EXPONENTIAL ORGANISATIONS

A new breed of company by Yuri van Geest

When Yuri van Geest got into a self-driving car for the first time and watched the speedometer exceed 200 km/h, he 'freaked out'. Giving away control became an existential experience of the 'perfect machine, far superior to a human' – one that manifested itself in uncontrollable laughter.

By the third trip, it had become the new normal. And so, it is with all humans and new technologies. Adapt, survive, thrive; it's an old cycle of learning but one that has ramped up in recent years, largely due to the rapid proliferation of technologies in our daily lives.

The problem we face is that while technologies become cheaper and more effective, the leaders within organisations are still using old data to solve new challenges.

Most global leaders will extrapolate linearly from the past into the future. Even top consultants – the McKinsey, Accenture et al – do the same thing. Their narrow focus means they miss out on the broader picture and what's happening at the peripherals in terms of the exponential nature of technological growth. They miss out on new organisational models and new leadership skills.'

Leaders, focused on what is immediately in front of them and drawing only from what's immediately behind them, miss out on technologies that may exponentially grow their organisations. Instead, it's those operating in the peripheries that become the 'disrupters', pushing old business models out. This can be dramatic, but often it's a death by a thousand cuts.

No wonder the half-life of businesses is dropping every year.

	Cost (Averages) for Equivalent Functionality	Scale Impact
3D Printing	$40,000 (2007) to $100 (2017)	400x in 10 years
Industrial Robots	$500,000 (2008) to $1,000 (2017)	500x in 9 years
Drones	$100,000 (2007) to $100 (2017)	1,000x in 10 years
Solar	$30 per kWh (1984) to $0.02 per kWh (2018)	1,500x in 34 years
Sensors (3D LIDAR sensor)	$20,000 (2009) to $79 (2017)	250x in 8 years
Biotech (1 whole DNA profile of 1 human)	$10,000,000 (2007) to $100 (2017)	100,000x in 10 years

The cost of our most heralded emerging technologies has dropped dramatically in recent years, corresponding with a massive increase in their impacts

The big picture is easier to see from the back of the room

A real challenge for CEOs and business leaders in today's environment is focus. There is a constant demand to be agile, to be always evolving and adapting. It's easy to attend another conference, or watch a TV segment on an emerging technology and dismiss it as something that's come and gone because, after all, we're still doing pretty much the same thing as we did ten years ago, right?

Well, no.

It's crept up on us and has often happened so subtly that we don't even notice, but the world of work – both what is required of us and how we carry out or jobs – has genuinely changed dramatically in the last 10 years.

We live in a digital world, and many predict this is only the very opening notes in the revolution to come.

You only need to take a step back and look at both the price and impact of emerging technologies and how they have changed in the last few years to begin to grasp the scale of change we're experiencing.

This digital revolution has been reasonably fast. The now ubiquitous smartphones are only 10 years old or so, and now more advanced industrial technologies such as quantum computing, biotech and robots are becoming the purview of the ordinary person (and business).

'Sensors, for example, have dropped in cost by 60 – 90% in the last five years and will do so again in the next five years' said Yuri. 'Today we have 20 billion connected devices globally to the internet, with an average of 12 sensors on board. In the next 10 years, we will have 1 trillion connected devices, with an average of 25 sensors on board. So, we are at just 2% of the evolution of the internet – we ain't seen nothing yet.'

This rapid rise is easy to miss when you're concentrating on the latest push notification on your phone, or the latest 'ping' that heralds another email.

Leaders now have to face that technologies are breaking through Moore's Law (essentially that the power of computer chip doubles every two years while the costs are halved) into quantum territory where technologies don't just step forward, they leap.

Quantum computing is leaps and bounds away from today's computing power

Quantum Leaps

Computers have a very basic, linear language that builds upon itself to create complicated applications. The phone in your hand uses essentially the same computing processes that those computers that took up whole rooms in the 1970s. They are simplicity upon simplicity layered until they become capable of complexity.

We all now have these classic linear computers – iPads, PCs, smartphones etc. Step-by-step they use bits, strings of 0's and 1's, sequential computation. Now imagine you can compute a 0 and 1 at the same time – in parallel! This is quantum computing, and it's here today… not science fiction.

Quantum computing will revolutionise the world over the coming decade. Why? We will move from a linear world – 1, 2, 3, 4, 5 – to an exponential world – 2, 4, 8, 16, 32 – moving beyond the limitations of Moore's Law in terms of the pace of change, and the impact that change will have. This is not an exaggeration. This is really the way it works and will work in the future.

As with other technologies, this is increasingly becoming available to the average SME. IBM recently launched an open source quantum computer that can be tested from a company in Ireland (with an expert's help of course). These computers are designed to tackle problems that are currently seen as too complex and exponential in nature for classical systems to handle.

