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BIAC Background Note to the OECD Ministerial on the Digital Economy

Cancun, Mexico

The Business and Industry Advisory Committee (BIAC) is pleased to provide this Background Paper to the 2016 OECD Ministerial on the Digital Economy addressing Innovation, Growth and Prosperity.

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Setting the Context: From Ottawa and Seoul to Cancún and Beyond

In 1998, the OECD community gathered at the Ottawa Ministerial centered around “A Borderless World” and considered the potentially transformative effects of “e-commerce” and the facilitating policy environment that was needed to support its continued, rapid growth. The 2008 Seoul Ministerial addressed the “Future of the Internet Economy” and the policy conditions needed to assure that future, both in terms of seizing opportunities and addressing risks. Building on this continuum, the 2016 Cancun Ministerial focuses on the “Digital Economy: Innovation, Growth and Social Prosperity.” Over the years, the scope of examination naturally has expanded from e-commerce, to the Internet Economy, and now to the Digital Economy, as innovations in business and social interaction have made the “the economy” into the “digital economy.”

In 2008, we noted the astonishing growth and change in Internet take up, use, and value generation both within and outside the OECD. During the past eight years, we have continued to witness an upward trajectory in Internet use and connectivity, which has enabled ever-more creative and innovative uses of information and communication technologies (ICTs); driving business development, economic progress, and the provision of a widening array of social welfare benefits. It would now be hard to find a company that is not engaged in or relies upon the digital economy in support of its business.

Evidence from the OECD Broadband Portal demonstrates that in more or less a decade, the usage of ICTs by businesses with more than 10 employees in most OECD countries grew from on average less than 50% to close to 90% of businesses in 2011.¹ At the same time while average OECD fixed broadband penetration rates grew 4-fold from 2003 to 2015² to reach close to 30% of outlets, mobile broadband penetration grew close to 260% from 2009 to 2015 reaching more than 1 in 4 persons in 2015.³ In the next decade Internet connectivity is expected to increase from between 2.5 billion to 3 billion more users.^{4,5}

¹ Business Use of Broadband. *OECD Broadband Statistics*. OECD 2012. Accessed 27 May 2016. Available at: <http://www.oecd.org/sti/broadband/BB-Portal_2.4_Business%20Use%20of%20broadband_2012.xls>

² The rates grew from 7% to 29% for fixed broadband penetration.

³ Historical time series, fixed and wireless broadband penetration. *OECD Broadband Statistics*. OECD 2015. Accessed 27 May 2016. Available at: <<http://www.oecd.org/sti/broadband/1.5-BBPenetrationHistorical-Data-2015-06.xls>>

⁴ McKinsey Global Institute, 2013. *Ten IT-enabled business trends for the decade ahead*. Accessed 27 May 2016. Available at: <<http://www.mckinsey.com/industries/high-tech/our-insights/ten-it-enabled-business-trends-for-the-decade-ahead>>

⁵ Furthermore, we note the Outcome Document issued at the conclusion in December 2015 of the U.N.-hosted World Summit on the Information Society (WSIS) High-Level Meeting, which highlighted this extraordinary trend and underscored the linkage between expansion and use of ICTs and business and economic development, social benefit and inclusion. The number of mobile phone subscriptions is estimated to have risen from 2.2 billion in 2005 to 7.1 billion in 2015, and by the end of 2015, 3.2 billion people were expected to be online – amounting to more than 43 percent of the total world population – of which 2 billion are from developing countries. Moreover, fixed broadband subscriptions have reached a penetration rate of almost 10 percent, as compared to 3.4 percent in 2005, while mobile broadband remains the fastest growing market segment, with continuous double-digit growth rates reaching 47 percent in 2015, a value that increased 12 times since 2007. Outcome document of the high-level meeting of the General Assembly on the overall review of the implementation of the outcomes of the World Summit on the Information Society, A/70/L.33.

The Cancun Ministerial presents an opportunity to leverage the potential of new technologies and business models to drive economic growth, provide societal benefit and create quality employment. The Ministerial will allow us to further develop the global and local policy framework that will enable these benefits, while addressing the societal risks and potential challenges to security and privacy that may arise. It also presents an opportunity to expand inclusion across sectors, geographies, and social groups and begin the exploration of innovative ways to address the temporary societal and labour dislocations that may accompany new technologies and business models. Our goal, in cooperation with governments and across stakeholders, is to realize the positive benefits of these technologies and innovations while mitigating the potential negative effects, and collectively working to ensure that the benefits are widely shared across economies.

