GT BRIEFING December 2015/January 2016

10 Trends to Watch for 2016 and Beyond

December 2015/January 2016: It's been an unsettled and unsettling year around the world – with more of the same on the horizon. Oil prices remain low, creating economic and social challenges for oil exporters, many of whom are in geopolitically volatile parts of the world. At the same time consumers are benefitting but not always demonstrating the responsible behaviors that they are calling on businesses to implement, with American consumers for example buying record numbers of gas-guzzling SUVs this year. Whether we are on the tipping point of a new energy landscape remains to be seen. Financial markets were thrown into turmoil as the Swiss National Bank pulled its Euro peg – and are playing catch-up with crypto currencies on deploying blockchain technologies which could be massively disruptive to financial services, particularly as the sector continues to face multiple new challengers from P2P lending to technology companies new payment systems.

Connectivity continues its inexorable advance, with the race on to connect the unconnected, whatever it takes: Balloons, satellites, drones and more. At the same time connectivity is going ever deeper into our lives as the internet of things and billions of sensors are deployed across every facet of our work and lives – and increasingly bodies through wearables, and in the not too distant future, implants. Consumers are taking advantage of advancing technology to demand hyper-local and personalized products, services and experiences, instantly, seamlessly, frictionlessly and through new channels such as virtual reality. But there is a cost: Data overload and misuse could fuel a techlash with tech companies the new 'baddies' of the business world. Increasing cyber-attacks highlight individuals' and organizations' vulnerabilities, even as regulatory frameworks for a connected world continue to lag behind.

Against this backdrop, it's no surprise that executives in many industries are desperately in search of new business models that will allow them to weather the disruption ahead – there are few industries not under threat – and to reinvent themselves. Take manufacturing where the 4th industrial revolution is imminent in the form of breakthroughs in sensors, robotics, connectivity, smart materials and production methods. Finding new ways and markets in which to create and capture value through partnerships, technologies and co-creation with customers, suppliers and consumers will be crucial in a volatile future environment. However, simply selling more to the BRICS may not be the answer. Amidst economic and political issues, the BRICS have been quietly pushed aside in favor of 'IC" if not just China. All eyes are on China, even as it slows and regional geopolitical tensions increase, begging the question, where next for economic growth?

Perhaps the most significant and worrying trends looking to 2016 and beyond are around people. Income inequality continues to rise worldwide and labor markets are much more insecure as contract work increases. Employment prospects for young people are improving slightly, but youth unemployment remains high and there is the risk of lost generations in some countries. Businesses are stepping up their education efforts, but it requires more attention and more stakeholders working together to address these issues.

The people challenge is not just around income, but mobility and its consequences, most notably fragmentation. Today, migrants are moving in the millions around the world, seeking refuge from debilitating conflicts and natural disasters, and economic betterment for themselves and their families. This is just the tip of the iceberg. In coming decades we will see many millions more heading for cities, fleeing climate change or seeking better, safer lives across borders. They will redefine societies, cultures, economies, governance, work, resources and environments – and are already doing so. The problem is that we lack the global and local governance, infrastructure, frameworks and rules to deal with extreme mobility. In a world where globalization is giving way to fragmentation of countries, societies and cultures, and geopolitical tensions are high, terrorists are taking advantage of this to drive even greater wedges between people, whether through attacks in Kenya, Kuwait or Paris. Freedom of movement is under threat.

As we said last year, there is a risk of a new age of crusades, fueled by fear, economic inequality, religious extremism, growing nationalism and greater awareness of global challenges. The fight for values and beliefs is increasingly fierce. In a world of insecurity, the biggest test for us as a species is whether we can address these massive challenges through cooperation or confrontation, integration of societies and economies for mutual benefit or power plays and, ultimately, conflict.

1. Energy at a tipping point?

The energy games we flagged last year are well under way. OPEC is still pumping, oil supply continues to exceed demand and oil prices remain around US$50, less than half the price of mid-2014. Some high cost U.S. frackers have already fallen by the wayside, denting but not dashing ambitions of long-term U.S. energy independence, although Middle Eastern producers' market share is likely to rise, raising energy security issues for developing Asia which will dominate energy demand growth to 2040. Meanwhile renewables will account for much of energy supply growth. Against a backdrop of shifting energy sources the notion of peak oil is disappearing, being replaced by talk of stranded assets – no longer are oil reserves more valuable in the ground in anticipation of future price rises. The race is on to capitalize on existing reserves as soon as possible. Major energy incumbents will need to rethink long-term strategies and short-term investments, as consumers become more informed about climate change and empowered by technology to play a more active role in energy production – and as new technologies promise to further shake up the energy mix. But given the corporate clout they wield, expect some spirited defense of the status quo.

In Action!

World energy outlook: Middle East producers could see their market share escalate to levels not seen since the 1970s by 2020. Such dominance would raise concerns about energy security, particularly for China and India which, according to the IEA's World Energy Outlook, will dominate demand for all forms of energy over the coming decades. Energy demand will grow by one-third between 2013 and 2040 in the IEA's central scenario, with oil prices creeping back to

US$80 by 2020. However, the risk of prices remaining around current levels to 2020 is real – good news for consumers, but bad news for oil-based economies which could see economic and social problems as a result. Low oil prices would not necessarily impact the rebalancing of the energy mix towards renewables which will become the major source of new energy supply to 2040 and the expected dramatic slowing in energy-related emissions, but could slow energy efficiency measures. Even with anticipated COP21 climate change commitments in Paris in December 2015, the long-term emissions trajectory is insufficient to keep global warming below the target 2°C.

The games of stranded assets: Stranded assets – where fossil fuels are rendered worthless because they can't be burned in a world facing global warming – could be a real threat for fossil fuel companies. Why? Because an increasing number of investors believe that within the next 15-20 years the world will be in such a panic about climate change that, either due to laws or prices (including costs of environmental impact), it will be very hard to burn fossil fuels at the scale we do today. Fossil fuel companies should worry. A recent report estimates that the world's biggest oil and gas companies have over US$2 trillion at risk by overestimating future fossil fuel demand. Globally, organized protesters are pressuring investors to sell holdings in 'dirty' fuels. By September 2015, over 400 institutions representing over US$2.6 trillion in assets under management had made some form of divestment commitment due to such protests. The winners are not yet clear in the battle of politics versus markets as well as environmental interests versus economic ones. (Sources: The Guardian, 350.org, The Economist, Institutional Investor)

Look Out For...

