A world in flux
The trends reshaping government

Better balance
Gender and leadership in the public sector

Innovation imperative
Improving defense procurement

Access for all
Meeting the rising demand for quality education
How can more young people get a high-quality education?

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Welcome to the latest edition of Citizen Today, EY’s magazine for government and the public sector.

A good education has long been seen as an essential foundation for life as a fulfilled, productive citizen. In today’s complex world, skills that equip our young people for life and work have never been more important. But in most places, education systems are under pressure. Funding constraints, combined with increased demands, mean that many countries do not have enough high-quality school and university places.

We are delighted to welcome Karan Khemka and Rob Lytle, from the education practice at Parthenon-EY, as guest editors of this issue. Parthenon-EY works with organizations from the public and private sectors, and provides some of the latest original thinking on education issues. On page 6, Karan and Rob set the scene for our collection of articles on education, which highlights some of the innovations in mature and emerging markets that are helping to increase access to high-quality education around the world.

The rise of transnational education is reshaping the university sector. Demand for English-language degrees is increasing across emerging markets, but how will it be met if anti-immigration sentiment in countries such as the UK and US means tighter study visa restrictions? On page 8, Amit Garga explores the market dynamics.

Schools are under pressure from parents and employers to drive up standards. Matthew Robb (page 12) assesses how well structural changes to schools’ organization and accountability have translated into better performance in the classroom.

On page 16, we look at vocational education. Lucille Halloran tells the story of how a plan to encourage private providers to expand the sector backfired in Australia, and draws some lessons for better management of public-private ventures in education.

On page 20, Haven Ladd puts the university sector in the US, Australia and UK under the spotlight. He assesses what the responses in these countries to rapid change mean for the world’s higher education institutions.

In other features, we look beyond education. Last year proved tumultuous for world affairs. This year promises to be no different, with elections in France and Germany among the likely top talking points in government ministries and agencies around the world. On page 25, we look at some of the underlying trends behind the headlines that will help shape government in 2017 and beyond.

Ahead of the publication of a major EY study on women’s representation in key industries, we present new research into the careers of women in government and the public sector – and explore attitudes to gender workplace issues among men and women (page 28).

It’s an unpredictable world for defense organizations, with security threats changing and budgets fluid. On page 32, Paul Donato presents four core principles that can bring innovation and control to procurement projects.

As always, if you have any comments or ideas for future features, don’t hesitate to get in touch.
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In this edition of Citizen Today, we devote much of our space to education. Here, our guest editors Karan Khemka and Rob Lytle map the terrain of a global education landscape that is marked by a gap between the demand for high-quality learning and governments’ ability to supply it.

There has been significant progress toward meeting the UN’s Sustainable Development Goals (SDGs) in education. However, despite the steps toward universal access throughout the 2000s, around 60 million children remain out of primary school and progress has slowed for much of the past decade, in part because of population growth.

Despite a building boom, there still aren’t enough school places. Out-of-school children are disproportionately from the most vulnerable and hard-to-reach populations: those in rural areas, girls, children with special needs and those affected by conflict. And the quality of education is inadequate: fully 250 million children in school will leave without basic literacy or numeracy skills.

The global population boom coupled with a growing middle class has driven a tremendous growth in demand for high-quality education as well as the increasing ability and willingness to pay for it. Governments have been unable to keep up with this unprecedented demand. For example, many public higher education systems are oversubscribed by 20%-50%.

These factors have combined to drive the participation of the private sector as a critical complement to public education across emerging markets. The growth of private sector provision over the last 10 years has outpaced that of the public sector in both K-12 (primary and secondary education) and higher education in most of the 100 or so emerging markets we have studied. Traditional investors have noticed the great potential of private education. Mergers and acquisitions in education in emerging education markets have increased over six times since 2000, with the value of those deals having increased by 5,000%.

Private education has the potential to expand access, drive quality and relevance, and improve innovation. Private investors and operators are more likely to explore new markets where demand is strong, ensure strong outcomes in order to continue to attract students, and seek out inventive ways to compete, all of which can contribute to more high-quality options for families across emerging markets.
Of course, private provision is not without risks, and there are unfortunately a handful of poor-quality providers in both developed and emerging markets. However, risks can be mitigated through thoughtful oversight by policymakers providing transparent regulatory frameworks that encourage private sector participation while ensuring quality and accountability.

This issue of Citizen Today highlights some education initiatives that are reshaping the way the sector works, including semi-autonomous state schools, transnational education and vocational education serving marginalized populations. These examples shine a light on innovations in both developed and emerging markets that can help to increase access to high quality education around the world.

The education SDGs are achievable. To meet them, it is critical that both private and public participants engage to ensure all children receive the education they deserve.

We hope you enjoy the collection of features that follow.
In recent years, transnational education – the provision of degrees to foreign students – has gone from a niche sector to a US$25 billion-plus opportunity. Since 2000, the number of students studying abroad has doubled to more than 4 million. This increase has been driven by rising incomes in emerging economies and a growing appetite among people in these areas for Western (typically Anglophone) degrees and the English-language skills they confer. Ambitious people in emerging economies believe that such an education will give them a head start in competitive job markets. This demand has been compounded by the shortage of quality higher education institutions in many emerging countries. In China, for example, only two universities are ranked in the global top 100.
A degree from a prestigious English-language university is increasingly sought after among the rising middle classes of the emerging world. Amit Garga assesses the implications for higher education institutions and governments, and explores how tighter study visa restrictions in some English-speaking countries may affect the market dynamics.

Western degrees from Anglophone countries remain the preferred choice for international students, and the US, UK and Australia are the top destinations. Universities in these countries, increasingly facing budget cuts, have welcomed more international students as a way to both diversify their student population and bring in additional revenue. Foreign students tend to pay a fee premium. Another benefit for these institutions is that increased international student populations can contribute to enhanced rankings and reputation. For example, most mainstream rankings include a measure of diversity of student populations. Higher international student numbers can also lead to better global brand recognition, a more cosmopolitan alumni network, and international work and study opportunities for students and professors – all of which help to improve the university’s reputation.

**College industry**

International student numbers are rising, as are the number of universities trying to attract them. This results in an increasingly competitive market. Services have arisen to help universities compete for international students. These include study abroad agents and pathway providers. Universities are also setting up branch campuses and satellites abroad to diversify their offering to students. Study abroad agents are counselors to students who advise them on where to apply internationally and how to submit a successful application. Agents are commonly cited in surveys as the most important influencer of international students’ decisions about university. For families with no experience of the application process and limited English skills, they are important resources. For example, around half of Chinese students get support from an agent. University engagement with these networks is crucial to increasing and sustaining international student enrollments. Most agents are young, with less than three years of total work experience, and turnover in the
career is also high, with around 40% of all agents having less than one year in their position. Moreover, most agents will never have visited the destination countries they are describing to families. Thus, it is critical that universities provide adequate training and support to agents.

Best practices for agent engagement include frequent visits from university officials; abundant materials in the local language; and formal, regular training sessions. Universities can also think strategically about their message and how the agent can best help the student to imagine themselves in a new country. For example, with huge interest from China in US basketball, a well-trained agent may be able to describe the university’s local team, providing a key connection point for the student with a location of which they may never have otherwise heard.

Pathway providers also supplement the international student experience. These programs offer students a year-long prep course taught in the destination country, offering intensive English and study skills sessions. The programs provide students with the opportunity to matriculate at higher-ranked universities and ensure they are ready for a full-time English degree. For universities, they offer a wider pipeline of students who will have a greater chance of being successful in their degree programs.

While a variety of strategies are helpful for universities to increase enrollments at home, they also have the option to set up branch campuses abroad. Foreign branch campuses are outposts of a university set up in a foreign country that allow students to obtain the same degree but stay closer to home. Therefore, they allow universities to broaden their addressable student population. Campuses have been set up throughout the Middle East and Asia, with the most campuses in the UAE. These campuses may allow students to circumvent challenging visa regimes, while also receiving a foreign degree at a lower cost and with greater convenience. The most popular foreign branch campuses also offer students the opportunity to spend a semester or year at the home campus.

Many governments have been eager to support the setup of branch campuses, in bids to enhance their country’s or city’s reputation, entice talent, contribute to local human capital development, and improve the performance of their domestic university sector. Countries including UAE, Qatar, China and Singapore have provided financial and operational backing for top quality institutions. Other education regulators have enabled straightforward market entry for foreign universities, and some have established specialized free zones for educational institutions.

Migration laws

The political mood in countries such as the US and UK has heightened the possibility of tighter immigration rules and study visa restrictions. What effect might this have on the global market for English language study?