For the CEO concentrating on the laptop screen right in front of them, how easy would it be to miss the opportunity afforded by this technology? Beyond quantum computing, what else might they be missing out on? What, and this might be the most burning question of all, if there's someone else doing what you should be doing?

A new economic infrastructure

Quantum computing is just one technology already impacting our world and promising to deliver exponentially more in the near to medium future. Other technologies seem to also be becoming central pieces of the new economy's infrastructure.

The quantum computer is the hardware layer of the future while blockchain will be the operating system of the new world. It's a public ledger logging all transactions in the world open and transparently, and it verifies these transactions. In short, it will create a faster, more effective and most importantly, more secure economy.

Why is this important?

The world will become increasingly open and transparent in the future – we see this already – and this will be pushed even further by blockchain technology. It is an open accounting system for the whole supply chain, so if you sell unhealthy products or use child labour, you will be exposed and in trouble. Consider the example of Provenance, which allows users to examine the supply chain of coffee beans.

In a world where trust between customers and companies will become increasingly important, blockchain technologies will push companies to do what is right, not just say what is right.

The third layer after quantum computing and blockchain is artificial intelligence. And you can break AI itself down into three subsets: algorithms, machine learning and deep learning. Deep learning is the most advanced form of AI we see today.

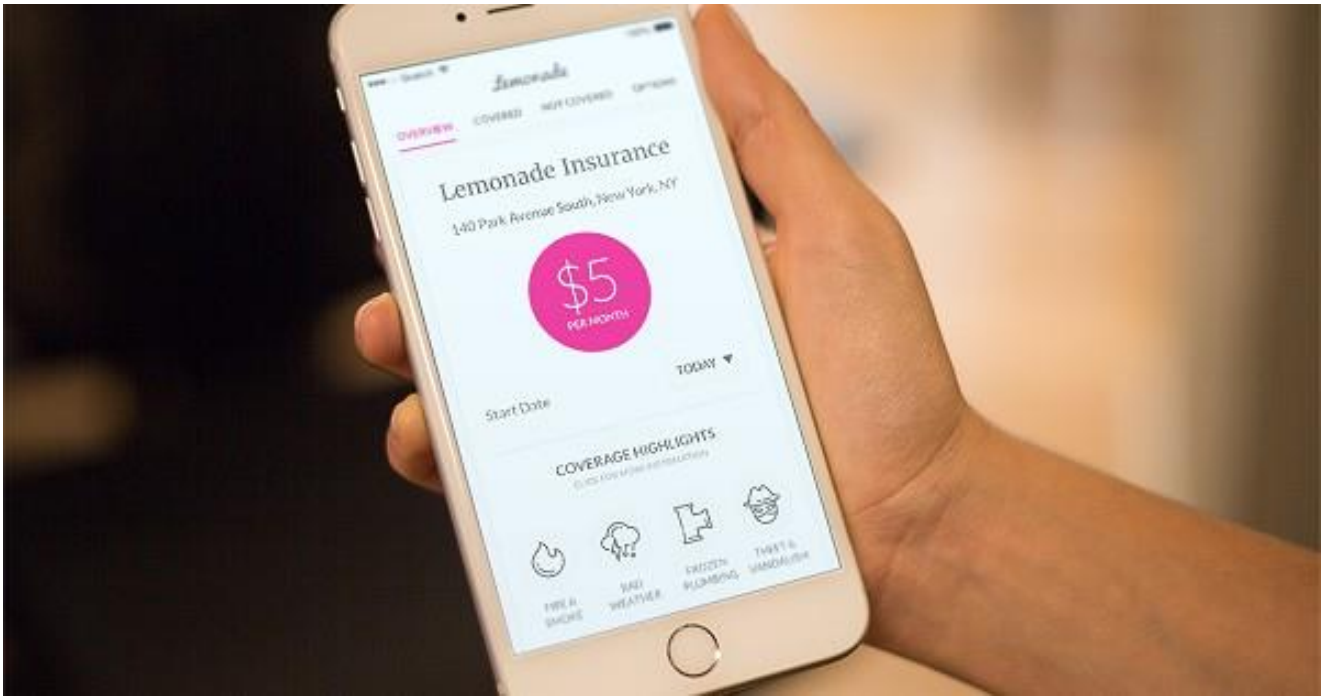
It's basically self-learning software, looking for patterns in data, all by itself, without any human input or intervention. 7 years ago, when we began tracking this, we saw a breakthrough moment – the error rate went from 50% to 25% (for object recognition, speech recognition etc.). And from that moment it kept improving until where it is today, with an error rate in deep learning of about 2 – 3%.

In comparison, the average human error rate is 4%. Thus, we are already at the point where AI machines will not only make fewer mistakes than a human but complete the tasks exponentially faster. This is seen clearly in medical applications, where AI machines can now scan thousands of x-ray images to detect cancers and other anomalies, vastly outperforming humans in the same role.