This explosion in ICTs and online participation now compels us to consider the potentially transformative effects of technology on a broad range of socially beneficial, data driven applications. These include: e-health and medical research; sustainable development and inclusion; environmental applications and sustainable consumption, logistics and supply chain management; resource management and urban development; and improved agriculture for food safety and security – to name just a few.

Digital transformation has also had beneficial effects in the arts, entertainment and culture. The breadth of devices that enable individuals to access and participate in entertainment, related applications and artistic endeavors and performances is ever evolving. The continued development of legitimate online marketplaces for content and efforts to combat illegal activity are needed to foster consumer choice and trust in the digital economy.

The Cancun Ministerial comes at an important time in the development of new technologies and business models that further integrate The Economy and the Digital Economy. The Ministerial provides an opportunity to consider how best to forge a productive and inclusive path forward and continue to promote these transformative opportunities in an open, transparent, responsible and inclusive manner, respecting individual rights, freedoms and the rule of law.

The Cancun Ministerial: A Business Vision for the Future

The private sector plays a lead role in the topics central to the Cancun Ministerial. The four Ministerial themes address the need for comprehensive policies necessary to support growth and innovation, investment, and inclusive job creation in the digital economy:

1. Addressing the economic and social benefits of Internet openness and the policies that support its development
2. Taking advantage of the economic and social benefits from convergence to the Internet of Things
3. Enabling greater co-operation to protect consumers and manage privacy and security risks
4. Benefitting from the new, ever-evolving labor markets

Business addresses these themes in a cross-cutting, multi-disciplinary manner. Innovative and productive companies seek and depend upon investment and regulatory policy frameworks that effectively enable them to create, invest, and grow.

The following sections outline business views in the context of the cross-cutting issues and themes of the Ministerial:

- *Framework Conditions Turning Opportunities into Realities for Internet Openness and Innovation*
- *Emerging Technologies: Seizing the Opportunities Across Sectors*
- *Promoting Trade, Inclusion and Trust*
- *Workforce Development, Mobility and Flexibility*

Framework Conditions: Turning Opportunities into Realities for Internet Openness and Innovation

Innovation is the driving force for enhanced productivity and growth in our economies and societies. Government policies play a pivotal role in ensuring the right framework conditions are in place for business to continue to invest and innovate across the economy. Such investments range from infrastructure improvements, R&D, and product innovation to the development of new business models across a wide array of technology areas. In the past eight years, such innovation, R&D and infrastructure investment have enabled ongoing advancement in both the development and use of ICTs *across sectors* to address economic and social challenges and to raise living standards. As a result, we have realized new social benefits across health, medical, environmental, logistical, urban planning and many other sectors and forms of endeavor.

ICT innovations in such areas as Big Data, analytics, and the Internet of Things, and Cloud Computing in turn, have fueled revolutionary advancements in traditionally non-ICT fields such as healthcare, education, transportation, finance, culture, the environment, agriculture and energy. For example, information technology (IT) tools are improving clinical care by applying a system of smart tags that track the flow and activities of patients, treatments and equipment. Innovations in the use of analytics such as automated knowledge work by the IBM's Watson supercomputer are improving clinical care recommendations using a database of medical research and patient records.⁶

ICT advancements also have created possibilities for global businesses to make their multinational operations more efficient, effective and productive, through smarter forms of communication and streamlined processes. Importantly, continued ICT breakthroughs have enabled increasing numbers of small and medium-sized businesses (SMEs) to effectively participate in the global digital economy and internationalize their operations, realizing access to customers in foreign markets that in the past was out of their reach. Global supply chains have also provided opportunities for SMEs to contribute to such global endeavors in ways that not only increase their business but also provide skills and knowledge transfer that may help them move up the value chain and develop their own industries. A prime example is Indian business process outsourcing industry, which has become a world leader.

⁶ McKinsey Global Institute, 2013. Ten IT-enabled business trends for the decade ahead. Accessed 27 May 2016. Available at: <<http://www.mckinsey.com/industries/high-tech/our-insights/ten-it-enabled-business-trends-for-the-decade-ahead>>, p. 39.