Despite ongoing shifts in immigration policy in key western destination countries, the number of students seeking a foreign degree is set to keep growing. International student growth has proven to be resilient throughout political cycles. While numbers have at times decreased in specific destination countries – such as the US after stricter student visa laws came into force after the 9/11 terror attacks – the overall number of international students continues to grow, as students simply shift to other destinations.

Countries with English-speaking institutions are primed to develop into alternative hubs for international students. For example, the UAE, within eight hours’ flight of two-thirds of the world’s population, and with around 50 existing branch campuses, is well placed to compete for these students.

“Universities in continental Europe have begun to offer English-language degrees and are gaining market share.”
It is likely that, in the next five years, English-speaking countries with friendlier immigration attitudes, such as Canada, New Zealand and Ireland, will attract more international students. Universities in continental Europe have also begun to offer English-language degree programs to compete with Anglophone universities and are gaining share. Though some suggest online programs may disrupt international education, these programs’ perception among recruiters in emerging markets remains poor, and students who earn a foreign online degree do not yet enjoy the same prospects as those who study abroad. With few exceptions, such as the University of Nicosia, undergraduate online models have enjoyed limited success. However, models that use hybrid programs, particularly at the post-graduate level, have gained traction. These models use some online modules, while also having centers for students to congregate and network. Innovative uses of technology are likely to become even more important as the sector grows and diversifies, and as online degrees become more mainstream.

International student growth is expected to remain one of the key opportunities in higher education. While geopolitical issues may affect the choices on offer, overall demand is expected to grow as wealth increases in emerging markets. Universities and services that can provide solutions to support students and families have ample opportunity to thrive.

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As they contemplate a labor market of the future characterized by robotics and global competition, more people believe that without a good education, their children will find it difficult to find a good job. Understanding among policy makers about the impact of education on wage inequality is deepening. And, with more data available on school performance — such as the influential OECD Programme for International Student Assessment (PISA) — people can now judge more clearly how well their children are being educated.

So across the world, governments are under increasing pressure to drive up education standards. At the same time, public budgets are under great pressure. The usual levers — teacher training, curriculum reform, investment in early years — have a very limited track record of producing lasting improvement. Therefore, among governments at national, state and local levels, the search is on to identify fresh, more efficient, ways to improve standards.

One path ahead is to give schools more freedom to find their own solutions by creating semi-autonomous state schools (SASS). The record on these is patchy, but there are positive signs. Making them work requires four things: larger school groups, more clearly defined operating models, better professional governance and an accountability framework that balances school autonomy with public accountability.

Market structure

Government interventions in school policy typically fall into two broad categories. The first covers the most direct interventions, designed to change how classrooms operate, such as reforms to the curriculum, pedagogy and teacher training. The vast majority of government interventions fall into this category. The second encompasses structural interventions, focused on the organization of the education system, such as market reforms and accountability models.
Politically, classroom-based interventions tend to be easier. They look like they should work and voters can quickly make the connection between actions and campaign promises to “fix schools.” In some cases, such as Singapore’s approach to teacher recruitment and mathematics pedagogy, they can be successful. But the correlation between spending, interventions and outcomes remains frustratingly weak.

Accordingly, some governments have approached the problem through more structural interventions. Specifically, they are trying to create market-like structures in which universal access is combined with autonomy, accountability and competition. Within this market-like structure, SASS are given significant control over curriculum, labor relations and pedagogy. In England, these SASS are called academies or free schools; in Sweden, they are voucher schools or free schools; and in the US, they are charters. In each case the government provides the funding, but the school is owned and operated by a non-government entity.

To date, the evidence for SASS is mixed. In particular, the share of state schools that are SASS is too low in most places, and the models are too diverse to make effective generalizations. But some lessons learned from England, Sweden and the US are instructive.

**England: chain reaction**

SASS in England have been piloted since 1996, but since 2010 the share of academies and free schools grew to the highest level of any country. Nearly two-thirds of all secondary schools and almost one-fifth of primary schools have converted from local authority control to academies. Although the Government stepped back from mandatory academization, the vision is clearly for the vast majority of schools to be academies and free schools by 2022.

The data on outcomes for pupils in academies versus traditional state schools is mixed. In some locations, free schools and academies drive better outcomes – notably in inner London where multi-academy trusts (MATs) are achieving significantly above average
results in their schools. However, the performance of other MATs is not as strong and there have been some high-profile failures, including some of the larger MATs, which grew too quickly.

In our 2015 paper entitled *Education in chains* (published with the think tank Reform), we argued that the successes were down to chains of academies (MATs) developing clearly defined operating models that they implemented across multiple schools achieving economies of scale and consistency of practice. The failures were due to poor governance and the lack of a clear operating model, which condemned struggling schools to fall into poor performance. However, 77% of academies are in MATs of fewer than five schools. These cannot invest in their operating models, lack economies of scale and rely on a single outstanding individual (an executive principal) to lead across the schools. Unsurprisingly, without a common operating model, variability across schools is high.

**Sweden: early movers**

Sweden is perhaps the best-known example of independent state schools. A voucher system was introduced in the early 1990s, whereby parents could elect to send their children to privately operated free schools, or *friskolor*. In Sweden, unlike in England and most of the US, independent school operators are allowed to make a profit – though they are not allowed to charge parents “top up” fees.

Sweden’s education system was heralded by educationalists and policy makers across the globe as the country saw strong performance in pupil results in the PISA rankings through to 2000. Since then, Sweden lost its position at the top of the rankings, falling continuously and dramatically from 2000 to 2012. These movements may have been explained by the voucher school reforms. But the share of children in these schools is simply too low, at around 15%, to be a major factor. In addition, OECD research found that the decline in standards in Sweden was across all schools, not just free schools. Other OECD research has highlighted poor pay and job attractiveness for teachers, the lack of formal accountability and immigration as other reasons for the decline.

More research on the effect of free schools has found not only that their students do better than those in municipal schools on average, but that a 10% increase in the number of students in free schools raises standards in competing municipal schools by 2%. Furthermore, the National Education Agency reports that free schools are more efficient than municipal schools, and that municipal schools are more efficient when exposed to competition.

**US: a new charter mark?**

Charter schools have been in operation in the US for decades. However, their share of all state schools has been relatively modest, due largely to caps imposed by state governments on the number of charter schools that can be opened and operated each year. In 1999, approximately 300,000 children were being educated in charter schools across the country, with that number growing to 1.6 million by 2009. This still represented just 3.3% of all enrollments across the country. Even today, less than 8% of enrollments in state schools in the US are in charter schools.

However, some significant numbers can be found in urban areas. For example, in New Orleans, 95% of enrollments are in charter schools, in San Antonio, Philadelphia and Indianapolis the figure hovers between 30% and 35%, and in Detroit the number of enrollments is greater than 50%.

It is extremely difficult to generalize about the performance of charter schools in the US. The model varies by state, so the level of control that the charter organization has over the schools varies. Even as early as 2005, a RAND Corporation report into schools run by the Edison education management organization found that standards in Edison charter schools rose according to the fidelity with which the schools implemented the Edison model, and that this took between three and five years to really bear fruit. It recommended that school districts “give Edison full authority to...”
implement its design.”

According to the 2015 Urban Charter School Study, black students enrolled in urban charters typically gain the equivalent of 26 additional days of learning in reading and 36 additional days of learning in math compared with their counterparts in traditional state schools, while low income students gain an additional 17 days in reading and 24 in math.

For the highest performing operators – those part of the Lumicore Group – the results can be even greater. Pupils at Match Education in Boston, where there are 1200 enrollments, score 32% higher on state reading tests, compared with their traditional state school peers, and 35% higher on state math tests. Bellwether Education, a leading not-for-profit consultancy dedicated to improving school outcomes, looked at dozens of urban school districts across the US and found that the vast majority of pupils in these schools gained a significant number of learning days, helping to close the achievement gap. However, charter schools in Las Vegas show a reduced number of average “days of learning” in both English and math, compared with students in traditional school districts.

**Intervening for impact**

So, for governments looking to intervene with impact in the school system, what conclusions can be reached? The evidence from all three countries is positive on balance, but mixed. Case examples of significantly stronger performance promise much, but the system-wide benefits are patchy or non-existent. However, there are three common features present where performance is strongest.

First, an effective contracting and accountability structure. As government moves away from the role of school operator to the role of school watchdog, policy makers need to consider the appropriate accountability regime to ensure standards are maintained. In particular, how long should SASS operators be given to improve standards? Too short a time could encourage short-term and unsustainable actions, but too long leaves students in underperforming schools. Options for managing this could range from “sticks” such as school inspections and transparent school rankings, to “carrots” such as additional capital funding for school operators that are able to demonstrate sustained raising standards for pupils. What are the performance indicators that government should monitor to ensure standards are being met for pupils? At what point does government intervene? How do schools exit underperforming SASS chains? These are the types of questions that will need to be considered alongside the structural reform.