The rise and fall of oil states: Russia, Venezuela, and Saudi Arabia along with other Middle Eastern and North African nations are among the world biggest producers and exporters of oil. Many swiftly became global economic powers with the surge in oil prices in the mid-1970's, changing the geopolitical landscape. However, the sudden drop in oil prices in 2014 could be as disruptive as those historical forces. Consumers may be happy at the gas stations, but governments are feeling the negative consequences. In Russia, capital is the fleeing the country, the ruble has devalued, foreign investments are drying up, Central Bank reserves are shrinking and export revenues are down. Saudi Arabia will not run out of money anytime soon despite a larger budget deficit and declining foreign exchange reserve. Yet, if the oil prices stay in the current price range the international financial markets will become nervous with potential implications such as capital flight and lower credit ratings. (Sources: Foreign Policy, The Atlantic)

What's next for batteries: If we could find a way to harness fusion power technology the world would have enough clean energy. Unfortunately, despite being believed in by start-ups and backed up venture capitalists it still needs to be invented! Just like the batteries that can store enough energy to make the world run on renewable energy. What's next for battery energy storage? Apparently the race to develop batteries that will power up the energy storage industry is intensifying, notably in the U.S. One idea is exploring salt water as an electrolyte, a project backed by Bill Gates and other serious investors. It is the culmination of work by former NASA scientist Professor Jay Whitacre. In California another similar project is under way, also involving water and serious investment. The quest is the same: To create a commercially viable, cheaper, and less toxic storage battery. (Sources: The New York Times, Renewable Energy Focus)

2. Yep! We still want more responsible environmental and social behavior…

The world's weather is getting more unpredictable. Temperatures are reaching record highs, as are sea levels. Water is increasingly becoming a scarce resource, while the fight to own and control many resources rumbles on. Global waste has increased ten-fold in the last century. 'Make, use, and throw away' has become the mindset of today's generations. Consumers are becoming more conscious of the challenges, choosing more natural and environmentally friendly products. Still, 50% more renewable resources and land are being used annually than the planet can generate. By 2030 the rate will be 2 times, and by 2050 we will need the equivalent of 2.8 planets**.** The number of people wanting to shape the debate around resources and climate change is growing rapidly. Yet, despite tough climate negotiations every year, and promises and plans on resources and the environment, often these don't add up or get acted upon. Addressing these urgent challenges seems to be a never-ending story of words without real commitment. Will it be a different story at the December Paris climate summit? How do we make a difference?

In Action!

Working towards a better water world: Water is a shared responsibility between societies, governments, businesses, individuals and other stakeholders but the implications of our current and future water challenges at times seem overwhelming. Nestlé is leading the way for big corporations. In 2014, in Jalisco, Mexico, Nestlé opened its first 'zero-water' manufacturing site in the world. It saves the water-stressed area enough water to meet the average daily consumption of 6,400 people in Mexico. In 2015 the company announced that its milk factory in Modesto, California, is on its way to becoming a zero-water facility. In Africa, nine countries have taken a historic step to collaboratively address the threats to the Niger Basin that is the source of drinking water, irrigation, fishing, hydropower and transport for about 112 million people in West and Central Africa. (Source: The World Bank)

Taking action: According to the World Bank, by 2030 climate changes could push more than 100 million people into extreme poverty due to failing agriculture and the spread of diseases. No longer is it only climate change experts that are crying out to make the world understand that mass consumption is doing irreversible damage to the planet. The crowd has joined in, whether it is celebrities, local politicians, the Pope, scientists or other concerned individuals. These people are all voicing their concern to raise awareness and change mindsets among consumers. Expect more debate and calls for responsible environmental and social behavior – those that are listening and have influence will be taking action at multiple levels in society and business.

Look Out For...

Is green the new black? Going green is not just for tree huggers and hippies any more. A shift in demand towards more environmentally-friendly goods and services is growing. Pressured by government regulations, consumer demands and perhaps self-interest, forward-thinking companies have for years tried to figure out the balance between going green and keeping stakeholders happy with the black numbers. It is possible: New 'Green Giants' such as American Chipotle, Whole Foods Market and Tesla have proven successful in being responsible, sustainable and profitable. Big and more traditional corporations such as Unilever and Nike are also driving this trend towards a more socially and environmental responsible world. We hope to see more of this innovative thinking and commitment in the future. (Source: GE Reports)

Revolutionizing the waste culture: 1,414,952,376 tons of waste has been thrown away by households this year and the waste mountain keeps piling up. To stop the 'Make, use, and throw away' mindset, radical changes are needed. The problem: To change mindsets, people have to want to do it or have an incentive. Despite the challenge, governments around the world have started the long process of changing the waste cultures of their populations. In South Korea food waste is banned from landfills; in 2010 the government also introduced a volume-based waste fee system. Local governments in many other countries are also introducing measures to reduce the waste mountain but are consumers ready to change? (Source: Innovation Seeds)

Mission-driven investment: Impact investment is a hot topic as more and more investors find that investing only for financial returns is incompatible with their personal values. Globally investors, from traditional investment firms like Morgan Stanley and Goldman Sachs to specialized impact investment funds such as BlueOrchard and Root Capital, are promoting this new type of investing to address social, environmental and economic challenges while at the same time making a profit. According to Global Sustainable Investment Alliance, assets under management that incorporated sustainability investment strategies made up 10% of all global investments in 2014, or approximately US$21.1 trillion, up from US$13.3 trillion in 2012. Growth has been seen in all regions of the world. Impact investment is taking hold, in particular, among millennials and is therefore poised for growth. (Source: Standard Chartered Bank) However, the challenge of measuring impact remains a significant one.