Finally ICT applications such as cloud computing can lower the barriers to entry for SMEs because they no longer need to maintain dedicated IT staff and expensive equipment that requires frequent updating and improvement. Cloud computing changes the funding model for technology acquisition from a product to a service and from capital expenditure to operational expenditure in a pay-for-what-you-use business model, with quickly variable capacity to meet growth or peak demand as well as to account for slowdowns.

It is critical that public policies foster continued business investment, including in R&D and infrastructure investment, enable digital innovation and leverage benefits of emerging ICT technologies across all sectors of the economy. While business has the principal responsibility for bringing expertise, investment and creativity to this process, the appropriate government policies are necessary to continue to produce positive results for the Internet and the global economy. The 2011 *OECD Internet Policy Making Principles* (IPPs) are a comprehensive set of recommendations which, when considered together with the range of OECD guidance addressing issues from online privacy, security and consumer protection, provide the foundations for policy makers and stakeholders working together to achieve these interrelated policy goals⁷. The 14 Recommendations found in the OECD IPPs underpinned by the broad range of OECD analysis for the Digital Economy provide important policy guidance that also reflects and benefits of multi-stakeholder dialogue. Effective implementation of the IPPs and these instruments is critical for inclusive digital growth and innovation.

As we consider the optimal path forward, we recognize that a number of interdependent elements create a framework that facilitates economic growth, job creation and societal benefit that must all be addressed. We refer to the framework as the “6 Is”, which include *Infrastructure, Innovation, Information Flows, Investment, Intellectual Capital and Integration* of these elements at, behind and across the border. We promote this framework of the so called 6 Is for evaluating the successes of the digital economy and information society. It focuses mainly on how to turn opportunities into realities while addressing challenges, possible risks and issues of transformation, emphasizing that all elements referenced in this paper are essential factors for success.⁸

⁷ <https://www.oecd.org/sti/ieconomy/oecd-principles-for-internet-policy-making.pdf>

⁸ The Asia-Pacific Economic Co-operation (APEC) has developed the Digital Prosperity Checklist as a compendium of success factors for the digital economy and information society. The factors are grouped under six thematic sections each starting with an “I” – hence the shorthand reference to the “6 I”s

The 6 Is underly new growth and power today's global economy. These include:

1. Infrastructure: The need for an appropriate physical, logistical, technical and broadband communications infrastructures supported by a facilitating policy and regulatory environment
2. Investment: The ability to promote and support a range of investment opportunities including foreign direct investment (FDI) fluid capital markets and micro-financing
3. Innovation: The ability to foster and sustain innovation, including the ability to promote and protect innovations and investment in research and development
4. Intellectual capital: The ability to foster the appropriate skills and training from technological to linguistic to entrepreneurship.
5. Information flows: The ability to use, transfer and process information – the currency of the digital economy – while promoting privacy and a trusted Internet environment
6. Integration: Having appropriate trade frameworks at, behind and cross borders to connect domestic business (including SMEs) with the global economy

The 6 Is Framework is meant to be considered as an overlapping matrix; all "I"s are interconnected and all "I"s are important. In addition, the 6 Is are effectively reflected in the OECD IPPs. The Framework creates the necessary conditions to drive economic and societal benefit in the digital economy. It is predicated on conditions that are market-based, support innovation and investment, and enhance the security and privacy of Internet users. It is essential that governments support these requirements through policy frameworks that can be applied with flexibility to meet the fast paced changes of technological and business models while still providing consistent and predictable outcomes in application.

The combination of flexibility and predictability requires that policy makers consider the application of policy across a number of fact patterns and contexts. The granularity of the drafting must also be considered as the more specific the drafting, the more likely the draft will be obsolete before its time. The important role of self-regulatory and co-regulatory mechanisms should also be recognized. Such tools are an important element of a legal framework that can meet policy goals in a technologically fast moving environment with complex value chains.

The complexity of issues related to emerging business models and technologies is challenging and can be hard to grasp. Business stands at the ready to work with government and other stakeholders to best consider how to address potential regulatory and societal implications while preserving the potential benefits of implementing such innovations. Governments must continue to liberalize markets to realize competitive open markets for all players, and ensure that any new measures or incentives have a positive impact on infrastructure investment, the growth of the Internet and the innovative services and applications that are being provided to consumers and citizens.