Second, a strong scale and operating model. SASS work best where they create clearly defined and well-implemented operating models at scale. These models should include five elements: curriculum and timetable, pedagogy and assessment, labor model, management structure and approach, and the financial model. Policy makers should therefore consider how to inspect and assess the operating models that school groups use and how to encourage the growth of MATs at a sustainable rate. Critically, this requires inspectors to understand not just teaching and learning, but to be able to assess the quality of leadership and management in a corporate context.

And third, effective school governance. Most schools have some form of local governance or accountability to governing bodies or local democratic representatives. Policy makers need to provide guidance on how their governance reflects the autonomy of the SASS and the need for them to be given full autonomy to implement their operating models while retaining some local input. This could mean that school groups have a single executive board that is responsible for all schools within a group, with individual school-level parent boards that ensure a local parent accountability check. Whatever the governance structure, government will need to provide guidance and a way to audit governance to ensure that fiduciary and other duties are being carried out properly. 

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The world of work is changing and fast. Robotic process automation and artificial intelligence are replacing jobs. This is not just happening to transport workers and administrators but also accountants, lawyers and medical staff. Individuals, industry and governments need to be agile in order to provide opportunities for workers to retrain and move into the roles that will emerge in the new economies. Failure to train and retrain workers will result in widespread joblessness and major social dislocation.

Vocational education and training (VET) is a crucial component of an overall education ecosystem. VET helps people develop practical skills for current and future jobs. It supports businesses by producing workers with specific skills and competencies, and contributes to national economies by addressing skills gaps and promoting economic growth.

Having traditionally sat between secondary education and the universities, VET is increasingly occupying space in both. University graduates look to VET to more adequately equip them for work. Employers and industry associations are increasing their participation in vocational training in order to fast track and target skills that are in demand.

VET’s pivotal role in facilitating the reallocation of labor in the changing world of work, and how it should be funded, is becoming a focus for governments around the world. It is clear that demand is outstripping the capacity for governments alone to provide and fund services. Individuals, businesses and government all benefit from skills training. So it is reasonable to argue that all should contribute. Therefore, attention is turning to a co-sourced funding model where the costs are shared between government, industry and the individual – with government providing loan funding and also carrying the risk. However, hard lessons learned in Australia should echo around the world.

Not sufficiently vetted

Eight years ago, the Vocational Education and Training Fee-Higher Education Loan Program (VET FEE-HELP) was launched in Australia. The program intended to provide equitable access to VET qualifications by offering income contingent loans to students and directly funding the private sector to deliver VET courses. Funded by the Commonwealth (federal) Government, the program was designed
Funding pressures are forcing governments to look to the private sector for help with providing vocational education and training. But such schemes don’t always go to plan. Lucille Halloran explores how a program to encourage private provision in Australia went badly wrong for learners and taxpayers, and sets out what lessons policymakers can draw from the mistakes that were made.

VET FEE-HELP was introduced in 2009 by the Australian Government to provide income contingent loans, with no upfront fees, for students enrolling in a VET course with links that allowed articulation to an undergraduate-level university course, and hence were quality assured by the university.

Initial take-up was slow. Between 2009 and 2012, around 55,000 students were accessing the scheme. During this period, the total advances for VET FEE-HELP loans were estimated at AUD673 million, with loans for students studying with private sector VET providers accounting for around two-thirds of this money.

In 2012, the scheme was opened up more broadly to VET at the diploma level and above, and the requirement for a link to university level courses was removed. The logic was that not all VET graduates desired articulation. As part of this expansion, students were able to use the scheme to access VET courses supplied by private education providers who did not have links to higher education institutions.

In a typical scenario, a private sector VET provider, who was free to set their course prices, would be paid by the government upfront once a student had been enrolled in a course eligible for VET FEE-HELP. The student would pay nothing for this course upfront, but would subsequently repay the loan incrementally through the taxation system once their income exceeded a threshold (currently around AUD54,000).

From 2013, enrollments in VET FEE-HELP courses expanded dramatically. This in turn contributed to the large growth of private providers, with some increasing their student cohort and government funding from a low base in a very short period of time. At the same time, TAFE’s market share declined dramatically.

In 2015, there were around 272,000 students accessing the program, representing a more than 50-fold increase in student numbers from 2009. And from 2009 to 2015, the total advances for income contingent loans for VET FEE-HELP were around AUD6 billion, with loans to students studying with private sector providers accounting for approximately 80% of this money.

VET FEE-HELP has delivered some benefits.

“...The government had created a powerful incentive for the private sector to enroll students in order to access government payments.”
Overall, there have been greater enrollments in VET courses and the growth of the sector has increased competition between providers. Arguably, the sector has been more agile in responding to changing consumer and economic needs. Consumer choice has also expanded, providing a greater variety of study opportunities. These have included more flexible courses, such as part-time and intensive study options, and an increased variety of delivery options, including online learning.

However, the costs of the program expanded dramatically in a short period and there was little evidence of related improvement in student engagement, progression and completion. Before significant reforms were implemented between April 2015 and January 2016, private providers were receiving tens of millions of dollars in funding under VET FEE-HELP with many reporting only single-digit completion rates.

Private providers were able to set their own prices and were not held to account over their costs, the quality of education they provided or their enrollment practices. Payment was simply provided once a student was enrolled in a course and was not dependent on measures of student engagement, progression or completion.

The program's design gave the administering government department limited powers to regulate providers' behavior. So it was difficult to withhold funds for providers with a poor track record. Essentially, private providers were receiving substantial amounts of government money with little responsibility for its repayment.

In effect, the Government had created a powerful incentive for the private sector to enroll students in order to access government payments. Poor practices emerged: providers often incentivized students to sign up by offering enrollment bonuses such as cash, vouchers, mobile devices or laptops.

A thriving broker market developed, in which agents were being paid commission by VET providers to recruit students. There were reports of high-pressure sales tactics to promote courses, with vulnerable people targeted through door-knocking in poorer areas. Some providers and brokers went even further and were marketing some courses as “free” or “government funded” to encourage enrollments.

Some individuals did not fully understand the conditions of the loan they had accepted, and in some cases did not even realize that they had been signed up to courses for which they were incurring a debt. This was compounded as the government department administering the loans was found not to be providing easily accessible information to students, particularly around the cost, quality and reputation of VET FEE-HELP providers.

Through VET FEE-HELP, the Government was largely funding a poorly functioning market and providing little regulatory capacity. Although the private sector is, in theory, a more cost-effective provider, course costs for students through private providers in an unregulated price market can be much higher than those offered through a tightly regulated public sector.

Under VET FEE-HELP, average course fees increased from AUD4,060 in 2009 to AUD13,991 in 2015. During this period, courses delivered by the private VET providers were in some cases up to five times higher for the student than publicly delivered alternatives for the same qualification.

There was little indication that price deterred enrollments because income contingent loans substantially reduced students' susceptibility to price sensitivity for courses. In other words, students are less concerned about the total – and future – cost of a course when they don't have to pay for it immediately.

There were also significant shortcomings with the financial modeling that underpinned the program. Evidence suggests that many of the income contingent loans financing these courses are unlikely to be repaid. Research from the Grattan Institute, a non-partisan public policy think tank, found that approximately 40% of students who complete a diploma through a VET FEE-HELP loan will not repay their debt because their earnings are likely to remain under the repayment threshold.

Finally, loop holes were exploited that could not be closed due to the lack of regulatory options. Students could access VET FEE-HELP for lower level qualifications that were not the target of the funding scheme. To enable this, providers built the lower level qualification (certificate) into a longer higher qualification (diploma), which was eligible for VET FEE-HELP. For example, a Certificate IV in Project Management was embedded into a Diploma of Project Management, meaning that a student could enroll in a Diploma level course, and withdraw once they completed the requirements for a Certificate IV – in effect accessing VET FEE-HELP for a qualification for which funding was not intended.

Learning the lessons

The program, designed with noble intentions, was fatally undermined by flaws in design and implementation that created the conditions for a range of dubious practices among private sector providers, many of whom were offering education services of questionable quality. This in turn
contributed to ballooning publicly funded student debt, some of which may never be repaid. The sector’s reputation is damaged and a lot of work to rebuild trust lies ahead.

So, what are the key lessons for governments that are planning to incentivize the private sector to deliver VET through government-funded income-contingent loans?

