

Industry Agenda

Information and Communication Technologies Governors Meeting 2014

Davos-Klosters, Switzerland 22–25 January





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Introduction



Alan Marcus,
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and Communication
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USA

Under the theme “The Reshaping of the World: Consequences for Society, Politics and Business”, the World Economic Forum Annual Meeting 2014 focused on how political, economic, social and technological forces are transforming the world. More than 2,500 global leaders convened in Davos to discuss this theme—in both official and private sessions—and to further look at the issues that are shaping the global, regional and industry agendas.

In Davos, the Forum’s Information and Communication Technologies (ICT) Industry programme provided private, peer-to-peer and action-oriented, cross-sector sessions spearheaded by our ICT Industry Partners. The programme also offered a unique opportunity to engage with leading government officials, regulators and thought leaders in a trusting environment.

The ability for ICT to be a disruptor and the opportunity for technology to eliminate inequality was a pervasive theme throughout the Annual Meeting, not only within the ICT Community programme. A deeper understanding and dramatically increased awareness and interest from all sectors represent a significant opportunity for the ICT industry. However, 2013 also saw a substantial breach of trust in the digital environment between governments, business and individuals—a trust that the sector will have to take a leading role in restoring.

This report summarizes the key insights and discussion points collected throughout the ICT programme and related sessions at the Annual Meeting 2014, and offers action points and areas of prioritization for the Forum’s ICT Community to further discuss and take action.

We would like to thank all our Governors for their invaluable insights and commitment, and particularly wish to express our gratitude to the steering committees of the IT and Telecommunications Communities, and their respective chairs, Pierre Nanterme and Jon Fredrik Baksaas.

Executive Summary

During the Information and Communication Technologies (ICT) Industry programme at the World Economic Forum Annual Meeting 2014 in Davos-Klosters, Switzerland, leaders from the IT and telecommunications industry convened with leaders from other industries, key public figures and experts to discuss the transformational landscape for the digital ecosystem. There was broad consensus on a number of key issues, including the need to rebuild trust in the digital environment, in particular by highlighting the significant social, economic and individual benefits that a hyperconnected world will enable.

To deliver on this promise, key challenges in the areas of privacy, security, resilience and governance need to be addressed. Furthermore, there is a need and an opportunity for the industry to create a shared vision for the digital society of the future.

Key highlights of this year's Industry Partners Meeting include:

- The Industrial Internet and increased awareness and interest from all industries represent a significant opportunity for the ICT industry. However, serious work needs to be done to restore trust between governments, business and individuals, and to avoid the fragmentation of the Internet.

- Trust, security and privacy are key enablers for the growth of the Internet and the "Internet of things". There needs to be smart regulations, widely adopted standards and ubiquitous connectivity. The policies need to support and serve everyone.

- Hyperconnectivity is already here, transforming how all industries produce and deliver value. All of these opportunities rest on the common global digital architecture, which is currently under pressure. It is a shared business imperative to keep the internet global and open.

- The digital economy is projected to reach US\$ 4.2 trillion in the G20 countries by 2016, transforming both developed and emerging markets; the ICT industry must guarantee the delivery of a robust digital infrastructure through collaboration, among its own players and with governments.

- Trust is the foundation of the personal data ecosystem and trust has been broken; innovative ways are needed to restore accountability, transparency, governance and empowerment in the use of personal data.

- Great progress has been made in the maturity of leaders' understanding of cyber risks. A shift in the dialogue is needed – from being reactive to being more future-oriented given the development of the Internet of Things. Governments need to work with the private sector and with each other to develop norms of behaviour for the most destructive threats.



Information and Communication Technologies Industry Community of the World Economic Forum

As of 1 February 2014

| | | | |
|---------------------------|--------------------|----------------------------|---------------------------|
| Accenture | Cisco | Kaspersky Lab [†] | SAS Institute |
| Adobe Systems | Cognizant | Kudelski Group | Saudi Telecom |
| Akamai Technologies | EMC | Lenovo | SK Telecom |
| Amdocs | FIS | Liberty Global | Tata Consultancy Services |
| América Móvil | Fujitsu | Lockheed Martin | Telefónica |
| ARM Holdings [†] | Google | Mahindra Satyam | Telenor |
| Axiata | HCL | MegaFon | Telkom SA |
| BAE Systems | HP | Microsoft Corporation | Telstra Corporation |
| Bharti Airtel | HTC-VIA | Neusoft | TIBCO Software |
| Blackberry | Huawei | NQ Mobile [†] | VimpelCom |
| BMC Software | ICANN* | Ooredoo | Wipro |
| Brightstar | iGATE* | Qualcomm | |
| BT Group | Infosys | Reliance Industries | |
| CA Technologies | Iron Mountain | Salesforce.com | |
| China Mobile* | Intel Corporation* | SAP | |

* Industry Associate

[†] Global Growth Company Shaper

Technology for Humanity

This session brought together heads of international organizations, government leaders and chief executives in a highly interactive conversation that sought to better define the benefits that greater collaboration between the technology sector and the human rights/humanitarian communities could unlock. The conversation was built around three objectives: the intersection between technology and humanity; partnerships and cross-sector collaboration; and human centred approaches.

Intersection between technology and humanity

Twenty years ago, accessing information online was done by a minority with technological know-how. Today, communications technology is an essential part of people's daily lives. Digital technologies have become more affordable and accessible than ever. As a result, there are now more phones than people in the world.

Technology has also become an indispensable tool for people to express themselves and to share information and ideas. Participants widely acknowledged the transformative benefits of the global technology platform for the economic and social good. As one speaker noted, cell phones have been able to give "voice to the voiceless".