Building on the momentum of the 2011 Internet Policy Making Principles, business seeks from Government the following:

- An environment providing appropriate incentives, legal protections, and policy coherence where innovation and creativity can flourish across communities, business models and disciplines;

- Open, fair and competitive markets for both new and existing players allowing them to capitalize on emerging opportunities;
- Incentives for investment in technologies and their implementation, including communications, new media and information technologies, that will provide adequate capacity, security and capabilities for the future to capitalize on digital opportunities supported by needed connectivity;
- Respect for intellectual property rights, and effective systems to enforce those rights;
- Transparent legal and regulatory frameworks that are applied fairly, with predictable outcomes;
- Policies that enhance the skills and employability of workers and encourage entrepreneurial activity by businesses.

Multi-stakeholder cooperation is a foundational element in the development and implementation of these framework conditions that support the development of a broad range of sophisticated and increasingly “real-time” services, communications, transactions and interactions over intelligent networks.

Emerging Technologies: Seizing Opportunities Across Sectors

There are emerging and innovative technologies and business models that are having a profound impact on how data is collected, used, and maintained for an ever evolving range of purposes that will help drive economic growth, improvements in social welfare and new and expanded job opportunities. Central among these innovative technologies are Cloud, Big Data and the Internet of Things. The OECD has started to review both the economic and policy considerations related to each of these technologies.⁹ When considering these emerging technologies, we must also consider how they operate and leverage each other in combination.¹⁰

The ecosystem of these emerging technologies creates an environment where people and objects interact with each other in computer aware environments to avail themselves of services delivered through the cloud and supported by an unprecedented level of analytics. While economies find themselves at different levels of infrastructure development and deployment as well as varying levels of innovation and investment, all economies can benefit from these applications, where appropriately implemented.

Health Innovations -- While these emerging technologies represent the cutting edge of ICTs, their true economic and societal benefits lie in their sectoral and cross-sectoral application. Sensors, ranging from

⁹ OECD 2016, *The Internet of Things: Seizing the Benefits and Addressing the Challenges*. Ministerial Background report for Ministerial Panel 2.2. DSTI/ICCP/CISP(2015)3/FINAL; OECD 2016, *Stimulating Digital Innovation for Growth and Inclusiveness: The role of policies for the successful diffusion of ICT*. Draft Background report for Ministerial panel 1.2. DSTI/ICCP(2015)18/FINAL; OECD 2016, *Convergence and Beyond: Innovation, Investment, and Competition in Communication Policy and Regulation for the 21st Century*. Background report for Ministerial panel 2.1. DSTI/ICCP/CISP(2015)2/FINAL.

¹⁰ This has been considered to some extent in the OECD’s horizontal work on the Knowledge-Based Economy. See for example, OECD, 2016. *Enabling the Next Production Revolution: The Future of Manufacturing and Services- Interim Report*. C(2016)43/REV1 ; OECD, 2003. *OECD Global Forum: Policy Frameworks for the Knowledge-based Economy: ICTs, Innovation and Human Resources (Summary Report)*. CCNM/GF/KE/DE(2002)4.

those embedded in our homes to wearables and even ingestibles, allow us to catalogue, and where appropriate, share aspects of our lifestyle as never before. This is a boon to the concept of personalized or precision medicine. Today we have become ever more expert at identifying the specifics of the disease and tailoring the treatment to the drugs most effective at curing or containing the disease. However, we are still focused on the interaction of the drug and the disease. Future applications will take that to a new level of personalization and effectiveness. Not only will we address which drugs work best on which diseases, but which drugs work best on which diseases in people like you; people with similar genetic backgrounds, medical histories environment conditions and lifestyle factors.

We will have to consider how to apply policy frameworks and legislative priorities in ways that both enable these societal benefits while protecting against the wrongful use of personal and sensitive information, and the challenge of using identifiable information to support innovation. Personalized medicine by its very nature cannot rely solely on anonymized or pseudonymous data.