First, treat the design of policy as critical. Pursuing a primary goal, for example to increase the size of the VET sector, may be the overarching purpose, but this should be balanced with supporting goals, such as high student engagement rates and increasing measures of teacher performance. This helps to ensure that the private sector does not pursue short-term revenue and profit at the expense of student experience. While VET FEE-HELP partly achieved its primary goal of increasing participation in VET, it arguably did so at the expense of other important indicators of education quality, such as student outcomes, value for money and sustainability. Therefore, when considering future programs to incentivize the private sector, a broad range of goals should be developed, measured and pursued. This may help balance the incentives of private providers, who in the absence of a balanced set of goals, may tend to pursue financial goals, creating a set of unintended consequences.

Second, prioritize measurement and compliance in order to guide the effective implementation and administration of privatization programs. VET FEE-HELP suffered because it was a publicly funded privatization program with limited measurement and compliance oversight from the administering government department. Having effective measures to support primary and secondary goals, and running effective compliance checks on providers, is essential to foster the effective use of public money. This is particularly important when government is asking the private sector to help grow the education sector but wants to do so in a way that does not incentivize profit at the expense of student outcomes. Balance should be achieved, so that innovation in the private sector is not stifled in the effort to prevent providers from exploiting the system. The administering department should also be empowered through legislation to respond quickly when things go wrong. This can be through an independent watchdog, or a well-resourced team to respond to individual complaints, both of which the VET FEE-HELP program did not have in place.

Despite the VET FEE-HELP experience, there is merit in government support for a competitive vocational education and training market. With careful design that prioritizes student outcomes and effective use of public money, such programs can play a part in preparing for life in tomorrow’s much-changed workplace.

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GLOBAL opportunities LOCAL strategies
How can universities thrive in the ever changing and more competitive world of higher education? Haven Ladd looks for answers in three of the sector’s most significant markets

The last year has seen tumultuous change across the world, with people registering noisy protests through the ballot box from the Philippines via Europe to the United States. The winds of change are also being felt in the more refined world of higher education. The sector is in a period of rapid transformation.

In most developed nations, universities are desperately competing for resources, students and global impact. In many developing nations, the demand for a quality education far exceeds supply. While higher education institutions across the globe are facing unprecedented challenges to their business models, the most successful of them will not only survive but thrive during this period of change.

To find out what it takes to succeed in these conditions, we can look at three of the sector’s larger markets: the United States, the United Kingdom and Australia. The higher education landscape has evolved differently in each of these markets. But across all three countries, institutions are united by the struggle to integrate interdependent sources of capital. (See side bar)

US: after the golden age

Since the Great Recession, a common refrain heard throughout higher education in the US is that hundreds of colleges and universities are at risk of going out of business. The reality, of course, is that few have closed – about five a year, on average – lulling many academic leaders into believing that they are somewhat immune from the disruptive forces of change sweeping the economy.

It would be a mistake, however, for college and university officials to think that this period of financial distress and the public’s unease about the value of higher education...
is in any way temporary. The golden era of higher education—a time when many of today’s higher education leaders came of age—is over.

Colleges and universities have been rewarded with two successful periods in their recent history. The first, which lasted from 1968 to 1990, witnessed the Cold War and Baby Boomers usher in unprecedented growth in higher education spending and enrollments. The second era, from 1991 to 2008, saw technology transform teaching, learning and research as well as increased demand for a degree from students of all ages.

Higher education is now firmly situated in a third era, which began in 2009. It is marked by diminished state and federal spending, lagging personal incomes of college-going families, and increased demand on colleges to prepare graduates both for a career and life as contributing citizens to society. But this new era doesn’t necessarily portend the end of the road for many colleges, as some pundits argue. Rather, it demands a significant shift in strategy for institutions around their uses of capital.

We see two paths ahead for universities. The first lies in deeper partnerships across institutions to maximize their strengths. The second is around tighter alignment across sources of capital.

In order to grow and thrive, successful US universities must be single-minded in their focus on mission, and most importantly in using that focus to align disparate sources of capital behind a common goal. Yet many university mission statements are broad to a fault and risk significant mission creep. Institutions that are able to hone in on the true objective behind their mission statement, and the implications of that objective on strategic planning, decision making and capital allocation, are better equipped to succeed.

From capital infrastructure investments to decisions around online learning opportunities, from the structure of faculty incentive programs to alignment of student support services, successful institutions are able to prioritize critical decisions based on an overarching, actionable goal. Prioritization and alignment of institutional capital, supported by clear self-awareness of strengths and weaknesses, enables clear direction and successful outcomes.

**Australia: creative response as reality bites**

Education is one of Australia’s leading exports, representing an AUS20.3 billion dollar industry in 2015-16. Its proximity to Asia, coupled with the English speaking, western-style university system makes it a destination of choice for the region. Over the years, Australia has ridden a double wave of increased international and domestic demand for higher education.

More recently, however, with tightening budgets and increased international competition, financial pressures have
on as they always have, while attempting to cut costs. Many, however, are taking the opportunity to transform their business model by placing students at its center. Others have been rethinking the role they play in society and assessing how they can stay relevant in the face of disruptive forces. The results have been fascinating.

For example, the University of Technology in Sydney has created a new Faculty of Transdisciplinary Studies that offers degrees based on a real-world problem, not a faculty curriculum. This allows students to work with industries and communities to frame a challenge and draw upon units of study throughout the university.

Across town, a new entrepreneur school will be established by the state government in partnership with universities and TAFE (Technical and Further Education) to explore new technologies and foster start-ups. Initially receiving AU$25 million in funding, the project is modeled on Sweden’s renowned Stockholm School of Entrepreneurship.

Meanwhile, Deakin University in Victoria has invested in artificial intelligence through IBM’s Watson technology as a means to drive efficiency and quality with stunning success. By the end of the pilot, the students were unable to identify the support as a machine, and rated its service and accuracy higher than its human counterparts.

However, these creative journeys still face strong headwinds. Universities find it difficult to drive tangible value in short periods of time and many are dealing with legacy systems that require large outlays of capital in order to just keep pace. The lack of diversity and specialization is also a weakness in the system.

**UK: brave new world**

In the UK, the era of block grants to institutions and capped student numbers ended just five years ago, but already it feels like ancient history. The market for students — as it is now properly described — is being transformed by changes in regulation and technology, and hence buying behavior.

The regulatory changes are dramatic. Student loans — repaid only when graduate incomes exceed a threshold — freed up student numbers and lower barriers to entry have created a proper market. To provide better information for students, the Government has introduced the Teaching Excellence Framework (TEF), mirroring the Research Excellence Framework (REF). While issues undoubtedly remain with the TEF, it does provide students with some view of the quality of the teaching they will get rather than just the research strength of the institution. Brexit is notable for UK universities primarily because it exacerbates the already-restrictive immigration policy for both students and staff.

\[\text{A long-standing lack of alignment between universities’ academic and business sides limits productive cooperation and creates friction.}\]
The vocational system is being overhauled in favor of employer-centered apprenticeships. An Apprenticeship Levy (a payroll tax) has been introduced to pay for this reform: for the first time, employers are making the principal contribution to vocational training. We expect that this will drive up demand for higher-level apprenticeships, as employers have historically proven more likely to invest in their most able staff. As apprenticeships can be taken up to, and beyond, degree level, they now represent a debt-free route to a degree and a job. This proposition will appeal to many students who are focused on employability, and many universities will have to respond by offering apprenticeships.

The UK has been slow to online learning. However, momentum appears to be gathering, primarily at the post-graduate and professional levels. The mixed mode of employer-based academic programs in higher level apprenticeships should bring more digital learning to the undergraduate market.

In the face of these changes, universities have to adapt. In some cases, institutions have been innovating successfully, often with commercial partners. Pearson, Deltak and Laureate have partnered with several universities to offer a wide range of online courses. The Open University has partnered with professional services firms to deliver white-collar apprenticeships and Warwick University has partnered with Dyson, the manufacturer, to provide unique engineering degrees. However, these innovations tend to be the experiments of more successful universities. Change among much of the traditional sector is slower, more cautious and reactive.

Student experience – defined in as many ways as there are institutions – is top of mind for senior teams everywhere. Taken to the limit, this implies profound changes in IT, real estate, course offering and academic staffing. Beyond this, the principal strategic choices include investing in transnational education, apprenticeships or corporate partnerships. All imply significant cultural change for most institutions, with real implications for managing human capital through the transition.

Campus connections

So, what does this global period of change and range of local responses mean for the world’s higher education institutions?

First, they must play to their strengths. Universities are some of the most resilient organizations the world has ever known. Many have survived recession and depression, political upheaval and armed conflict. A primary source of this longevity is their ability to draw on disparate sources of capital. This makes them complex organizations with many stakeholders and a variety of structures and goals. At times, they are viewed as businesses, generating revenues, incurring expenses, pursuing sales, serving customers and delivering outcomes. At other times, they are viewed as historically unique institutions, pursuing teaching and research that serves society. They are, of course, both.