3. A new world of finance

For years, the world of finance has been undergoing radical change. Traditional banking is still under pressure as industry boundaries are blurring, aided by technology advances. New players, from crowdfunding firms to technology companies, have gained footholds in the financial landscape. Like the rest of the world, the financial industry is going digital. We are increasingly being exposed to, if not dragged into, a world of electronic transactions, passwords and digital currencies – a world where paper money no longer rules and the traditional financial system is no longer the sole provider. Blockchain technology, originally the province of 'upstarts' like bitcoin, has become the new friend of the financial industry – a technology that the industry can no longer afford to ignore, as signals fundamental shifts in how business is done, the roles of intermediaries and the economics of banking. However, as more and more financial counseling and transactions take place in cyberspace the issue of security is rising. Are we willing to risk it? Do we dare to trust our personal finances to the web? Many of these concerns are valid, as criminal activity has become one of the 21st century's growth industries, from identity theft to fraud to money laundering to cyber attacks.

In Action!

Seamless payments: The maxim 'convenience is king' applies equally to payments. We are increasingly living in a 'less-cash' society – not quite cashless yet – with new payment solutions popping up constantly. Mobile devices, sensors, wearables, apps and the internet of things are changing the payment landscape and your financial service provider is not necessarily a part of it. Increasingly technology companies, e.g. Google, Apple, Facebook, Amazon, are working on convenient payment solutions, often integrated with their own ecosystems, that may cut out the middleman (banks) and eventually make transactions free of charges. One example is Facebook which rolled out its new payment feature for Facebook Messenger in spring 2015 that lets you tap a $ button and send money without fees. Apple Pay, rolled out in 2014, is gaining traction as a payment method though only available in the U.S., the U.K. and soon in Canada. As it does, more large American companies are planning on integration of loyalty cards into Apple Pay to make payment simpler and more convenient. (Sources: TechCrunch, TechCrunch)

When money is digital – crypto currencies: Virtual currencies are "for real" if not physically real – in fact, there are over 600 different kinds worth US$5.3 billion as of November 2015. The biggest crypto currency by far is bitcoin with a market value of US$4.865 billion, a currency not controlled by governments or financial institutions. Currently, 80% of total bitcoins by value are held for speculation while 20% are actually used for payments. 90% of all commercial bitcoin transactions are in developing economies. As the currency becomes more popular, it could herald widespread acceptance. In November 2015, CoinBase (the startup operating the digital bitcoin wallet) unveiled its first bitcoin debit card in hope of helping the currency hit the mainstream. However, while digital currencies represent a huge advance in terms of currency and payment technologies, don't expect their adoption into governmental monetary systems anytime soon. Even so, many large companies accept bitcoin as payment, e.g. Dell, PayPal/EBay, Tesla, Expedia, Bing (Microsoft) and many more. (Source: Coin Market Cap, Mobile Payments Today, Wired)

Look Out For...

Jumping on the blockchain: UCLA Professor of Finance, Bhagwan Chodhry, is serious about nominating the anonymous bitcoin founder Satoshi Nakamoto for the Nobel Prize in Economics. Why? He believes that the anonymous inventor deserves the prize due to the disruptive nature of bitcoin as it will destroy high-cost money transfer services. Even more important could be the technology underpinning bitcoin: Some believe that blockchain technology could be as disruptive as the internet in the early 1990s. Blockchain technology provides a shared public ledger of transactions, open to all and hosted on a distributed network, that provides a tamper-free data structure. Upsides include cutting out intermediaries and much improved security features. The financial industry has finally discovered the power of the technology and is racing to harness its advantages which have the potential to shave off up to US$20bn in costs by 2022 and disrupt the entire financial landscape. Companies such as UBS, IBM, Citigroup, JP Morgan, Barcleys and PwC are collaborating with startups or launching projects to make blockchain technology work for the financial sector. (Sources: Huffington Post, FT via WEF)

When securing the network is not enough: Cyber security is a huge threat, one the financial services industry takes very seriously. But despite the hundreds of millions of dollars poured into securing their systems, the number of cyber attacks is higher than ever. Financial services companies encounter security incidents 300% more frequently than other industries. To address the rising threat, the British and American governments plus leading global companies have recently performed tests on how the world's biggest financial centers, New York and London, would cope with a cyber attack. These tests included how to share information, communicating with the public and handling the attack. (Sources: Housingwire, FT, WebSense, CNBC)

4. The next generation of connectivity: Broader, deeper, faster – and more risky?

The world is becoming hyper-connected. Technological advances, lower costs, more networks, the cloud and off-the grid options have made it possible to reach every corner of the Earth via wireless and mobile web connections. Today 3.2 billion people have internet connections and by the end of 2015, there will be more than 7 billion mobile-cellular subscriptions. Still, over half the world's population has no internet access, something that is about to change. As internet penetration broadens, along with new types of devices and solutions, connectivity is reaching deep into society and work changing our daily lives. More devices than ever are tracking, monitoring and recording us. The internet of things and big data might benefit the world but are increasingly preying on our privacy and opening up our data to attack and misuse. Technology has clearly made life more comfortable but are we ready to deal with the risks?

In Action!

Connecting the unconnected: To connect the unconnected two things are needed: A mobile phone and a mobile cellular network. As of 2015 about 3.2 billion people were connected to the internet, leaving more than 4 billion worldwide with no connectivity, something tech giants worry about. Yet, there may be no financial gains or sense in investing traditional network infrastructure in remote and rural areas. Rather, to connect the unconnected new thinking is needed and ambitious projects are taking shape. Google thinks it will have enough internet-beaming balloons to form a ring over part of the world by next year – and is also also working on other solutions. Facebook plans to launch a satellite providing internet access to remote areas in Africa in 2016. OneWeb is working on wirelessly connecting remote areas by launching 648 micro satellites. (Sources: Worldometers, BBC, BBC, Northstream)

The techlash: Bank of America Merrill Lynch suggests that the market for cyber security today is worth US$75 billion a year but will grow to US$170 billion by 2020. It's no wonder that the cyber security industry is booming: As connectivity increases and sensors hook up everything from home security systems to appliances to cars and health devices the resultant exploding volume of data is being eyed by hackers near and far. Keeping data safe is a growing headache. Privacy and ethical concerns are rising, although many organizations only pay lip service to addressing issues including: Is selling data to a third party ethically correct? Who owns the data? Who should control it – the consumer or the organization? In this relatively new world of digital data it is critical that organizations of all types and governments around the world understand and address the risks associated with collecting, storing and using data. (Sources: CFO, CNBC)

Look Out For...