Urban Planning – Other cross-sectoral applications will include urban planning, traffic management, logistics, sustainable consumption, energy conservation and impact almost all facets of our lives. For example, smart lampposts are today able to determine structural issues in the bridges on which they stand. Digital phone exhaust can inform city planners of where and how resources should be allocated to address issues ranging from the need to plan pedestrian zones to traffic flip lanes and bike paths. Jet engines can identify and transmit the maintenance they need to avoid problems while still in flight. And products can help self-identify how they should be recycled or disposed of.

Society's most vulnerable communities can also be assisted by such technologies. City planners can use these technologies to make cities more easily accessible to sight and hearing impaired persons with both improved sensing technologies supplemented by contextual information on surroundings and self-driving cars. The elderly can remain at home and engaged in society by using remote sensing technologies, which enable their independence while not sacrificing their care or well-being. In fact, keeping the elderly out of hospital settings often protects them from infections. Thus, these technologies can dramatically contain soaring health care costs by allowing individuals to be treated at home or on an out-patient basis.

Agriculture -- As noted previously, these technologies can also support sustainable development and the the UN Sustainable Development Goals (SDGs). One prime example can be found in agricultural applications that support food safety and food security as well as help create efficient markets. Rudimentary sensors that can report on rainfall, ground moisture, soil composition, river flows and levels can be joined with historical data and weather forecasts to predict information such as the suitability of certain crops to the region and optimal planting and harvest times. This can significantly improve crop yield and long term conservation goals. When this information is supplemented by data on other growing conditions, planted crops, and rural needs, local farmers can plan the crops most appropriate to meet the need and sell them where most beneficial. Finally, by improving the predictability of local transport options (putting sensors/GPS tracking on busses and trucks) much time that is currently wasted on trying to guess when the weekly bus or transport might arrive may be spent on more productive or leisure activity. Productivity is not just enhanced work efficiency, but also a reflection of optimal work/life balance.

In this section we have focused on many of the benefits that can accrue from these emerging technologies. The following paragraphs will address some of the concerns, which can arise from this enhanced information collection, use, and retention as well as workforce issues that may result from the introduction of

technologies. Before we address those issues, we must consider how to apply the 6I's framework these opportunities.

Understanding the 6I's Matrix -- All of the 6I's mentioned previously are essential components of making these opportunities a reality. Without policies that support innovation and creativity or assure that vestigial regulation does not thwart or unintentionally impede innovation and creativity, technologies will neither be developed or deployed. If innovation is enabled but not financed, then again the benefits of the innovation will not be realized. For these innovations to work data must be able to be used and transmitted. Laws or regulation that prevent or unintentionally impeded such uses will degrade if not deny the benefits of innovation¹¹. Infrastructure is essential to innovation and is often constrained by lack of capital or investment. However, emerging economies often are able to leap frog a number of more costly infrastructure deployments. Furthermore, cloud computing has significantly lowered the threshold of investment necessary to use advanced technologies. A number of these benefits do not require the most cutting edge technologies but can be obtained with more basic computing and communications technologies. Finally both skills (intellectual capital) and Integration (trade behind, at and across the border) are essential to gaining the full measure of benefit of any innovation.

Recommendations to OECD:

- consider how to apply policy frameworks and legislative priorities in ways that both enable these societal benefits while protecting against the wrongful use of personal and sensitive information
- support innovation frameworks as applicable to cross-cutting development goals in particular in areas such as urban planning and agriculture
- avoid imposing laws or regulation that prevent or unintentionally impeded the benefits of innovation or constrain the flow of capital or investment.

Promoting Trade Inclusion and Trust

Data-driven innovation and data analytics are key features of the 21st century, with potential to enhance growth and job creation in developed and developing economies. The flow of data across borders is now a central part of global value chains and a major requirement for a wide range of manufacturing and services industries. For example, strategic business development depends on the ability to analyze large data sets. The efficient management of global investment portfolios requires that data move freely across borders. Data flows are an integral part of modern logistic systems and electronic customs procedures. In summary, data flows are the basis of today's digitalized economies and are important to consumers and business, including start-ups, SMEs and large corporations.