A long-standing lack of alignment between universities’ academic and business sides limits productive cooperation and creates friction. While both sides represent different sources of capital they are, in fact, interdependent, and they must plan and work together if universities are to thrive in today’s world of change.

Second, they should tailor strategy to the market in which they operate. Universities compete globally for resources, influence and impact. But their individual strategies should depend on the local market and environment. In the US, the task is to tackle the combined forces of slowing demand and increasing supply. In Australia, increased higher education exports and stronger domestic demand drives innovation. And in the UK, changing regulation offers opportunity to those who are agile and creative.

Universities worldwide are seeking to blend their mix of capital sources into a recipe for sustainable growth. Bringing their academic and business sides together to fight for shared goals and tailoring strategy to local market conditions are important parts of the method.
Brexit, elections in Europe and the Trump presidency are sure to garner attention this year. But what key underlying trends are emerging for governments and how can they tackle them in 2017 and beyond? George Atalla investigates.

In our world of constant, fast-paced disruption, it would be easy to gloss over just how much change occurred in 2016, resulting in an entirely new state of affairs and much uncertainty in 2017. We can all agree that the election of President Trump represents a significant shift from recent US administrations. The UK is starting the process of separating from the European Union. Last year’s referendum removed a cornerstone of UK foreign policy and will force a reassessment of the country’s place and role in world affairs. For the EU, the departure of one of its members and a major European power will affect its future policies and relationships with the remaining members, some of whom are already considering whether to follow the UK’s example. Polls last year showed that a favorable opinion of the EU was held by just 27% of people in Greece, 38% in France and 47% in Spain. The EU’s task is made more urgent, and more challenging, by this year’s general elections in Germany and France.

In addition, stagnant economic growth lingers on. This year, GDP is set to grow less than 5% in emerging economies and under 2% in mature economies. This is around half the growth levels seen in 2010. In many countries, public debt remains high and financial markets are still prone to volatility. Slow growth keeps wages down, limiting the prospects for wide-ranging improvements in living standards.

If they have the room for maneuver, some governments may respond by providing a fiscal “shot in the arm” to their economies, resulting in looser fiscal policies and even higher debt levels. Protectionist trade policies, while increasing employment in the short term, may constrain business investment and consumer spending, and harm long-term economic prospects.

Finally, the flow of migrants from the Middle East and Africa has only slightly subsided, putting strains on European governments.

Against this backdrop, what are the key economic and policy trends that will occupy government and public sector leaders in 2017 and the years ahead?

**Productivity imperative**

First, there is still a need to kick-start productivity in the public sector. Nowhere is “growing the size of the pie” and improving the quality of service more important than in the public sector itself. In many countries, constrained finances along with long-term pressures such as aging populations have meant that needs are outpacing revenues. So becoming more productive is now a necessity rather than an aspiration.
There is no single solution. Improving productivity demands a range of responses including boosting innovation, improving knowledge sharing and promoting human capital. To speed the process, governments can look to scalable, breakthrough technologies, including blockchain, robotic process automation and cognitive computing. Digital tools can help government provide services quicker, more effectively and more responsively to citizens.

Closing the infrastructure gap
Second, repairing aging infrastructure and putting in place new infrastructure is still a top priority. Since 1980, the overall global stock of public capital has declined significantly as a share of output. The gap between what is invested around the world in infrastructure and what is required is US$1 trillion a year.

Investment is now ramping up to address this gap. Interest rates are expected to remain at historic lows in the near term, which can help accelerate the investment trend. Renewing roads, bridges, rail links, airports and housing stock can bring the short-term gain of job creation and the long-term benefit of a better connected economy. But the challenge is not just to spend more – it’s to spend smarter.

To have the highest possible impact, projects must be well-allocated, well-executed and well-funded. As they develop and renew their infrastructure, governments should reconsider how major infrastructure programs are designed, address the governance issues associated with the selection and development of projects, integrate cost and performance management, and drive targeted investment in innovation and resilience.

Populism on the march
Third is citizens’ rejection of the status quo across the world. A combination of flatlining living standards, rising inequality, dissatisfaction over immigration and a perceived gap between what governments promise and what they deliver is fueling mistrust and anger toward political elites.

According to the International Labour Organization, wage growth around the world fell from 2.5% in 2012 to 1.7% in 2015. It finds that in Europe, the top 10% of earners take more than a quarter of the total wages paid to all employees. In some emerging economies the share taken by the top 10% is even greater. The rise of automation brings the threat of more unemployment and deeper inequality to come.

Public opinion surveys reveal deep concerns over the future outlook. An Ipsos MORI study of opinion across 25 countries found that six out of ten people thought their country was heading in the wrong direction, with sentiment worse among mature democracies. Mainstream parties are bearing the brunt of this dissatisfaction. Electorates are becoming increasingly unpredictable and this makes policy-making more challenging.

“Electorates are becoming increasingly unpredictable and this makes policy-making more challenging.”

Investment in skills training is key to increasing productivity and building public confidence about future living standards. Governments can provide regions that are left behind – such as post-industrial towns – with targeted support that blends investment in jobs, housing and transport links. Better accountability, and more transparency over the management and impact of public spending, can help to restore trust.

Inclusive globalization
Fourth, and connected to the rise in populism, is the backlash against globalization. The value of exports in the global economy has more than doubled since 2000, despite the 2008 global economic crisis and its prolonged aftermath. Globalization has succeeded in pulling people out of poverty. In the 30 years from 1981, the number of people in the world living in extreme poverty almost halved, with progress accelerating since 2002.

But globalization has also benefited the few very well, while leaving many middle and low earners behind. And they are now making their voices
heard. Nativist and populist politicians are winning support by promising to rip up global trade and financial agreements.

Renewing globalization, so that it becomes more democratic and inclusive, is a big challenge. Of course, countries can’t do this on their own. But they can get together to refocus international institutions, established in the 20th century, on the challenges of the 21st, and make these institutions more accountable to citizens.

A multi-polar world
Finally, geopolitical changes and cyber threats heighten global security risks. The global security landscape is increasingly complex and fraught: the number of conflicts has surged since the Arab Spring in 2011 and many remain seemingly intractable. According to the United Nations, 65.3 million people were forced to flee their homes by conflict or persecution in 2015. That’s four times more than a decade earlier.

The shift to a multi-polar world is increasing the potential for global conflicts: a growing number of powerful actors with a greater geographic scope of interests will increase the likelihood of disagreements and power struggles. New technologies such as cyber warfare and the proliferation of the Internet of Things bring new risks to both physical infrastructure and digital systems from rogue hackers or state-sponsored attacks.

Combating the threat will require comprehensive long-term strategies with political, military, economic, societal and environmental dimensions. For example, governments, international organizations, the private sector and civil society must recognize that security – cyber and physical – is a shared responsibility and work together to build collaboration. Rather than leave each ministry or agency to tackle cyber threats, governments can develop an integrated approach across the public sector. They can establish or update comprehensive national security strategies, improve defense procurement processes, run public awareness campaigns, share intelligence, ensure that key industries have effective security in place, build security risk into infrastructure projects and encourage cyber security start-ups.

These issues are shaping political events and will play an influential role in determining the success of work carried out in government ministries and agencies around the world in 2017 and beyond.
World leaders at a G7 summit meeting last year. Most world leaders are men, but their governments would benefit from better gender balance among public sector workers.
George Atalla discusses the findings of new EY research into gender diversity among leaders in government and public sector organizations around the world.

There is strong evidence that diverse and inclusive leadership sparks better debate, stimulates innovation, and enhances problem-solving and decision-making. In short, it leads to improved performance and better outcomes. So, if governments and public bodies are to adapt to the monumental changes that are disrupting the sector, they must draw on a diverse pool of talent.

In mid-2016, EY surveyed 80 government and public sector leaders from a range of countries. This research, presented in a paper entitled *Navigating disruption*, reveals overwhelming agreement that gender diversity is crucial to combating the challenges faced by the public sector. But despite valuing diversity, many public sector organizations are not addressing the gender gap in a way that will deliver the change needed. Sixty percent of respondents believe they do not have sufficient diversity of thought and experience within their leadership team.

Why is this the case? The report identifies five disconnects that are preventing government and public sector organizations from achieving gender diversity on their senior leadership team. What are these disconnects, and what can government and public sector organizations do to accelerate the journey to gender parity?