The connected human: The human internet of things is already here. Wearables are increasingly popular, in particular, smart watches and other bands. Experts believe that by 2022 10% of people will wear chip-embedded clothing connected to the internet. Wearables are one thing, implants are another. Health devices, e.g. pace makers and cochlear implants, are already mainstream but what about a wirelessly-powered brain implant to treat depression, or an implanted mobile phone? 80% of experts in a recent World Economic Forum report believe that implanted mobile phones will be commercially available in 2023. Implants are still in the infant stage, but are already being used, e.g. employees of a software company in Sweden have implanted chips in their wrists that activate the company photocopier. Having minor surgery is easier that using remembering PIN-code, right!? (Sources: Live Science, cnet)

The next wave of connectivity: The World Economic Forum forecasts that more than 1 trillion sensors will be connected to the internet by 2022, taking the internet of things to the next level. It will impact and change the way businesses, governments and individuals interact with the world. Everything will become connected from the ground you walk on to you to the home you live in. Connectivity will become a basic human right. The importance of digital telecommunications infrastructure will increase and so will nations' vulnerability. Already the U.S. military is uncomfortable with Russian presence in the vicinity of the undersea fiber optic cables that carry 99% of transoceanic digital communications, e.g. phone calls, emails, web pages. Others have voiced concern about Chinese investment in vulnerable infrastructure, e.g. Hinkley Point Nuclear power station in the UK and critical telecommunications infrastructure around the world. (Sources: Wired, BBC, Los Angeles Times, WEF)

5. The seamless shopping experience

Retailers are facing a digitally driven perfect storm as connectivity, rising consumer influence, time scarcity, mobile payments, and the internet of things are changing where, when, and how we shop. Call it the on-demand economy, the frictionless economy, the intuitive economy or the hunt for seamless instant gratification, the simple message is that the digital age is rewriting the rules of what consumers want and how they behave. In the connected world there is always another opportunity to fulfil a need, so brands must tread warily and listen to what the consumer wants to become a part of this new ecosystem of intuitive, instant information and exchange. You never get a second chance to make a first impression; getting it wrong means you probably won't engage the consumer at all.

In Action!

Frictionless commerce: Instant gratification is in full bloom. Consumers want things and they want them fast. Starbucks has jumped on the "no-wait" wave with its Starbucks Order and Pay app. Just order your preferred drink via your app and swing by to pick it up. It is no longer you but your preferred drink that has to wait! To make shopping easier and more comfortable at Macy's and Hointer you can now just scan whatever garment you want to try on and get it delivered straight to the fitting room. Recently open in New York is the Kenneth Cole concept store that is accessible 24/7. Just get a card, text or call the number and the shop will be open in less than 3 hours. In addition, the store is filled with touch screens so shoppers can view Kenneth Cole's entire product line plus take advantage of same-day delivery in New York. (Sources: Starbucks, PSFK, NY Racked)

The next wave of subscription: Subscription is not really new. We have subscribed to magazines, newspapers and health clubs for decades. However, today many startups and other companies are taking advantage of technologies that make it possible to succeed by operating a subscription or recurring revenue model, whether hoping that the consumer is too lazy to cancel it or meeting a need to take the hassle out of buying goods and services regularly. Consumers no longer buy movies or music. They subscribe to them. At Amazon you can subscribe to monthly deliveries of cereal and diapers. In Greenwich Village, New York The Fair Folks and a Goat café offers customers a monthly US$25 subscription fee for unlimited coffee, tea, latte, espresso and lemonade. In Seattle, hairdresser Capelli's charges US$600 a year for its Executive Signature Haircut Membership or US$1200 a year for its Unlimited Executive membership. Many industries are just beginning to adapt to the subscription model and many more are ripe for transformation.

Look Out For...

Hyper-localized information: Shoppers want convenience and beacons are the solution to get customers hyper-local information quickly. A new twist on location awareness, retailers are already using beacons to offer customers product information, flash sales, personalized deals and coupons in-store as well as to speed up the checkout process with fully contactless payment systems. Business Insider estimates that beacon-triggered messages could directly influence up to US$4.1 billion of total US sales in 2015 (or 0.1% of sales volume at top-100 retailers), a figure that will grow 10 times in 2016. It does sound both cool and a little creepy. However, there are several layers of permission before the retailer can actually reach the consumer. The consumer must turn on Bluetooth, then accept location services on a related app and lastly opt-in to receive in-store or indoor notifications. (Source: Search Engine Watch)

V-commerce: Virtual and augmented reality is taking off, though still in its early stages as we highlighted last year. From gaming to travel to shopping the definition of "reality" could be reinvented, transforming industries. Fashion designer Rebecca Minkoff is the first fashion brand to capitalize on VR. Filming its runway show for VR the brand made it possible to view the show on a US$24 cardboard headset bought at Rebecca Minkoff's online store. Retail brand Tommy Hilfiger is the first major retailer to make the VR experience a reality in its store. It also offers customers a virtual trip via a Samsumg GearVR headset to the brand's 2015 fall fashion show in New York. In London, start-up Trillenium wants to create virtual stores for brands aiming to revolutionize the shopping experience. These will be augmented as the company also adds other feature, e.g. a chat feature so consumers can ask friends for their opinions on an item before actually buying it. (Sources: Racked, The New York Times, Smallbusiness.co.uk, GT Briefing July 2015 Navigating tomorrow's digital landscape Part 2: Consumers)

6. In search of new business models

Your competitors are not who you think they are. The industry boundaries that have traditionally divided companies according to what they make, what they do, and how they approach their business, are collapsing. This means that competition is increasingly taking place across industries, not within them. Today, no industry, business or organization is safe from disruption and when the disruptors show up management teams should know that it's time to act – because these disruptors don't just challenge traditional companies, they challenge whole sectors of the economy and society to reinvent themselves. Often, this means opening up firm boundaries to embrace partners (including customers and even competitors), build broader ecosystems and move to open platforms – as well as radically reinventing business models.