The United Nations Conference on Trade and Development (UNCTAD) estimates in its 'Information Economy Report' that about 50 percent of all traded services are enabled by the technology sector, including by cross border data flows, with the role of ICT applications and services expanding across the entire value chain. Data flows across borders will only accelerate as more people and devices come online. It is estimated that

¹¹ It should also be noted that a failure of trust at the level of the user whether from fears of privacy or security will equally degrade or deny the benefits of innovation, but that will be addressed in the following section.

by 2019, 3.9 billion people, over half of the population of the world, will be connected to the internet. It is also estimated that over the next five years, approximately 10.2 billion new connected devices (including tablets, watches, phones, sensors, etc) will come online – nearly double the number of devices in existence today. Many of these devices will transmit user data for processing across borders. There are a number of conditions that can either advance or impede these goals, as discussed below.

Forced Localization -- BIAC members have identified forced localization policies in manufacturing and services sectors as a troubling trend of recent years. BIAC emphasizes the need for policies that promote best practices for the development of innovative products and services. Limiting data movement will increase costs, reduce the business competitiveness across the globe and fragment the Internet. The objective of promoting cross border data movement is widely shared by technology and broader business groups in OECD member countries.

Open Internet -- As we look at the new and productive uses of data that can further drive economic growth and enhance economic benefit, many have started speaking of the Open Internet; an Internet of boundless opportunity and unfettered innovation. This will be the bedrock upon which we build the modern knowledge-based economy. Business strongly believes that we can achieve the benefits of this open Internet with respect for the rule of law and effective protection of individual privacy and security. OECD work in this space, including the Internet Policy-making Principles, the recent revisions of the OECD Security Guidelines and the OECD Privacy Guidelines along with the horizontal work on the Knowledge-Based Economy, provide a strong and risk-based policy grounding. Understanding the operational, economic and societal implications of risk and developing mechanisms that can address the broad range of risk while preserving the economic and societal opportunities and benefits of innovation is an essential premise of the OECD's work on digital security risk, and its related work on privacy risk.

Risk-Based Approach -- Evolving policy and regulatory initiatives on Big Data, Cloud Computing and Internet of Things are grappling with just these issues. Across geographies we are seeing innovation not just in technology and business models, but also early signs of them in policy and regulatory development. Risk-based analysis has been included in the recently adopted EU General Data Protection Regulations. The EU, members of the Article 29 working group and the APEC Data Privacy Subgroup are looking at ways of finding policy interoperability that will help streamline administrative procedures and reduce the complexity and cost of compliance. Codes of conduct are being developed across sectors to provide effective mechanisms of compliance that do not put undue stress on governmental enforcement resources. These new approaches to compliance may also be more scalable and reactive to fast changing technology and business models.

Most of these innovative approaches to compliance start with the baseline level of protection existing in regulation, but build upon this with new methods of application and implementation of the law. This application/implementation flexibility provides the needed latitude to enable new and innovative technology and business models to effectively meet compliance obligations, while realizing the important economic and social benefits they can provide. Stakeholders are now addressing these issues as they consider how to maximize the benefits of today's expanded data flows while assuring that individual privacy and security are effectively protected.

Building User Trust -- Building trust and enforcing security are important for consumers and business. Policy initiatives should not unduly restrict the movement of data within multinational firms or between related enterprises. Businesses along the value chain need to comply with applicable regulations related to data and consumer protection⁷. All stakeholders are considering compliance obligations and governance frameworks aimed at assuring that privacy and security protections remain effective and can be properly implemented in the context of emerging technologies and new business models, while enabling those technologies and models to realize their potential to deliver economic and social benefit.⁸ Governments have a responsibility to ensure that data protection regulations strike the right balance between protecting the fundamental

rights of individuals and enabling data to flow across borders. The OECD plays an important role in providing clear guidelines in this regard.

The flow of data across borders is essential for businesses and consumers in a digital world characterized by rapid technological change. Companies continue to develop technological solutions and processes to better protect data and comply with regulations that guide how to handle personal data. All stakeholders according to their role, should work to raise awareness of threats and how best to address them, including what steps can be taken to lessen the potential for threats to be exploited. Companies continue to work at providing users with transparent and user-friendly privacy management tools. Users need to consider how best to take advantage of the tools offered. It is a continuing imperative to build higher levels of consumer trust through compliance with laws and regulations on data protection and security.