**The reality disconnect**

The survey shows that government and public sector leaders are making progress in improving gender diversity within their organizations. Forty-six percent of respondents say they have already achieved gender parity on their board (defined as 30%–40% women), and 15% believe they will achieve it within five years. These figures compare favorably with the cross-sector survey, which revealed that just over one-fifth of business leaders believe their organization has already achieved gender parity or will do so within five years.

But the survey findings appear disconnected from reality. According to the World Economic Forum’s Global Gender Gap Report 2016, it will take until well into the next century — 2186, to be exact — to reach gender parity in both private and public sectors. Alarmingly, the forecast is 91 years further into the future than was anticipated in the 2014 report. The quest for gender parity appears to be going in reverse.

Certainly, our survey findings point to the danger of losing momentum in promoting gender diversity across the government and public sector. Only a quarter of respondents said their organization has an effective diversity strategy that is making a difference, while more than 40% say it is poor or even nonexistent. Just 16% have targets for female representation on their board or senior management team, and only 14% have a structured, formal program to identify and develop women’s careers in leadership.

Organizations should not assume that gender parity will take care of itself. They need to take a critical view of where they are now and where they need to be. Once the goal is set, they must develop pathways to get there. This includes increased and more inclusive networking opportunities, formal training, sponsorship and mentoring programs.

**The data disconnect**

If government and public sector organizations are serious about changing the status quo, they need reliable workforce data so they can assess how far they have to go to deliver equal opportunities to female employees. But organizations don’t measure how well women are progressing into senior leadership roles effectively enough.

Only 40% of government and public sector organizations surveyed say they have programs in place to measure their progress in improving gender diversity on their leadership team. The organizations that do measure gender progress are primarily focusing on the pipeline of future leaders. Less than a quarter of organizations track the proportion of female applicants for leadership positions. Few government and public sector organizations seem to have metrics in place to follow women as they move along their career path to see where and why outstanding women leave the organization or fall off the leadership track.

It is imperative to track the pipeline of women leaders. Doing so will help create an accurate picture of the diversity of today’s workforce and determine which interventions will have the greatest impact in the future.

Government and public sector organizations must also be held to account for their efforts to support budding women leaders. However, less than half of organizations surveyed say they publicly disclose information on their gender diversity performance. A greater commitment to doing so would create greater peer pressure to accelerate and scale up their efforts.

They should set a concrete target for gender parity, measure progress toward this target by using clear metrics to count the numbers of women at all levels
and in all areas of the organization, and use this data to identify and remove obstacles to female career advancement.

The pipeline disconnect

To improve the representation of women in public leadership positions, governments can begin to groom talented women in more junior posts or even from outside government. More than 80% of government and public sector organizations say they need to change their approach to attracting, retaining and promoting female talent, while at the same time, 71% indicated that they are already effective at attracting female talent. This disconnect indicates that organizations need better metrics and a better understanding of the root of their problems around hiring and retaining female talent.

Less than half the respondents believe their organization is effective at identifying future female leaders. Just 14% of respondents say they have structured, formal programs to identify and develop women for leadership roles in their organization. Around half say they develop women and men equally as part of an existing leadership program and have no plans to change this.

The public sector leaders we interviewed offered feedback on the policies and programs that have helped them to develop female leaders in their own organizations. These include creating a women’s program for senior management that can help identify talented candidates for leadership roles; developing internal mentoring programs for women early in their career; undertaking unconscious-bias training across the leadership team; offering opportunities for women to lead key projects; taking steps to identify barriers and implementing interventions to address them, including culture change programs; and appointing female department heads who act as strong role models.

Organizations should determine what they must do to become an employer of choice for women. This means implementing formal programs to identify potential female leaders and developing these women in a way that makes sense to them.

The perception and perspective disconnect

Men and women have different views on the gender diversity gap and how to close it. Our research shows that 43% of men believe that the public sector has become a more attractive career choice for women. Just 23% of women share that view. Almost two-thirds of women think government and public sector organizations should do more to attract, retain and promote women, compared with just over one-third of men. And while 61% of men think their organization is effective at identifying future leaders, only 42% of women share that view.

When we asked about the barriers preventing women from reaching leadership positions, we found further divergences. Both genders recognized the lack of flexible working arrangements as one of the key obstacles. However, only 40% of women said it was a challenge, compared with 57% of men. In contrast, women were more likely than their male counterparts to cite issues relating to management, policies and culture. For example, 40% of women consider lack of support from senior leadership as a barrier to moving up the leadership ladder, compared with 29% of men. Almost one-third of women believe that an unsupportive public sector culture is a challenge, compared with just 21% of men.

When women and men see the problems differently, it is not surprising that they favor different solutions to address the problems. Both genders agree on the importance of flexible working policies. But 35% of women also cite leadership training for women as important to helping them reach leadership positions, compared with 25% of men. However, less than one in five organizations actually has a leadership program for women.

To address the disconnect, organizations can work to create opportunities for open dialogue between men and women about challenges and potential solutions; advise and sponsor women and encourage all executives – male and female – to do the same; and decide what actions to take now that will contribute to a more inclusive and successful organization.

The progress disconnect

How well do government and public sector organizations compare with other sectors? Different sectors agree on the value of diversity but are making uneven progress toward gender parity. In every sector, almost all respondents believe diversity of thought and experience will be key to navigating the challenges of disruptive innovation. But sectors differ when asked whether they think their own leadership teams are sufficiently diverse in thought and leadership: 60% of public sector leaders believe they do not have sufficient diversity on their leadership teams, compared with just 38% in the automotive sector and 44% in oil and gas organizations. Sharing leading practices across sectors would offer important lessons.

We found further differences in perceptions, actions and progress across sectors. In some areas, government and public sector organizations fare relatively well compared with other sectors. For example, only 45% of insurance respondents said they are effective at promoting women to leadership positions, compared with 60% in the public sector. However, although almost 6 in 10 business leaders surveyed across all sectors said they had targets for female representation on the
board and senior management team, the equivalent figure for government and public sector respondents was just 16%.

Closing the gender gap requires leaders from all sectors to step up and make hard-edged commitments, backed by meaningful and measurable actions, to deliver a legacy of a more diverse and inclusive workforce. This means adopting leading practices for achieving gender parity, no matter where they originate.

**Decisive action**

Governments across the world have implemented various measures to address inequalities, introducing equal opportunity legislation and creating protections against discrimination. Many governments, wanting to lead by example, have gone further on gender inequality in their public sector workforces, issuing policies and guidelines for meritorious employment, quotas and targets, and maternity, paternity and childcare provisions. Initiatives such as these have resulted in a relatively high percentage of women pursuing careers in the public sector.

But progress is still slow. The pace can be quickened if public sector organizations incorporate diversity into planning and strategy; measure progress and increase accountability; build leadership support and drive culture change; build a more inclusive culture that tackles conscious and unconscious bias; develop flexible working policies and career options that help women balance work and personal responsibilities at different stages of their lives; and share knowledge of best practice.

For women leaders, public sector employees and board members, gender equity is not only a social justice issue. It also improves productivity, engagement and decision-making. So this work can, should and must begin today.

Read the full report, *Navigating disruption*, at ey.com/government
Uncertainty defines the present conditions of global affairs for defense organizations across the globe. Confronted by shrinking and unpredictable budgets, persistent international challenges and threats from non-state actors, and rising political tensions, governments and their defense organizations require a more agile and efficient procurement system. The challenge is to align strategy with investment in innovation and modernization of forces. The proper function of the acquisition and modernization process is needed in order to face evolving geopolitical threats while fielding warfighting capabilities and supporting overall readiness. Defense organizations are confronting political, economic and fiscal realities at a time when it is crucial to invest in technology, innovation and modernization of forces. The innovation imperative comes at a time when defense agencies are facing a “modernization bow wave.” The “bow wave” describes long-term defense modernization plans that depend on significant increases in future funding to fill in the gaps from years of declining budgets, program delays, deferred costs and other operational challenges. Escalating costs on procurements, program overruns and missed performance deadlines may result in other types of equipment being crowding out. This could lead to a lack of capabilities in force and matériel support. The deferred costs of modernization stretched out over a 5, 10, and 20 year horizon pose material risks to national security and force readiness. Global defense organizations can take steps to mitigate the challenges of modernization and innovation through strategic deployment of resources, the application of leading technologies and utilization of proven tools to drive productivity in the acquisition process. Maximizing agility and efficiency in funding innovation, modernization and future defense acquisitions rests on four core principles of strategic defense procurement: operationalizing data, integrating leading technologies into current systems, rationalizing cost levers and reinvigorating assessment of the procurement life cycle.