In Action!

Challenging tradition: Traditional business models are no longer attractive. A new landscape of cross-industry competition is forcing companies to reinvent themselves. Nike, Skype and Barti Airtel have challenged traditional business models with game-changing cost structures. Amazon, the "pure" online retail giant is grappling with food delivery from local restaurants in Seattle – and this year opened its first physical bookstore in Seattle. Apple, the company that reinvented the music industry, is now eying the healthcare industry. First, it launched a watch with the functionality of a medical device. Now, the ResearchKit it is showing its real ambitions: It wants to transform the pharmaceutical industry by changing the way clinical trials are done. Many others such as Google, Microsoft and Samsung are also eying the healthcare industry and have big plans. (Sources: Strategyzer, The Verge, The Washington Post, The Seattle Times)

The global brain: Mindsets in business are changing. Closed system, in-house innovation is no longer seen advantageous. Instead crowdsourcing, open innovation and open source movements are gaining ground. In the last 10 years 85% of the 2014 Best Global Brands have used crowdsourcing to accelerate innovation. Coca-Cola has used crowdsourcing 34 times within the past 10 years, Pepsico 30 times, Danone 28 times and Samsung 27 times. Other companies, too, are embracing open innovation. Take Hewlett Packard which has an open innovation team linking researchers and entrepreneurs in business, government and academia to come up with innovative solutions to hard problems with a goal of developing breakthrough technologies. Another is Sony which recently launched the new crowdfunding platform First Flight designed to find and crowdfund projects developed by Sony employees. In addition, it will let backers directly buy and pre-order new devices developed. (Sources: Eyeka, IntelligentHQ, The Verge)

Look Out For...

Moving beyond ownership and transactions: Ownership is becoming less important than experience, with simple, transactional business models giving way to longer-term but more flexible relationships between businesses and their customers. For example, Ford wants to reinvent itself as a mobility company renting out rides in a car-sharing program. German car company Audi has launched the collaborative car initiative Audi unite, a service that lets up to four people share a specific car for up to two or more years, with each person paying a monthly fee. The prototype service is now available in Stockholm, Sweden. This year Apple has jumped on the bandwagon, starting to sell iPhones on installment plans allowing customers to rent a phone with a new upgrade every year instead of buying it. However, as always remember to read the fine print before jumping into this option! (Sources: USA Today, ars technica)

The responsible business model: As social entrepreneurship increases and businesses are becoming more involved in responsible capitalism, a number of new business models are emerging, e.g. B Corporations, hybrid non-profit and for-profit organizations, philanthro-capitalism, and crowd-driven philanthropy. These approaches to collaboration and innovation allow ordinary people to do big things even when money is scarce. Examples of responsible business models include: Textbooks for Change (profits are split between the student groups/clubs, program administration costs, and any remaining funds are used to support social programs in developing communities), and Edgar and Joe's Cafe (profit from sales of food and beverage go to wages, training, and social betterment programs for the staff-beneficiaries). See more responsible business models here.

A world of global partnerships: An increasing number of companies are using partnership models to build capabilities to help them to shape future markets and stay ahead of change as well as developing new products and playing fields. Recently, the Swedish mobile equipment maker Ericsson and U.S. networking company Cisco Systems agreed a business and technology partnership. The plan is to offer routing, data center, networking, cloud, mobility, management and control, and global service capabilities in a joint effort. Look out for more to choose the partnership route. (Source: Fox Business)

7. On the brink of the 4th Industrial revolution

Manufacturing today is more than just the production of a physical product. In an era of mass production and consumption, scale was king. As we move into an age where knowledge dominates, technology advances will once again disrupt the manufacturing industry. The 4th industrial revolution is knocking on the manufacturers' doors in the form of breakthroughs in sensors, robotics, connectivity, smart materials and production methods. It's a constant reminder to find new ways of creating and capturing value. The digitization of the industry along with the internet of things is making once valued workers' skills obsolete and creating the need for new ones. Add in a growing consumer culture of instant gratification, customization and personalization along with lower entry barriers, easier access to commercialization, cheaper and better technology and materials and the lines between consumers and producers are blurring. At its most extreme, consumers will be producing their own customized goods using 3D printing at home making the manufacturing industry obsolete – or at least in need of radical change to adapt to a new reality.

In Action!

The connected factory: Sensors and the internet of things are taking automation and the use of robots to new levels, outpacing humans in the race for efficiency, fewer errors and better quality. Research shows that for every million things a person produces he or she makes mistakes 500-1000 times, and human mistakes are often costly for companies. Computers have a much better track record. In Amberg, Germany, Siemens is working on taking automation to a whole new level to improve quality. The factory is a testing ground for manufacturing processes that rely less on sequential steps and more on networked pathways. It is all about digital communication. The systems communicate not only with each other and within the company but also with systems elsewhere. Most importantly, they communicate with the product being produced, e.g. the product knows it should be painted white, not blue and can send a message if corrections are needed. A McKinsey study suggests that factories and manufacturing facilities will focus more on buying new high-tech sensors and routers than production equipment in next decade. (Sources: Newsweek, Fast Company)

Direct manufacturing: 3D printing technology is moving from being a prototype on the manufacturing floor to an integral part of end-user production. A report from Stratasys Direct Manufacturing suggests that it is still seen as a technology solution but in the future 3D printing will be a business solution. This is already happening: UPS's global hub in Louisville CloudDDM has opened up America's first 3D printing factory, which will manufacture on-demand prototypes and machine parts for corporate consumers. It has 100 3D printers but only one employee to oversee the whole facility per shift. Orders are fully integrated into UPS's shipping service giving them a huge time advantage to complete prints compared to other 3D printing services. This may be the way forward as the consumer focused 3D printing industry is declining. It might have been fun to print a plastic cup the first time. But there is really only just that much you can do with an affordable 3D printer from home. For consumers, the solution may be local stores where you order your custom product online and they print it for you. Then the choice is for you to pick it up or get it delivered by Uber. Both B2B and B2C shifts will have huge implications for manufacturing as well as the logistics industry. (Sources: Engineering, Fast Company, Fortune, T3, Linkedin)

Look Out For...