Technology and the SDGs -- Technology provides new opportunities for inclusion that are unprecedented. Trust is an important element of adoption of technology, but is not the only gating factor. Familiarity with and access to technology are also important elements, which must be addressed. Business has been working in conjunction with other governmental, academic and civil society stakeholders in the development and implementation of the UN Sustainable Development Goals. While four of the goals call out technology specifically, business believes that technology may be integral to the achievement of all of the goals. Today's technology has lowered the barriers to entry to many users: more intuitive methods of interaction with technology, the ability to use cloud computing resources to lower capital outlays and the technical sophistication needed to use advanced technology as well as new and innovative ways to utilize more basic technologies deployed in the rural areas and agricultural applications supported by centralized resources and analytics. These applications will beneficially impact health, food safety and security, sustainable consumption, urban planning, and local entrepreneurship, just to name a few. Business continues to work with other stakeholders on the furthering and implementing the SDGs and believes that much of the OECD's policy work provides a valuable policy resource for development in non-member nations. That being said, all stakeholders should work with non-member economies on how best to consider the OECD work and implement those elements relevant to their current stage of development.

Recommendations to OECD:

- Gather and develop evidence on the adverse effects of forced localization and other measures that restrict cross-border data flows;
- Highlight to governments the impact of data localization and other restrictive measures on international trade and investment;
- Provide guidance to governments to support an effective response to the proliferation of data localization – such as through enforcement of existing trade rules and the establishment of additional international trade disciplines to discourage such measures;
- Raise awareness, among ICT and non-ICT industries, on the importance of data flows for business operations in global value chains (GVCs);
- Work with governments and business to identify best practices in policy formulation that allow for the needed cross-border flow of data and that address concerns for security and privacy;
- Promote policies among governments that enable the open flow of business data to end unnecessary rises in operational costs;

- Work across stakeholders, according to their role, to raise awareness of digital privacy and digital security risk and the behaviors, practices, tools and methods available to manage those risks;
- Continue work across stakeholders on how to create beneficial policy frameworks that will help further and implement the Sustainable Development Goals.

Workforce Development, Mobility and Flexibility

The digital economy is transforming organizations and the types of skills and competencies needed for companies and individuals to rapidly adapt to today's dynamic markets and the changing world of work. It provides unprecedented opportunity and access to knowledge, skills, and training and provides platforms for new business model development and for entrepreneurs.

Knowledge-based capital is an important part of the potential for the digital economy's contribution to productivity and well-being. With the opportunities posed by the digital economy for work, there are also distinct challenges. OECD analysis continues to show that in many countries large numbers of the population continue to lack experience and or basic skills needed to use ICTs for everyday tasks. There is a need to reform education systems in order to prepare individuals for the opportunities presented by the digital economy and to develop a range of soft and hard skills needed for tomorrow's economy – for the emerging types of jobs and for those jobs not yet created. Building a more mobile and adaptable workforce for the future of work means anticipating and encouraging frameworks in which innovation occurs in the both the digital and traditional economy. Skills development is a key aspect of enabling worker mobility and resilience to labour market shocks, enabling an ability to move to a different job within same firm, to a different firm, industry or employment arrangement.

BIAC strongly supports the OECD focus on skills, and specifically on digital skills. Resilient and inclusive labour markets require a strategic approach to the demand for skills, i.e. reviewing education curricula to target key labor and societal needs; strengthening teacher quality and training, including for vocational education and training; improving career guidance for students; and training employees for both the skills and capacities relevant to today's labor market, as well as for longer term needs. This approach requires building better bridges between employers, education, and employment. A sound education and lifelong learning framework is needed for engaging the creative inertia of the next generation of workers and skills in the digital and traditional economy.

Today's technology provides opportunities for greater flexibility in work environments. Many companies are allowing employees to work remotely or accommodating flexible time arrangements for employees with family responsibilities or other needs. Similarly, ICTs are enabling workers across industries to be more productive by eliminating administrative duplication, through automation and streamlined manufacturing. Industry 4.0 or the fourth industrial revolution will introduce the Internet of Things (IoT) and mass data analytics more and more, further revolutionizing workplaces. As well, a growing number of companies already are using distance education and workforce development/advancement programs to grow and foster employee skills across various job functions. ICTs and analytics have also been successfully employed to better capture and certify acquired skills, although many new and cloud-based technologies are directly usable by workers without advanced technology skills, with new technologies having served to lower employment market entry barriers and "democratizing" access to technology.

