things will become more intelligent, they will become independent and autonomous. Things that can receive information, negotiate, buy and request service represent new customer opportunities for all industries. This will have a great impact on supply chain, distribution networks and existing sales models.

That's a lot of interconnections, creating billions of new relationships, not driven solely by data but by algorithms. The algorithmic business is already here: interconnections, relationships and algorithms are defining the future of business. The internet of things will be the catalyst for a new age of the algorithms. The arising algorithmic economy will include businesses that are key for creating highly beneficial data products.

But it's vital to understand that the real value is not in big data.

"Data is inherently dumb, it doesn't actually do anything unless you know how to use it, and how to act with it," Peter Sondergaard, senior VP and head of research at Gartner Inc., says. "The real value is not in big data but in algorithms as they define action."

Dynamic algorithms are at the core of new customer interactions. In the future algorithms – all encoded in software – will define the way most of our world will work. Using a set of rules to follow in making computations – which are finally algorithms – is how today's leading websites and services work their magic. Agents and virtual personal assistants are becoming real: Apple's Siri, Microsoft's Cortana, Amazon's Alexa and Google Assistant are just the early prototypes that will lead us to the post-app era.

Agents enabled by algorithms define the post-app era. A market for algorithms will soon emerge. By 2020 smart agents will facilitate 40 per cent of interactions and consumers will rely on virtual assistants – algorithms in the cloud – they trust.

The furious pace of technological adoption and innovation is shortening the life cycle of companies and forcing executives to make decisions and commit resources much more quickly. Leaders – in business, politics and society – should adjust to a new reality.

I could go on and on about the disruptive force of digital transformation and the implications of autonomous cars, digital healthcare, and the next phase of mobility. But there's a very important issue that deserves attention: robots, drones, smart machines, and artificial intelligence.

Faster and faster we'll see an emerging super-class of technologies. As long as these technologies are supporting us in a fruitful way we should be fine. But as we enter in a conflict of interest zone between us humans and these technologies and machines, we should think twice, decide and regulate it in a wise way forward. We must do this soon. And we need to get this right because if we fail, we might not get a second chance.

▪ *Reinhold Karner is a global success advisor and mentor for entrepreneurs. He is also a chair and fellow of Think Tanks and The RSA London.*