Talent as a differentiator: Today's manufacturing facilities boast ubiquitous automation technology with both workers and robots on production lines although there is little real interaction between them. The 4th industrial revolution will transform factories into single, connected networks. Workers may not be required on the floor; rather skilled workers will staff control or monitoring centers managing the production process and even work from home via mobile devices. Workers will also work in direct collaboration with robots, without any physical barriers. This means that the future manufacturing worker will need skills including: IT knowledge, data and information processing and analytics, ability to interact with modern interfaces (human-machine/human-robot), self-and time management, adaptability to change, and team working abilities. Already an estimated 10 million manufacturing jobs globally cannot be filled today due to a growing skills gap – expect talent to become a key differentiator in the industry in future. (Sources: VDI – The Association of German Engineers and ASME American Society of Mechanical Engineers, WEF)

Global supply chains, but with caveats: Rapidly developing economies have increasingly sophisticated manufacturing and innovation capabilities, contributing to continuing globalization of supply chains. Labor cost differentials still exist although previously popular low-cost manufacturing bases such as China have seen substantial wage increases, pushing companies towards countries such as Vietnam and Indonesia where differentials are still high. Connectivity, knowledge transfer, and affordable logistics, along with networking and partnering are allowing SMEs to think and operate globally. Public policies in many countries are also focused on building vibrant sectors in chosen industries, although in some cases infrastructure can hamper growth, e.g. in India. However, as with many comparative advantages between nations, advantages will be eroded over time including labor costs, access to technologies and potentially access to resources. Perhaps more important to the progress of globalization of supply chains are the increasing levels of nationalism and protectionism in many regions, as well as global geopolitical, economic and currency uncertainties. Keeping jobs and resources at home to sustain economic independence may in future outweigh the benefits of global sourcing. (Sources: WEF, DHL)

8. Beyond BRICS – All eyes on China

Is the BRICS finally broken? For many years there has been talk about how the world would be dominated by the BRICS – Brazil, Russia, India, China and South Africa – in the future. Years of rapid growth made these economic powerhouses, in particular China and India, recover quickly from the global recession, fuelling growth at a time when the developed world was struggling to keep afloat. Now the BRICS are hitting the news all for the wrong reasons. These once ‘hot’ emerging markets have been slowing down for quite some time now. Russia and Brazil are both in full-blown recessions; South Africa has lost its rank as Africa’s biggest economy to Nigeria and the country’s economic prospects do not look good. China is trying to fight off the slowdown, while India is struggling to push through reforms and build infrastructure that can help it reach its full potential. Investors worry that the BRICS crisis will spread to the rest of the world and, even worse, send the global economy spiraling into a new financial crisis. But all eyes are on China. Tensions are once again ratcheting up in South China Sea and the Chinese are playing their own economic and geopolitical power games. Expect the unexpected.

In Action!

Renewed tensions in South China Sea: Old disputes over territories in the East and South China Seas have been resumed with vigor, creating tensions between China and its neighbors including Brunei, Malaysia, Taiwan, Japan, South Korea, Vietnam, and the Philippines. Regional security and the global economy depend on an international rules-based order in the region which is home to critical trade routes. Yet China refuses to take part in a process to solve the issues through international laws and norms. In November 2015, President Obama again called on China to stop land reclamation activities in the area, including building airstrips and creating artificial islands.

The U.S. has recently upped its military presence in disputed regions, incurring challenges from China, e.g. two U.S. B-52 bombers were challenged despite not flying within 12 nautical miles of China's artificial islands. (Source: Chicago Tribune) Worldwide notice may be increasing – along with the risks of unplanned incidents that may escalate – but easy solutions remains elusive.

The slowdown: What happens when China sneezes? Well, everyone more or less gets a cold, in particular, in the emerging economies. Unlike Russia and Brazil, China is clearly not in recession, with a growth rate around 6.9% (not that everyone believes that number!) but it is has slowed down dramatically since its record growth years and the knock-on effect is starting to kick in. Those suffering most are many African countries that depend on exports to China as well as heavy investment from China. Many countries in the Asia-Pacific region, e.g. Australia, Japan, South Korea, Thailand and Malaysia, will also suffer severe impact with some already making contingency plans, e.g. Australia has entered a trade treaty with Japan and South Korea, while the Trans-Pacific Partnership (TPP), a trade agreement among twelve Pacific Rim countries, including the U.S. but not China, was signed in October 2015. China's slowdown will inevitably have negative consequences for Europe and the Americas but they are betting on a faster pace of recovery in Asia-Pacific to mitigate the consequences. (Sources: International Banker, CNN)

Look Out For...

From BRICS to IC – and? Has the BRICS finally lost its economic and geopolitical importance? Goldman Sachs, who coined the term, seems to think so. It quietly shut down it BRICS investment fund in October 2015, a fund that had dropped 88% since its peak in 2010. The BRICS is adapting to a new normal and so is the world. With Russia and Brazil in recession and South Africa overtaken by Nigeria, the question is whether China and India are now the only two countries relevant in the acronym when looking for future growth opportunities? Or should investors and businesses look in other directions, e.g. MIST (Mexico, Indonesia, South Korea, Turkey), N-11 or PEMI (Pakistan Egypt, Malaysia, Iran). While there are no risks that China and India, the biggest potential markets on Earth, will not be on the map of investors and businesses in the future, it may be time to broaden horizons. (Source: Quartz)