**Deploying data**

Data is currency in the modern global economy and the foundation for strategic defense procurement. Reliable data is critical to accurate through-life planning, forecasting, budgeting and properly accounting for the costs related to in-life performance, sustainment and maintenance. Liberating data can elevate innovation over the mechanics of defense procurement, where policies and procedures can create significant drag on outcomes. The central tactic is unlocking the power of structured and unstructured data to properly
measure costs across the defense acquisition life cycle. One element that can drive improvement in the capture of information is establishing cost profiles for each asset category. Asset categories include raw materials, research and development, component parts, labor hours in the development of the equipment, organizational costs for administering the program, supply chain, maintenance costs and sustainment support. This process involves review and reconciliation of performance data through the acquisition process.

Improved data capture, management and evaluation will enable defense organizations to develop new leading indicators to build more robust and accurate cost models for planning, and measure performance beyond current tools such as telematics. The US Department of Defense annual report on the performance of the defense acquisition system notes that: “It is hard with existing records to distinguish cost growth that is due to overly optimistic planning or poor execution from cost growth that is due to needed design changes that address evolving threats, technological opportunities or other prudent factors.”

New methods of data capture and cataloging can add agility to the planning process, model potential changes in design based on historical and in-life performance of like equipment, and develop more precise estimates of sustainment and maintenance costs.

**Tapping leading technologies**

Despite the modernization challenge, defense organizations and military branches are the most technologically sophisticated entities in the world. While the sophistication of defense equipment and matériel have reached the upper echelons of technological superiority over the past 30 years, some commercial and proprietary technology applications have yet to cross the threshold of widespread adoption. Blockchain technology and advanced analytics enable organizations to manage risk and assess, evaluate and manage assets through the supply chain – in turn strengthening the procurement life cycle. Both are significant value-added tools that, on top of existing enterprise planning systems, allow for a fully transparent view of supply chain and performance costs. This suggests greater visibility into costs throughout the procurement life cycle, across the supply chain, and into full view of in-life and sustainment activity costs.

“Errors in initial cost estimates are the single largest reason for cost growth in development programs.”
Blockchain is a step-change in innovation for defense organizations and governments to better assess performance, enhance supply chain and improve the procurement life cycle. Blockchain technology will enable defense organizations to securely and transparently track all transactions through a decentralized, heavily encrypted ledger. Its application to the procurement life cycle is enormous. Each time a transaction is made, an asset is exchanged, information inputs in the manufacturing process are entered, or equipment is deployed, there is a secure, tamper-proof digital record accessible for defense agencies, offering an unprecedented view into its procurement supply chain. The integration of blockchain technology will also bring opportunities to create new, specialized uses for the technology as a result of the decentralized architecture. In turn, these real-time costs can be translated to predicting development, in-life and sustainment costs with greater confidence.

While blockchain may be the frontier of innovation, big data analytics allows for the most immediate gains in advancing an innovation and modernization agenda through the procurement life cycle. For example, advanced analytics can help defense organizations to assess sustainment efforts that will enable military branches and leadership to better predict sustainment costs on the equipment assets, as well as the function or process. Advanced analytics would allow for reducing asset downtime and overall sustainment costs by leveraging historical and real-time data. This could lead to more rapid deployment of condition-based maintenance protocols that would improve sustainment activities and overall operations. The data-driven approach can also be used to increase the productivity of the procurement function and the activities of operations and acquisition officials, and to assess the performance or effectiveness of the military depots that deploy resources.

**Gripping the cost levers**

Innovation and modernization cannot accelerate without examining the cost levers of the procurement life cycle. Optimizing data and utilization of leading technologies should work in concert with the rationalization of cost levers at all steps of the procurement and acquisition life cycle.

The traditional approach to managing the procurement life cycle has focused on reducing unit costs on a program-by-program basis, rebidding or renegotiation of supplier contracts on major equipment, or direct funding cuts to programs. In the case of many defense organizations, major planned acquisition programs can be truncated well before the full quantity is procured due to external factors such as cost overruns and poor performance. Parsing through the data and information signals from the procurement life cycle will establish the proper levers to assess and evaluate cost structures.

Across the procurement value chain, four consistent levers – demand, source, fulfill and manage – apply to deliver a holistic, quantitative evaluation of the acquisition life cycle. This helps understand where efficiencies can be gained, where value leakage is more pronounced and what resources are necessary to manage the equipment programs. The demand levers are two pronged: strategic demand management (to change how a defense organization operates) and tactical demand management (to analyze tactical demand patterns.) This includes acquisition of new equipment, contract structures, estimates and evaluations of costs, and the relationship between the administrative functions of procurement and process of the acquisition. The source lever involves creating coordinated procurement across a defense organization. This enables full transparency of transactions across the supply chain and works in partnership with the original equipment manufacturer on the key functionalities of the demand lever to guide programs to meet budget, deadlines and cost.

Acquisition program fulfillment is a key lever in establishing the proper cost estimates for major equipment procurements. This includes capturing the requisite data for through-life and in-life planning, balancing demand and supply, and compliance with the procurement regulations that govern the acquisition process. The process of fulfillment lever ties directly into the management of the overall procurement effort, which in many cases can stretch into a decade or longer when factoring in basic and applied R&D.
and business performance management involves the identification and implementation of key performance indicators, coupled with an analytical platform that drives behavior, measures the quantities and instability in requirements are a few examples of how cost overruns can occur on the programmatic level. Large cost overruns tend to occur early, when programs are in development, and

Controlling costs does not imply that poor or arbitrary decisions to cut costs should be made that result in short-term savings at the expense of longer-term costs. Where “should cost analysis” and “performance based logistics” fail short, there is a significant need for total cost of ownership functions in guiding equipment programs and major procurements. This suggests the utilization and integration of total cost of ownership in through-life and in-life planning, budgeting and forecasting is an integral part of development, production and sustainment.

Past performance and historical data is a baseline, but assumptions must consider more dynamic scoring of costs by factoring in operational data from the field, equipment, individuals, and the development and testing process. The integration of total cost of ownership assessments into all stages of the procurement life cycle will enhance the productivity of procurement operations and the acquisition of core equipment, while forwarding the innovation and modernization agenda.

Built to last
The principles of strategic procurement must outlast the tenure of administrative officials and acquisition leadership. These core principles ought to buttress the foundations of major acquisition programs, validate operational capacities and development milestones, and enhance the productivity of the procurement life cycle. Increasing the budget, cutting other programs within the defense budget or rebalancing major acquisition programs are sometimes necessary. But, the failure to address the structural deficiencies in the procurement process, discounting the evaluation and monitoring of the underlying systemic risks, and undercutting the ability of defense organizations and their people to adhere to long-term strategies, is a detriment to national security and the innovation agenda.

Reinvigorating assessment
Controlling life cycle costs is a top priority for defense organizations and staying on budget isn’t enough to keep costs in check. Overly optimistic assumptions in planning, changes in

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The digital revolution will disrupt and collapse everything we take for granted today about how work is done. Organizations that cannot change will become marginalized and irrelevant to customers, citizens, shareholders and employees. To avoid that unwelcome fate, here are the workplace changes that leaders need to start understanding and embracing right now.

**The gig economy**
Temporary or freelance worker demand is rising rapidly, with predictions that 40% of the US workforce will be contingent workers by 2020, according to the Organisation for Economic Co-operation and Development (OECD). Most organizations lack the ability to track, manage, forecast or effectively engage these workers. To avoid that unwelcome fate, here are the workplace changes that leaders need to start understanding and embracing right now.

**Automated knowledge sharing**
Traditional tools of knowledge management (classroom training, job descriptions, staff directories, electronic filing systems) will give way to new workplace strategies involving analytics, algorithms, big data and automation. People-driven machine workflows will become the new norm. Rigid organizational models that inhibit the free flow of ideas and information must be discarded and replaced.

**Death of the office cubicle**
Creating a next-gen workplace will cause a major disruption in the traditional design of workspace. Co-working space, with its informal and collaborative advantages, will become common. Office buildings are changing to reflect a shift from hierarchy to innovation. Lines between work and city will blur as office campuses mix in “community.” In this, the technology centers of the US’s West Coast have a 10+ year advantage over the rest of the world. As a result, tech companies will continue to draw talent away from more traditional manufacturing-based industries.

In the workplace of the future, will your people still be your greatest asset, or your biggest problem?

**What should leaders do to prepare for these changes?**
1. Assess the capability of your leadership team to accommodate and facilitate digital innovation and organizational change.

2. Educate and engage your board in understanding, governing and supporting the internal process changes required to meet the current and future demands of a changing workforce.

3. Have your HR teams focus on creating and enabling the important changes necessary to drive future success. Challenge or discard traditional roles, organizational structures and people processes that fail to reflect the new dynamics of future work.

4. See that a policy of diversity and inclusiveness is embraced and supported by all leaders — it will be demanded by younger workers who vote with their feet.