When life gives you lemons, AI makes lemonade

How will this AI manifest itself in the real-world? Will it gently fade into the background, pushing us all along at the same pace until it becomes a part of the fabric of life? Or will it, as many predict, fundamentally shift what companies survive and which ones don't?

It's a debate that cannot be resolved in advance and will almost certainly be a combination of all elements, but there's one example of how an AI led company had the potential to shake up the insurance industry. Lemonade is an insurance start-up based in the US. It offers all the traditional products – fire insurance, theft etc. – but analyses and delivers them in a fundamentally different way than its established competitors.



The Lemonade Insurance company app interface

Working through an app, the consumer opens up the application and will speak into the microphone on their phone, telling the app what happened. If the customer was involved in a car crash for example, they tell the app in their own words their version of events.

Within 6 seconds, the AI operating in the background will be able to tell if they're lying or not. Currently, the system is 98% accurate, and improving all the time based on the ever-increasing data it collects. The result is that they pay-out within 3-4 minutes based on your 'conversation' with the app - all operated by AI technologies.

Bye-bye competitors. Apart from its obvious capabilities as an almost fully driven AI company (their shareholders are not robots… yet), it also 'has a purpose – to make a better world. 20% of its profits go towards a purpose the customers themselves choose. The cost structure is 50x less than Alliance, which led to the insurance giant investing $1 billion dollars in the start-up.

These sorts of stories are happening in industries across the world. For leaders with that blinkered, linear view of the past and future, they will be rapidly overtaken if they don't expand their vision. The danger is also there in big companies – the 'someone else must be doing it' syndrome. The reality is often the only people looking are your future competitors.

'Disrupt yourself or somebody else will' concluded Yuri. 'And if you can't beat them, join them.

Technological advancements are already embedded in our lives - what comes next?

It's not just the 'big three'

Quantum computing, blockchain and AI are not the only technologies that will change our world, just the most talked about. There are now other emerging technologies that are making inroads already and promise exponential changes in the future.

Nanotechnology is about creating new, smart, strong, 'wonder' materials. It utilises our ability to hack and reform atoms into new materials.

Graphene, for example, is 15 years old but now affordable to create. It's 200 times stronger than steel, 6 times lighter than steel, it's superconductive which makes it more sustainable and efficient, both heat resistant and conductive, flexible, malleable and transparent.

It's a wonder material – how can you apply a material like graphene in your business? It will allow you to avoid accidents and calamities, increase safety, security, lower your costs, be more sustainable… wow. What's more, the costs have reduced by 95% in five years.

For construction companies, or companies dedicated to producing traditional steel, this is a game changer, and possibly a game ender for those that don't grasp it with both hands. Nanotechnologies have also been used to coat public transport buildings with a material that catches and kills diseases, as well as keeping the buildings permanently free of dirt. This simple act could have impacts on insurance companies (fewer diseases spreading) and cleaning companies.

Other technologies such as sensors and how, when combined with AI, they will have huge impacts on areas such as healthcare by turning medicine into a preventative approach, rather than the treating of sickness it currently is.

Risks and Opportunities – Movement Towards an Exponential Organisation

This cornucopia of new and exciting technologies are undoubtedly major threats to traditional business models and even to the very economies they operate within. On the flip side, there are of course major opportunities to be at the forefront of these new business models and economies.

In the short-medium term the most conspicuous risks and opportunities brought about by new technologies:

Exponential Technologies	Risks	Opportunities
Blockchain	More prevention > Less insurance needed	• More efficient organization • Less or no insurance fraud & corruption • Better prospect targeting
AI & Algorithms (Deep Learning)	More prevention > Less insurance needed	• More targeting & prediction > Higher insurance ROI and less insurance fraud
Nanotech	Stronger materials (graphene, coatings) > Less insurance needed	• Partner with manufacturing companies
Sensors (IoT, self-driving car, wearables etc.) and Biotech	More prevention > Less insurance needed	• More targeting & prediction > Higher insurance ROI and less insurance fraud
VR / AR	Less chance of accidents > Less insurance needed	• Real-time integration of outside experts during calamities (Empathy and presence)
Drones & Satellites	More prevention > Less insurance needed	• More targeting & prediction > Higher insurance ROI • Data collection > Less insurance fraud

But what of the individual leader? How do they keep up? How do they stay relevant? The answer is to become an exponential organisation.

The Exponential Organisation

The average lifespan of an S&P 500 company has decreased from 67 years (1920s) to 12 years (today). The average half-life of a business competency has dropped from 30 years in 1984 to 5 years today – and in IT it's just 2 years.

What are the implications for leaders and their organisations of these massive changes? What can they do about it?

In Yuri's book, 'Exponential Organizations: Why New Organizations are Ten Times Better, Faster, and Cheaper than Yours (And What to Do About It)' he explores these very questions.