Asia – the new innovation hub: According to the 2015 Global Innovation 1000 study innovation spending is booming in China and India, and more R&D is now conducted in Asia than in North America or Europe. The Chinese government is opening up to global tech entrepreneurs and talent. Shanghai will be the first testing ground for new entrepreneurial residence and immigration policies, removing external and internal labor market restrictions. Singapore has its SPRING Singapore programme, offering financial assistance and advice to make it a sought after place for new, innovative companies. Recently, MIT announced that it is opening up "Innovation Node" in Hong Kong, a collaborative space helping faculty and students to speed up the transition from idea to market. (Sources: Linkedin, Strategy & Business, Mashable, TechInAsia)

9. Managing extreme mobility: The people challenge

We have frequently talked about mobile everything, from knowledge to capital to people. Now the latter is in stark focus, and will continue to be, not just because of recent events including mass migration and terrorist attacks, but because we are seeing just the tip of the iceberg. Increasingly mobile populations – motivated by both desire and necessity – will redefine societies, cultures, economies, governance, work and environments in coming decades. Despite the planet's rapidly growing population, many countries will see a decline in the working-age population entailing the need to import workers and/or resort to automation. Climate changes have generated the world's first climate asylum seeker, potentially the first of many millions – refugees for whom we have no guiding principles or support systems. In addition, a growing number of people are being forced from their homes by poverty, wars, famine and natural disasters. Urbanization is accelerating with profound implications for resources, notably food, water and energy. While the world is globalizing, in every continent nationalism and social fragmentation is rising, creating geopolitical and social tensions. These may intensify as the world becomes a cultural melting pot, home to much more diverse societies. The need to rethink how we manage human mobility in terms of governance, education, resources, legislation, cultural sensitivity and potential tensions is immediate.

In Action!

Moving towards an urbanized world: Urbanization is driving significant economic, social and environmental changes, in particular, in Asia and Africa. Cities now house over half the world's population, a number that will grow to about 5 billion by 2030, with over 2 billion people entering the middle class, the majority in developing markets, notably China. Research suggests that cities could inject up to US$ 30 trillion into the global economy by 2025. Urbanization is a key engine for knowledge creation, wealth and increased living standards. Yet, in many developing nations that is not necessarily the case today. Hand in hand with rapid urbanization comes failure of infrastructure, social instability, water crises, the spread of infectious diseases, poverty and high unemployment rates leading to criminal and inter-community violence. In some Latin American cities, death tolls can rival those found in war zones and NGOs are struggling to figure out how to deal with this new world of urban humanitarian work. (Source: United Nations Population Fund, McKinsey Insights & Publications, The Guardian, Zurich Insurance Group)

Protecting our turf: The forces of globalization, fragmentation, and democratization are colliding to make divides within and between societies more transparent than ever. Globalization, mass migration and terrorism are fueling the flames of nationalistic thinking. Fragmentation and power-standoffs are infiltrating global and regional institutions such as the EU and UN. The globalized world suddenly seems crowded and cruel. The idea of fencing out the world to protect self-interest is having a major comeback – from Donald Trump's proposed US-Mexican border fence to the 110-mile, 13-foot fence already being built by Hungary, to Chinese currency manipulation, to Putin's embargo on food imported from Western nations. It is all evidence of a growing mindset of "protect our own country and interests," a trend that could ultimately result in more conflicts and less cooperation and collaboration. (Sources: The Trumpet, Huffington Post)

Look Out For...

Millions of climate change refugees: While migration to Europe is mainly driven by poverty, conflicts and wars in the Middle East and Africa, climate change could soon see millions on the move. In the Pacific alone between 665,000 and 1.7 million people may be displaced by 2050 due to rising sea levels. Island countries, Kiribati and Tuvalu, may be completely gone in the next 50 years. Fiji has already moved citizens from low-lying coastal areas while the Maldives has built an island plus opened a sovereign wealth fund to buy land elsewhere if needed. This is just a tiny part of the problem: Tens of millions of people are displaced each year by natural disasters linked to climate change. By 2050, adding in 'slow impact' effects of climate change such as drought, climate change refugees could number 250 million according to UN reports. The issue in dealing with such mass migration is the gaping legal and institutional holes. The 1951 UN Refugee Convention defines a refugee as a person who "has a well-founded fear of persecution because of his/her race, religion, nationality, membership in a particular social group or political opinion" – not people fleeing climate change or natural disasters. Further, none of the international institutions has a mandate to address the challenge. The big question is therefore who will – and what legal frameworks can be put in place? (Sources: UN, International Business Times)

Managing in a multicultural world: New challenges face the leaders of organizations that will become increasing diverse and multicultural along with workforces. The rewards of new perspectives may be great, but cultural barriers can easily create misunderstandings due to different values, behaviors, approaches and ways of addressing problems. People tend to gravitate towards people like themselves and sub-groups form in workplaces, excluding other groups. While diversity becomes more important, so too does inclusion. Research has shown that inclusion is a positive driver of reduced turnover, greater altruism and team engagement; included employees also are more likely to share information and participate in decision-making. (Source: Center for Creative Leadership, HBR)

Not so fast! Rethinking freedom of movement: Terrorism, nationalism, cultural and economic insecurities in the face of mass migration, and geopolitical tensions, are forcing a rethink of freedom of movement rules and agreements. The Universal Declaration of Human Rights enshrines the principles of freedom of movement within a citizen's own country and the right to travel to and from it. Europe's Schengen agreement goes further, allowing citizens of 26 European countries equal international travel rights with no immigration or passport controls. Maybe not much longer: Even before the Paris terrorist attacks, new border checks between Schengen countries, e.g. Germany-Austria, to deal with mass migration were starting to undermine Schengen. Now France wants tighter controls at Schengen's borders even for its own citizens and sharing of airline passenger data. A further challenge to free movement is the sheer number of migrants, putting massive pressures on host governments' resources and fueling anti-migrant sentiment. This will only increase. An urgent, coordinated – not unilateral – rethink of migration and refugee frameworks is needed at global, regional and national levels.