5. Collaborate with thought leaders, academic institutions, professional associations, and public and private sector partnerships that employ a creative and consultative approach to delivering future-work solutions.

6. Create clarity and management processes to support contingent workers and career paths for critical digital talent.

Failure to address the severity of the digital skills gap will yield paralysis in a time of rapid innovation and change.
How can a city be transformed by data?

Amsterdam has never been a city that has shied away from innovation. It was in Amsterdam that the groundwork for modern capitalism was laid, with the emergence of the first multinational companies and the evolution of stock markets from small-time lenders into muscular institutions capable of financing international enterprise.

But where once the city’s fortunes hinged on the return to port of a spice-filled frigate, growth now sails on seas of data. The Amsterdam Smart City initiative was started in 2009 to bring Amsterdam into the upper echelons of global connected cities.

The program’s success has been driven by several key features, which can serve as valuable lessons for any organization – or city – planning to make a similar transition.

1. Strong leadership and support from the top

The backing of the political establishment has been critical. Admirably, Amsterdam’s political leaders continued to pursue the Smart City project despite changes of administration, and despite the modest early results that flew in the face of pressure to show concrete benefits. It takes time and perseverance to innovate. Long-termism is sometimes hard to cultivate. But Amsterdam achieved it.

2. Growing a talent pool

One of the key challenges in any major analytics strategy is attracting and retaining talent. No talent means no innovation and that means a pre-digital city, destined to rely on tourism alone. But here Amsterdam has proved itself a leader. Key to getting the right talent on board was the Amsterdam Institute for Advanced Metropolitan Solutions. The institute is a university program dedicated to developing smart cities. It generates ideas that can be applied to Amsterdam while also making the city a hub for people more generally interested in using data to make a positive difference to the world.

3. Keeping customer needs at the forefront

Amsterdam’s Smart City managers have learned that even though they can make very sophisticated presentations of data, it’s the consumers of that data who ultimately dictate the best methods of communication. Learning to listen to customers and cater to their needs is an essential lesson in analytics. Sometimes, even when big data is available, small data will do, identifying areas for quick wins to secure further support.

4. Emphasis on proof-of-concept projects

Amsterdam has produced more than 80 pilots as part of the Smart City initiative. These range from the straightforward, to grander strategies that involve whole communities. Letting welfare recipients know when their payments are coming via SMS was a simple but valuable change. A scheme to have residents separate biomass from recycling streams to feed the city’s waste-to-energy power plant, and which saw remarkable success in participating households, required a much greater degree of collaboration. From the very small to the very big, this kind of granular approach to innovation turns the entire city into a lab.

5. Building effective alliances

It pays to work with partners in data efforts. Amsterdam knows this, both when it comes to working with the city government, and outside of it. Leaders have worked to educate department heads on the benefits of data sharing – which requires established players to rethink existing practices. Outside of city government, the private sector plays a key role, where stakeholders (and their data) across the community can be a part of something larger.

While Amsterdam may be criss-crossed by canals, the Smart City is not an island. No single group of stakeholders in Amsterdam could do this alone. These partnerships highlight how, after more than 400 years as a center of business and enterprise, public and private bodies are still working together for mutual gain.
Focus on
UK and Ireland

EY works with a number of government and public sector organizations in the UK and Ireland, helping to address challenges in areas such as policing, transport, trade and regional development. Here is a brief overview of some of our work.

Bringing Manchester police closer to communities

EY has been working with Greater Manchester Police (GMP) for more than four years, helping the force to address some of its biggest challenges. Now, EY is providing a program that can help realize GMP’s vision for transformational change in core operational policing.

At the heart of this vision is a transition toward placed-based policing, where multi-skilled officers are embedded within their communities to solve problems, manage risk and therefore reduce crime and repeat offending. EY is working across all levels of the organization, to help design, build and implement the business processes and tools that will change the way the force polices Greater Manchester.

EY’s role includes the distribution of 9,000 mobile devices to 5,500 officers. This helps give officers the tools and information they need to make decisions and solve problems “on the go,” away from the police station.

“The program is one of the largest ever undertaken by the force and I am very pleased with the results so far,” says Assistant Chief Officer Lynne Potts, Senior Responsible Officer for the Information Services Transformation Program. “The deployment of mobile devices across the force allowing officers to spend more time within their communities equates to an additional 160 officers being deployed across Manchester per annum.”

EY has also recently been awarded the prestigious Chief Constable’s commendation for its work and dedication to providing mobile technology that changes ways of working across the force.

Transforming Britain’s railway

Passenger numbers on Britain’s railway have doubled in the past 20 years. Over the next 30 years, another 1 billion passenger journeys are predicted on the rail network. It’s a challenge that Network Rail – Britain’s rail infrastructure owner – is tasked with meeting if it is to provide a railway fit for the 21st century.

To meet this challenge, Network Rail launched the Offering Railway Better Information Services (ORBIS) program in 2012. The seven-year £336 million digital transformation program is designed to put asset information, knowledge and data at the fingertips of engineers and planners to help them make better, safer more cost-effective decisions.

EY's task was clear: to create a unique service brand and design the operating model that would drive program success. EY reviewed Network Rail’s business change approach and, five years later, continues to work with the rail operator.

With the right change governance in place, identifying the new operating model and providing innovative communications campaigns, EY has been fundamental in turning the program’s vision into reality. EY has helped to develop innovative projects, including the Rail Infrastructure Network Model, the Linear Asset Decision Support Tool and the My Work app.

Tricia Nelson, Ernst & Young LLP Client Service Partner for Network Rail in UK & Ireland, says: “ORBIS is an iconic program. It's a brilliant example of high performing teaming, with Network Rail and EY working together to establish tangible transformation for the railway network. This success also means Network Rail now has a model and capability that can be replicated across the organization. This really is helping to build a better working world, every single day.”
Boosting Britain’s exporters

International Trade & Investment (ITI, formerly UK Trade & Investment) is a UK government body that helps businesses to export and grow into global markets. In January 2014, EY was awarded a three-year managed service contract with ITI to develop its flagship High Value Opportunities (HVO) program. This work was considered key to ITI’s mission of helping to develop an export-led economic recovery for the UK.

EY took over a service that had limited operational processes, structure and governance in place. In addition, ITI did not have a recognized knowledge management capability and needed to connect the insight its practitioners have at their fingertips to a capability that drives performance.

EY worked with ITI to develop a refreshed HVO program, which provided project management and professional support to UK industry. EY developed a new research commissioning process, including building a tool to coordinate research requests. EY also set up an operations capability to provide program governance.

The HVO program has now ended, but EY continues to supply a number of services. These include providing ITI with access to a range of commercially aware and networked specialists and to bespoke high quality research; working with ITI teams to build the capability needed to develop exports and inward investment; building relationships with ITI’s research commissioners; and supporting ITI to develop its own in-house capabilities to manage these services in the long term.

Serving Scottish cities

A City Deal is an agreement with government to give a city and its surrounding area targeted investment to boost economic growth, and certain freedoms to take on greater decision-making on how public money is spent. City Deals are unique in Scotland because the agreement involves both the UK Government and the devolved Scottish Government. EY has advised on all seven deals that have so far been developed.

EY was lead advisor to Aberdeen City Council and Aberdeenshire Council in the development of the Aberdeen City Region Deal. This game changing deal at a time of great uncertainty for the oil capital of Europe will see over £200 million invested into innovation and technology hubs for oil, gas and life sciences. EY supported the bid and the negotiation of proposals with the UK and Scottish Governments.

EY has been the lead advisor to the Highland Council and Highlands & Islands Enterprise on the Inverness & Highland City Region Deal, developing project ideas and outlining business cases for funding including a £20 million investment to transform Inverness Castle into an iconic visitor destination.

EY is lead advisor to the six local authorities that make up the Edinburgh and South East Scotland City Region Deal and is supporting the Tay Cities Region Deal bid, as both regions seek to drive inclusive economic growth for all of their citizens.

EY is also advising on the only non-city growth deal with the combined Ayrshire authorities. This includes proposals for the UK’s first spaceport at Prestwick, a project that has the potential to transform the already strong aerospace sector in the region.

Underpinning EY’s work on all these City Deals is knowledge of the cities and surrounding areas, appreciation of their infrastructure needs and business sector strengths, and understanding of the deal proposals. Armed with this knowledge, EY can help the cities, their businesses and their people make the most of the deals’ opportunities.
What wins young hearts today and creates great minds tomorrow?

Find out how EY infrastructure services laid foundations of future prosperity by helping to educate more than 350,000 children in the Philippines. ey.com/betterworkingworld #BetterQuestions