'Every linear market will see the rise of disruptive start-ups' before asking the question 'And why are these exponential organisations rising today? Why today and not 20 years ago? Well, firstly, in the last 150 years we have created linear organisations.

These linear organisations are focused on scalable efficiency – economies of scope and scale – and the managing a scarcity of resources. We globalise, we protect ourselves, we make money.'

This linear organisation however, is being overtaken by new ways of doing business at levels where costs are exponentially lower, and impacts can be exponentially higher even with fewer resources.

As the Lemonade insurance example above demonstrates, even with the power of an insurance giant, how could they compete with this start-up long-term that has costs 50 times lower than their own?

These new organisations are proliferating rapidly, with billion-dollar companies coming into existence at a pace much greater than companies in the past.

This returns us to the questions – why are exponential organisations on the rise? The first answer is, naturally, the technology we have been describing.

Many of these companies achieve this rapid rise by doing something different than what has gone before. Often this innovation comes through designing new technologies, leveraging emerging and existing technologies, or combining technologies together. Great leaps forward in technologies naturally leads to great leaps forward for companies that utilise those technologies more quickly and effectively than their rivals.

Another shift has taken place in these new, billion-dollar companies. When we began tracking these 10 years ago, Silicon Valley was always number 1 in the world as the home for these companies. Guess what? In the last two years, China has been number 1.

And these new companies are having impacts on all markets, from healthcare to mining.

Another reason for the rise of exponential organisations is the way an economy manages resources. If resources are scarce, those that ‘own’ the resources have a serious competitive advantage. Now, in the digital age, either that resource is essentially unlimited, or access to it is, or there is access enough for there to be competitive advantage.

Even when it comes to people talent, we are at a world high in terms of access to talent – especially when we can access those talents from remote places more and more. These forces are fundamentally shifting what can be done in the marketplace by organisations with fewer resources, thereby fundamentally shifting how those organisations are structured in order to take advantage of this new reality.

‘Structures, cultures, KPIs, strategies – the whole stack within an organisation – we are witnessing a systemic transformation of organisations’ today. The last time was 150 years ago during the industrial revolution. This is a unique phase in terms of organisational design.

What then do these organisations look like? What is an Exponential Organisation exactly?

Higher, higher, higher

There are plenty of well-known examples of these companies, from Uber to Netflix, to Spotify to Airbnb. They rise fast and grab market share (or create a market not seen before) off their competitors super-fast.

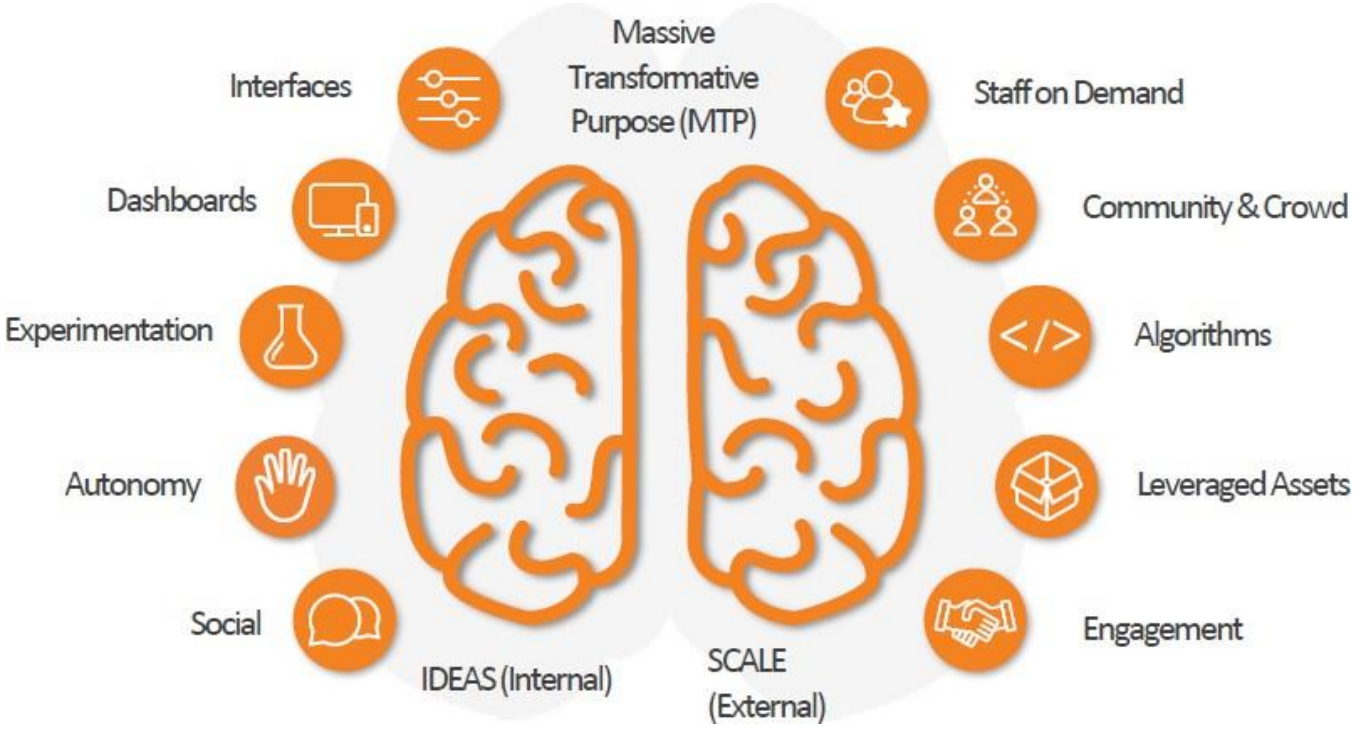
Again, the importance of software cannot be underestimated here – all of the companies mentioned above leveraged technology to their advantage.