10. Help wanted! Tackling income inequality

Even as affluence is growing around the world, so too is income inequality. The dramatic rise in tertiary education, female as well as male, means that the next generation of young adults is likely to be the most educated ever. Despite these positive developments, the world continues to struggle to reduce poverty and rising levels of income inequality within and across countries. Youth unemployment is easing somewhat, but the recovery is not universal and for many young people around the world finding work remains hard. Worldwide, the number of workers with permanent jobs is growing but many are increasingly employed on temporary/short-term contracts, without contracts, under own-account arrangements or in unpaid family jobs. In many countries no steady income also means lack of sufficient access to healthcare and education adding to the inequality in societies. It is critical that governments, businesses and other stakeholders ensure the current and future workforce possesses the skills needed. Economic and social development depends on it; the ability for individuals to reach their full potential depends on it – think again of the disenfranchised youth who need to be brought into the workforce, both for their own and broader society's benefit.

In Action!

The growing wealth gap: Rising income inequality around the world is being recognized as one of the key challenges of our time. Contrary to popular belief, it is just as much a problem of the developed as the developing world, where the poorest half the population controls less than 10% of the wealth. According to OECD, the gap between rich and poor is at record highs in most OECD countries. Today, the richest 10% of the OECD population have almost 10 times the income of the poorest 10% compared to 7 times in the 1980s. Critical issues to address to promote a more equal world include: Improved education, social welfare policy, job creation/redistribution, tax policy and workforce development. In its 2015 trends, WEF suggested that of the world's seven regions, Asia (25%) would be the most affected by deepening income inequality in the next 12-18 months, then North America (18%), Latin America (18%), Middle East and North Africa (14%), Sub-Saharan Africa (13%) and Europe (12%). (Source: World Economic Forum)

The environmental impact of income inequality: Health and social problems are a well-known side effect of income inequality. It is also recognized that environmental degradation contributes to income inequality in societies. A less known side effect is that income inequality contributes to environmental degradation. The topic is not as well explored as the correlation between health and social problems. However, a considerable amount of empirical research suggests that the higher the income inequality the worse the ecological footprint, e.g. environmental indicators such as waste production, meat and water consumption and biodiversity loss. Maybe paying a living wage could be a first step in decreasing both income inequality and reducing environmental degradation. (Sources: UN, Shaping Tomorrow's World)

Look Out For...

Education becomes everyone's responsibility: Who should be responsible for making sure that not only young people but also other unemployed are ready to (re)enter the workforce? This mammoth task requires more than our educational institutions. Governments, NGOs, businesses and other institutions need to rethink their roles in educating for the future. Many businesses are already doing so. Starbucks offers employees full tuition at Arizona State University's online program, allowing them to earn a bachelor's degree for free, helping underprivileged young workers to afford the education they need to succeed. Since 2008, financial services provider Barclays has worked with UNICEF to reduce youth unemployment by equipping disadvantaged young people globally with the skills required to set up their own business or to find employment through the Building Young Futures programme. For more examples click here.

The non-permanent contract world: The nature of work is changing, redefining how, where and how much we work. Some workers choose freelance or non-permanent contract work to obtain more flexible, on-demand work arrangements but for many it is not by choice. The ILO reveals that more than 60% of the world's workers lack an employment contract and even among wage and salaried workers less than 42% have a permanent contract, e.g. in India, China and some African countries over 90% of workers lack a permanent contract. In some cases non-permanent work can help get people a foothold in the job market. However, in most cases this type of employment is associated with inequality and poverty – and open to exploitation, e.g. unpaid internships for young people desperate for experience, and online piece work pushing wage levels to ridiculously low rates. As these types of employment relationships grow governments need to recognize the importance of protecting workers through relevant labor regulation.

Food for thought: On the horizon

Every year we make choices about which trends to feature in our end of year briefing: Generally these are the ones that organizations should be seeing starting to play out – and hopefully getting ahead of in the short term such as shifts in consumer behavior and digital disruption. There are other trends which may be less certain, and/or will only start to show a real impact in the medium to longer terms. However, it takes time to build capabilities to deal with change and organizations need to start addressing some of these longer-term trends now if they are to be ready to lead the next waves of change. So here are some teasers on longer-term trends as food for thought:

- **Augmented humanity:** May be coming sooner than we think, want, and/or will have regulatory and ethical frameworks to manage. Scientists and technologists are already working hard on humanizing machines, e.g. through development of artificial intelligence, but there is also ongoing work on digitizing humans, e.g. harnessing intelligence through thought control. Read our recent briefing on Augmented Reality: People 2.0 for more on augmenting our minds, bodies and workplaces.
- **Grey power:** Forget about technology for a moment. Why invent something new when we are not using the resources we already have? The world's population is ageing, and represents significant purchasing power as well as a vast source of wisdom, knowledge and experience, one that we frequently ignore as people move into retirement. But retirements are lasting decades as health and longevity improve – and need to be financed. How do we tap into this grey power – and take advantage of the wisdom around us?
- **New living spaces – oceans and space:** For some, the planet is becoming too crowded and competitive in terms of resources. Technology advances – accompanied by creativity and imagination – are making thoughts of colonizing previously inaccessible parts of the Earth such as the oceans, and even space, more feasible. Some are already working on it: The Seasteading Institute plans to build a floating city, while scientists are pushing forward on the concept of a space elevator, first suggested in 1895 by Konstantin Tsiolkovsky.
- **Where next for global governance/leadership?** In a world facing massive global challenges from climate change to income inequality, failed states and increasing geopolitical, social and religious tensions, governance is critical but failing to deliver solutions. International institutions need reform, and nations need new forms of leadership that go beyond short political tenures to address shared global issues. Trust needs to be built within and between communities and nations. The question is how – and who will take the lead?
- **Infrastructure in focus:** Trillions of dollars' worth of infrastructure in the developed world needs replacing, notably in the U.S., while in rapidly developing economies such as India, much needs to be built to accommodate growing and urbanizing populations and to facilitate economic growth. Expect infrastructure to become a key area of focus, but it will not be without challenges, in particular around security concerns, including cyber-security, openness to attack (terrorist or otherwise), and who will own critical parts of it as some governments move from state-owned to private-owned/operated infrastructure.

Look out for more inspirational insights to drive strategies and action in 2016!

Happy holidays and New Year!