Advances in technology however, come with challenges. We recognize that some improvements in efficiency and productivity result in worker displacement, and while technology has lowered barriers to entry, not all job skills are easily transportable. Further, depending on a displaced worker's age and stage of employment, opportunities for re-skilling might be limited. While the net result for the economy and society

is positive, this provides little solace for the displaced employee. OECD analysis addressing employment and digitization is important to better understand the evolving demands of the labor market, to identify areas supporting better skills match, and how social benefit systems can effectively respond to changing labor dynamics in the digital economy. Continued economic policy analysis also is important in order to determine and help address both structural and cyclical issues arising from job displacement.

The digital economy and information society are reshaping the workplace and workforce. The “app” economy is a good example, allowing individuals and SMEs to be competitive both within and across platforms. The app economy is dynamic: the workplace may range from an office to a start-up incubator to a kitchen table, with some app developers even not yet in high school. We need to encourage rather than constrain the dynamism of this new economy, while at the same time addressing issues of workers disadvantaged as a consequence.

BIAC’s recommendations on skills that are relevant to mobility in the workplace as identified in the 2016 OECD Employment Ministerial remain relevant during the 2016 Digital Economy Ministerial, namely:

- Support opportunities for targeted life-long learning, which help employers and employees adapt to the change in skills demand, in particular for digital skills. There is a pressing need for lifelong learning that pays equal attention to such subjects as science, technology, engineering, mathematics, and languages; as well as to “soft” skills such as creativity, critical thinking, communication, collaboration, and work-readiness.
- Enhance cooperation with employers in education and training systems to ensure skills matching for the current and future needs. Modalities for cooperation should include participation by employers in forward looking education policy setting, joint initiatives to develop work-based learning opportunities, and direct cooperation between education providers and employers for assessment and quality assurance systems.
- Support greater cooperation between public and private employment services for a more streamlined and effective matching between labour market demand and supply.
- Accord high priority to “skills development, activation and use,” while aiming to reduce skills mismatch and increase relevant work skills. New insights on skills matching and skills management and anticipation policies would be valuable, and would support the overarching goal of improving labor market participation. The Jobs Strategy should address the current and anticipated impact that the digitalisation of jobs has on demand for skills.

In addition to these recommendations to the Employment Ministers, governments should:

- Develop re-skilling and early or fast-acting labor market policies for workers displaced due to technological change
- Adopt a digital skills strategy in partnership with schools, VET, Business, Venture capitalist and entrepreneurs to support start-ups and SMEs

The Role of the OECD in the Digital Economy

Starting before the Ottawa Ministerial and continuing after the Cancun Ministerial, the OECD will play an important role providing a fact-based economic foundation, important surveys of practices and identification of trends that will inform consensus-based policy guidance frameworks to assist members in digital economy in policy development. The OECD considers issues and concepts over their lifecycle so the economic analysis is not limited to the conditions for policy development, but can also measure the effects of policies on markets and innovation. It is important for the OECD to remain a leader in such fact-based analysis, as to much of today's analysis in support of policy is based on anecdotal evidence, unsubstantiated correlations or emerging trends.

Each Ministerial outcome (Ottawa, Seoul, and Cancun) comes at an inflection point in our collective economies and societies. Ottawa outcomes helped inform a policy framework of no or light-touch regulation that allowed ecommerce to gain a foothold and flourish. Seoul provided an opportunity to recognize that the digital economy was now "main-stream"- e-business was just business and that a need had arisen to consider the effectiveness of compliance and regulatory frameworks across sectors. Cancun comes as we recognize that the digital economy is pervasive and is synonymous with the economy. We are trying to understand both the potential benefits and challenges of digital transformation; and while we are still trying to determine how to provide effective privacy and security protection in this digital transformation, we are equally aware that the wrong regulatory framework can needlessly constrain if not eliminate the potential benefits of innovation.

Since Ottawa, the OECD has been uniquely positioned by providing opportunities for meaningful multi-stakeholder input and participation. The OECD analysis and policy development has benefitted not just from the inputs and participation of the various stakeholder groups, but also by the exchanges of ideas and the solutions that emerge as a result of this interaction among the stakeholder groups. BIAC looks to OECD for its continued analysis and guidance on policy issues related to the digital economy with a view towards seizing the benefits of the exciting innovative opportunities that lie ahead.



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