They also leverage technologies that already existed – there was no reason why a US cable company didn't create Netflix. There was nothing stopping HMV creating Spotify.

"AN EXPONENTIAL ORGANISATION IS ONE WHOSE IMPACT (OR OUTPUT) IS DISPROPORTIONALLY LARGE – AT LEAST 10 x LARGER – COMPARED TO ITS PEER BECAUSE OF THE USE OF NEW ORGANISATIONAL TECHNIQUES THAT LEVERAGE ACCELERATING TECHNOLOGIES"

Yuri van Geest

Beyond leveraging technologies, what are the characteristics of an Exponential Organisation? Yuri proposes a model, using our individual brain as an analogy.



Model outlining the characteristics of an Exponential Organisation

Before anything else, the company must have a clear and ambitious purpose – coined by Yuri as a 'Massive Transformative Purpose (MTP)'.

This Massive Transformative Purpose
This is the glue that keeps the organisation together. How are you creating a better world? Look at Tesla as an example of a great purpose. Tesla wants to 'accelerate the transition to sustainable transportation'.

It is both authentic and of self-interest. The purpose allows you to get the best employees (and customers), it lowers your transaction costs and increases loyalty of all stakeholders. It acts as a driver for all characteristics.

If in ten years you don't have a strong purpose and only are focussing on shareholder value you'll be out of date.

Attributes of an Exponential Organisation
There are 11 key characteristics of a successful Exponential Organisation, further broken down into internal and external attributes.

The balance between left and right, between the internal and external, is very important when describing the attributes of an Exponential Organisation. If you only focus on the internal, then you have stability but too much stability… if you only focus on the external you will see exponential growth drivers, but too much and you will have anarchy and chaos. You may also grow too fast.

These attributes are 'millennial proof' – all are conducive to requirements of millennials working today. They are also self-reinforcing; the more you implement, the more scalable you become, and therefore the more exponential.

External Attributes of the Exponential Organisation

Staff on Demand
Staff on demand is a necessary characteristic of speed, functionality and flexibility in a fast-changing world. Rather than 'owning' employees, Exponential Organisations (ExOs) connects with external people for simple, complex and even mission-critical work.

Community and Crowds
Connect with your extended crowd. From customers, to staff on demand, and to detractors. Invite them to share creativity, ideation, validations and even funding.

Algorithms
As the world turns into data, ExOs leverage algorithms, including machine learning and deep learning to get new insights about customers and products. AI can turn into a new product itself.

Leveraged Assets
Don't own. Access, rent or share assets to stay nimble. Outsourcing even mission-critical assets. Leveraged assets include cloud computing, hackerspaces and customer / partner assets as inputs for your business.

Engagement
Engage employees, customers and partners through digital reputation systems, gamification and incentive prizes. This creates network effects and positive feedback loops.

Internal Attributes of the Exponential Organisation

Interfaces
Interfaces process output of external attributes into the internal organisations. Algorithms, filtering and matching process feedback into workflow software.

Dashboards
Real-time, adaptable dashboard with essential company, product, service and employee metrics is a must for ExOs. Short feedback loops, accessible to everyone in the organisation. Objectives and key results used as agile learning metrics.

Experimentation
ExOs use lean start-up, design thinking and other processes to constantly experiment with new ideas. Create a culture that allows risk-taking and embraces failure. To optimise success, experimentation includes fast feedback loops and radical transparent communications.

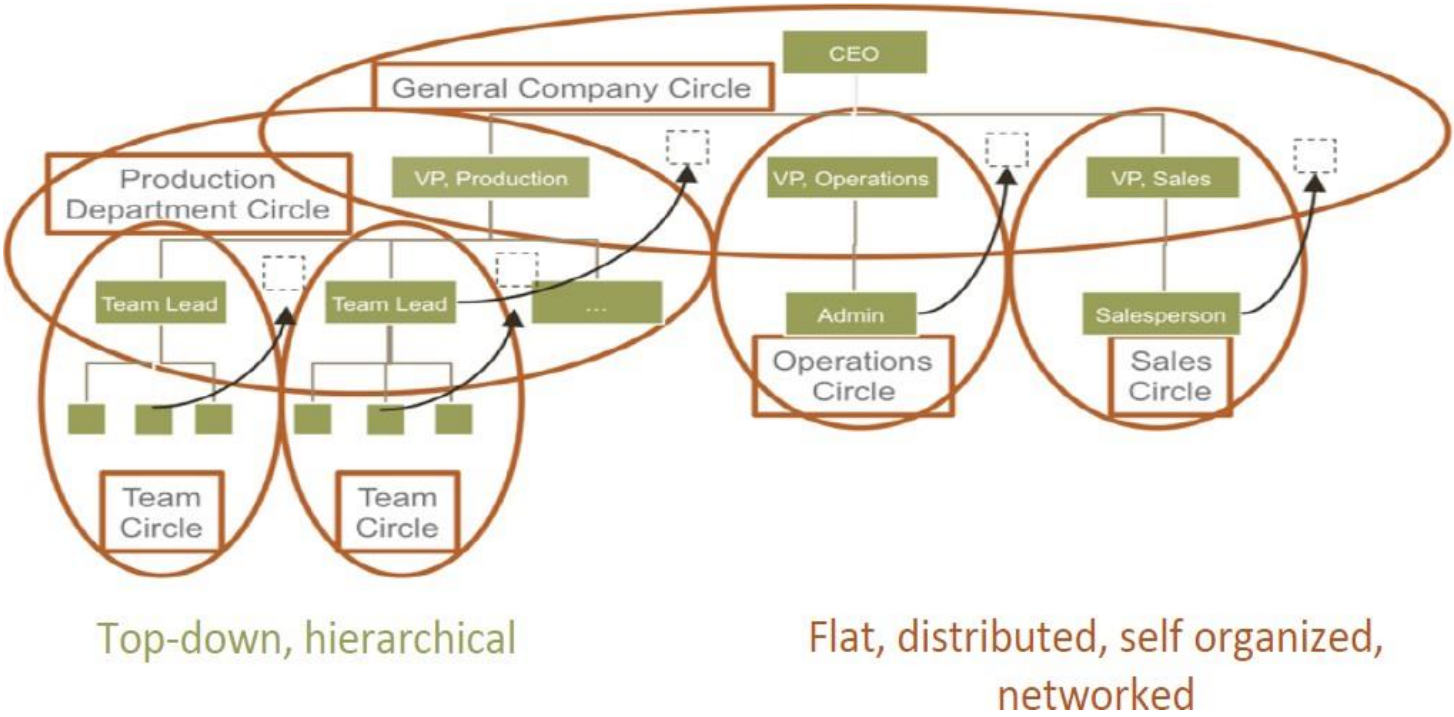
Autonomy
ExOs thrive in a flat organisation that allows for self-organising, multi-disciplinary teams. It encourages employees to operate with decentralised authority.

Social Technologies
ExOs use cloud file collaboration, mobile activity streams, wikis, telepresence, virtual reality and emotional sensing in real time.

This creates transparency, connection, virtual intimacy and lowers an organisation's information latency.

Designing an Exponential Organisation

Observing the direction, the world is going in and the companies that are becoming successful in the new economy the question becomes urgent - - how do you adapt from being a linear organisation to becoming an exponential one?



Organisational structures will change dramatically to become agile enough for the new economy

Move from top-down to bottom-up

Ideation and team forming should be encouraged from the bottom-levels up, not directed from the top down in a rigid hierarchical structure.

From 5 year to 1-year plans

Again, rigidity in planning is becoming redundant due to the half-life of technologies in business. It does not, however, mean strategic planning itself is redundant. 1-year plans are still recommended for stability, but strategy should be defined by your purpose, not a strategic document.

Remember, your strategic plans are ‘not a map, but a compass.’

Experimentation, Instant Feedback Loops

The traditional way to innovate was to take a known customer problem and match it with a known customer solution (or designing something yourself). In an environment where the customer problem may be unknown or the solution unseen, a new way of innovating must be implemented.

Constant experimentation and testing of customer needs within instant (or as quick as possible) feedback loops are key to iterating new and exciting ideas and not becoming stagnant.

Flexibility, vulnerability and heroic failure celebration

The bigger an organisation gets the generally more risk adverse they become. This, of course, leads to stagnation and to a greater risk from disruptors.

Greater degrees of flexibility when experimenting, showing vulnerability and sublimating ego when things aren't going to plan and celebrating heroic failure is how Exponential Organisations work. They will move fast and break things, but it is in the constant pursuit of being a better company and meeting their Massive Transformational Purpose.

A simple example here is in Amazon, which moved from a 'no' to a 'yes' culture in terms of experimentation with a number of easy-to-implement techniques. One example is that when an employee made an innovative suggestion, if their immediate superior said 'no' they had to write a public one-page memo explaining why. This exposed them to the company in terms of being poor in encouraging innovation.

Very soon, many great ideas were making their way into the senior team's inboxes.

Innovation at the Edges

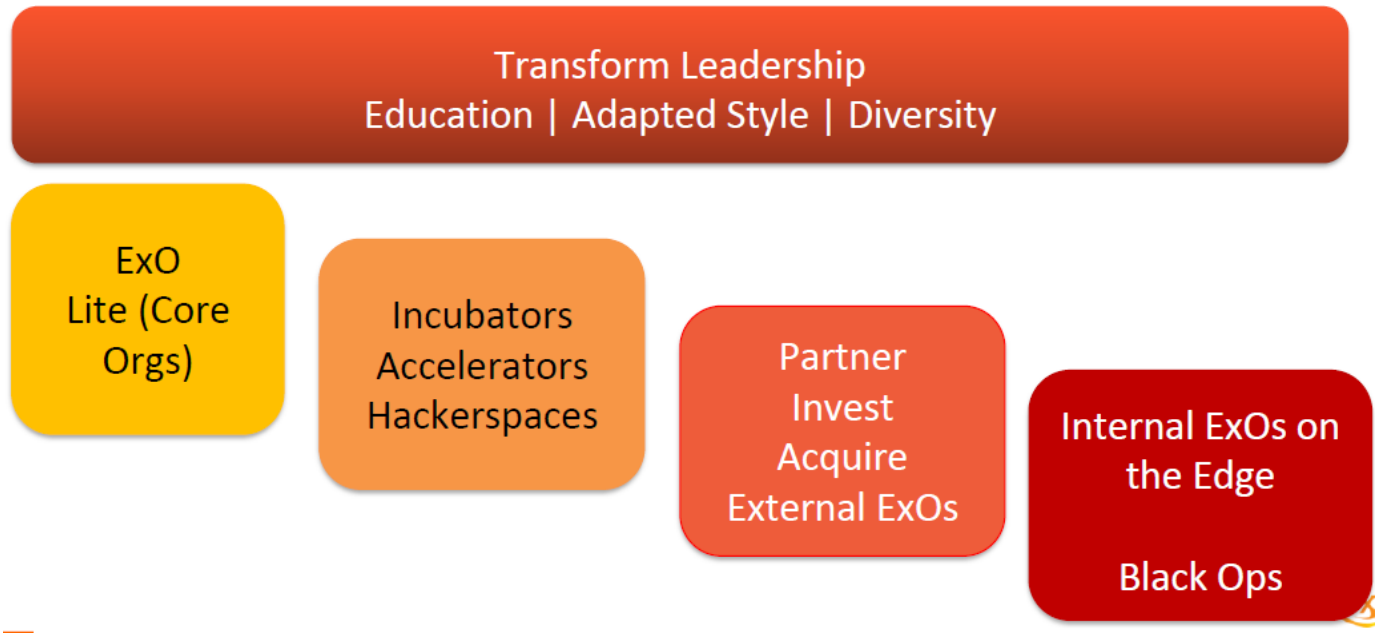
Traditionally, organisations will innovate from the inside. This requires massive resources and a reliance that the right people are asking the right questions (and can derive the answers) all within the four walls of your organisation.

An exponential organisation looks towards outside sources, using the 'wisdom of the crowd' to innovate at the edges.

Modular Growth Model for Linear Companies into ExO Model

It's easy to point to the top of a mountain and say 'that's where you should be' but not so easy to put a climbing party together and actually reaching the top.

What are the steps, processes and philosophies an organisation should follow to become an Exponential Organisation? There are 5 key components.



1. **Transform Leadership**

This is 'the most important thing to do.' In an exponential environment, an organisation needs a range of diverse thinkers. The top is too homogenous at present, leading to a homogenous culture. We need more diversity in the C-suite; more woman, more ethnicities and more young people at the top.'

2. **ExO Lite**

How can you revitalise your core organisation? The answer is you can't. Why? Culture eats strategy for breakfast. So ExO lite means looking at how can you install incremental and internal innovation to boost scalable efficiency. The rest, you leave alone.

3. **Incubators, Accelerators, Hackerspaces**

Getting innovation from the outside-in from things like incubators and hackathons allows you to drive the culture of your organisation in a new direction.

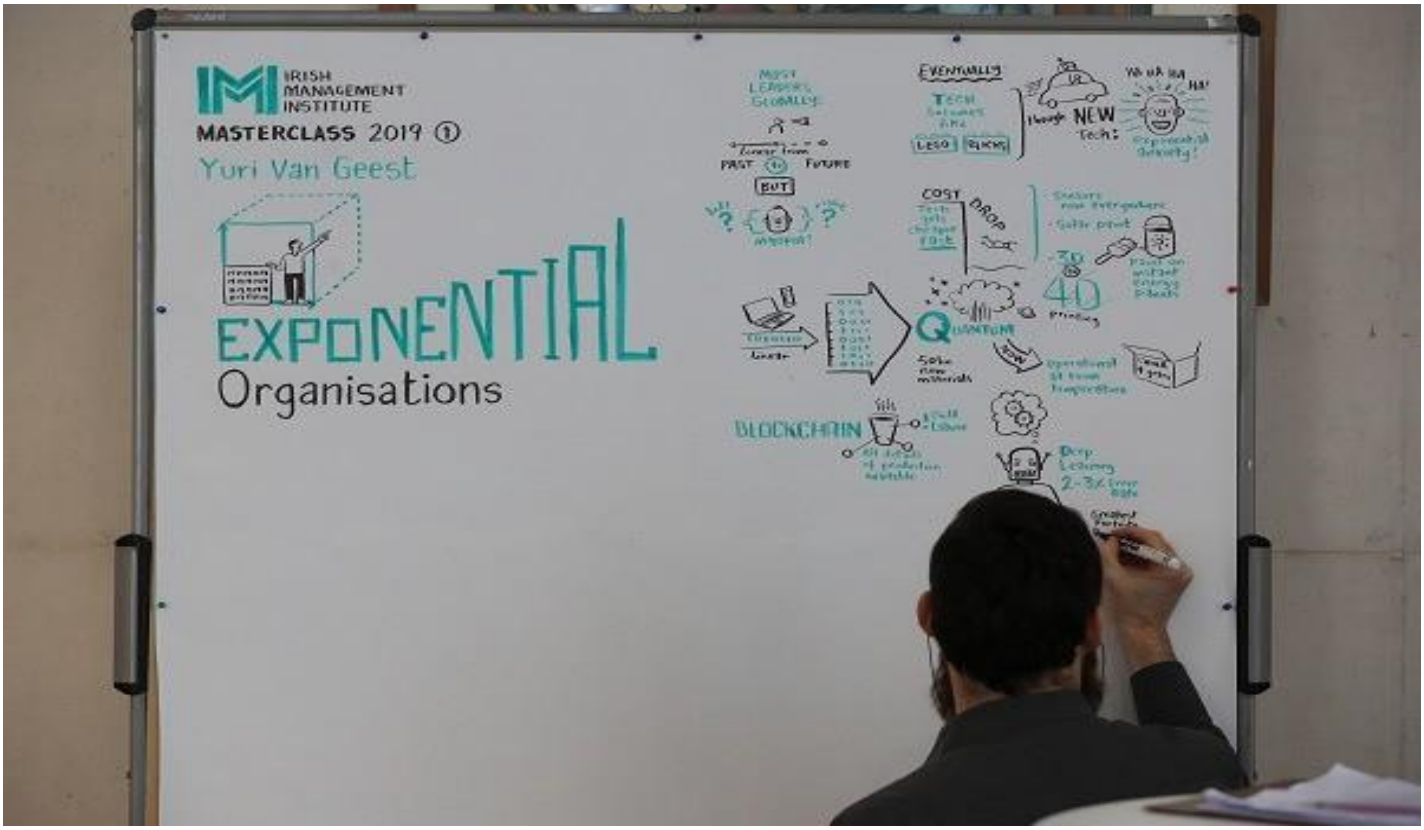
4. **Partner, Invest, Acquire, External ExOs**

Probably the most common way for a large organisation to successful overcome a disruptor – they buy them. If the culture of your organisation is not amenable to what made the ExO you are acquiring successful in the first place, it may however be a short and unhappy marriage.

5. **Internal ExOs at the Edge, Black Ops**

Can you curate start-ups on the edge of your organisations? Small teams creating new products and services, or even whole organisations? To repeat, 'disrupt yourself or somebody else will'.

This disruptive innovation needs to be removed from middle-management and be in the purview of the CEO, with their backing.



Artist Philip Barret illustrates Exponential Organisations

Leadership in the Age of Exponential Organisations

Leadership is changing. It used to be top-down, directive, and give you all the answers as a leader. Now, leadership is becoming more open, more vulnerable. Authentic, purpose-driven leadership from the heart and soul, thinking about higher purposes and values, asking more questions than in the past, enabling rather than facilitating, being decisive, more courageous, bolder – these are the key characteristics of the future-fit leader.

They are also the characteristics that may lead to innovative and bold companies to make exponentially bigger impacts than those operating with traditional mindsets and processes. In a world with an unimaginable future, it will be the leaders with imagination that will see the complexity for what it is – an incredible opportunity.

Go to China, India or Silicon Valley at least once a year to really feel what's going on… and then you can change yourself, because you can feel it. In the West, we talk too much, and we think too much.

Real learning is by doing, by experiencing stuff – and by playing with technology.'

www.sterlingdevelopment.co.uk