As a result of the increased availability of ICT solutions, ordinary citizens have benefited from better access to education and healthcare, among others. As one speaker underlined, individuals and communities now have access to critical

information and "governments no longer have a monopoly". In times of natural or human-made disasters – where information was previously held only in the hands of governments – individuals and communities have become empowered to ensure their governments act responsibly.

One example cited was Typhoon Haiyan, which brought immense destruction to the Philippines. Crisis maps, social media and mobile phones were critical and created unique ways of collaboration. During human-made disasters, such as armed conflicts, citizens can photograph and document abuse with their mobile phones – images that can form part of evidence against perpetrators and those who permit such abuse.

Partnerships and cross-sector collaboration

While the Internet has been a powerful tool to reduce inequality and poverty, some participants expressed concern about the lack of digital infrastructure in the developing world, creating a profound digital divide. With less than half of low-income countries connected to the Internet, it is evident that opportunities will continue to be available for those who are connected, but will leave behind those who are not.

To ensure that the global commons lives up to its potential, participants called for governments to share responsibility with business, international organizations and civil society to build partnerships that will facilitate better access to ICT. As one speaker noted, while governments have a



Peggy Johnson, Executive Vice-President and President, Global Market Development, Qualcomm, USA



Tae Yoo, Senior Vice-President, Cisco, USA

responsibility, private sector innovation and capacity will be critical in helping to close this gap. Participants unanimously called for reframing the discussion from “technology for humanity” to “humanity for technology”, putting the human element at the forefront of the debate.

Human-centred approaches

Today’s world is connecting in complex and constantly changing ways. With the private and public sector often being blurred, concerns are increasingly being raised about mass online surveillance and the interception and collection of data. Participants called for greater leadership from the private sector to keep pushing for more transparency and to ensure greater government accountability for digital surveillance and preservation to the right of privacy. It was unanimously agreed that the ethical use of technology can help to save and improve lives, and also to strengthen human rights and development.

Next steps

In setting out next steps, the group agreed that over the next 12 months, the Forum and its partners should:

- Work on establishing a Global Agenda Council on Technology for Humanity.
- Develop a dialogue series around these issues.
- Work towards and have a presence at the World Humanitarian Summit 2015.



Ralph Eichler, President, ETH Zurich, Switzerland; Katharine Mulvany, Senior Director, Corporate Affairs, Cisco, USA



Bradford L. Smith, Executive Vice-President and General Counsel, Microsoft Corporation, USA; Navi Pillay, UN High Commissioner for Human Rights, Geneva



Diego Molano Vega, Minister of Information and Technologies and Communications of Colombia; Alex Pentland, Toshiba Professor of Media, Arts and Sciences, Massachusetts Institute of Technology (MIT), USA

Rethinking Personal Data

This private session considered ways to strengthen trust in the personal data economy. Strengthening trust is essential to sustainably maintaining the flow of personal data, which participants noted has the potential to create enormous social and economic value. But trust has been broken by security breaches and revelations of widespread government surveillance, triggering a global debate on how governments, enterprises and institutions are collecting, sharing and using personal data. These activities have brought to light privacy and identity risks arising from personal data use. While participants felt strongly that these risk areas need to be understood and addressed in a proactive and multistakeholder fashion by businesses, civil society and governments, there was also consensus that the upside benefits far exceeded downside risks.

Drivers of trust

As a starting point for the discussion, participants considered several interrelated drivers of trust, including accountability, transparency and governance. Accountability – holding institutions or individuals responsible for their actions – was seen as a foundational principle for a trusted personal data economy. However, several noted that finding the means of enforcement to drive accountability can be elusive in a constantly shifting big data economy. Designing systems with accountability measures incorporated into their architecture was viewed as an important means of addressing this dilemma.

Related to accountability is the principle of transparency. Accountable systems provide a means for internal auditing, but also need to be transparent in order to more effectively drive trust.

Two principle issues around transparency emerged from the discussion:

1. Transparency alone does not strengthen trust, but must also involve a measure of empowerment.
2. Individuals need to have the means for making meaningful choices regarding their personal data.

Being more transparent

There was also discussion on the optimal degree of transparency. Transparency is often viewed arithmetically, with more transparency considered better. However, transparency more effectively builds trust when presented to individuals in a way that is both understandable and actionable. This was characterized as the difference between “how much” transparency and “how usable” that transparency is.

Effective governance

Upholding principles of accountability and transparency will require innovations in governance. Participants observed that new legal and regulatory frameworks would be needed, but stressed that such frameworks are more effective when market-oriented. Rather than a prescriptive set of policies, participants suggested that regulators provide an incentive structure for industry to drive accountability and transparency, along with appropriate sanctions in the event



Andrew Serwer, Managing Editor, Fortune Magazine, USA



Carlos Lopez-Blanco, Global Head, Public and Corporate Affairs, Telefónica, Spain, and Nathan Eagle, Chief Executive Officer, Jana Mobile, USA

that these efforts fall short. There was also consensus that governance was more effective at building trust and promoting innovation when core principles and terms were globally developed rather than nationally or regionally fragmented.

Protecting data

Throughout the dialogue a series of issues emerged. Participants noted that growth-inferred and observed data sets – data sets that originate with individual activity, but are aggregated and analysed over multiple layers – creates ambiguity regarding ownership and obligations of the data. As data becomes increasingly removed from its origin, determining the ownership of the data becomes complex as multiple parties in the value chain can present competing claims. Related are tensions surrounding obligations for protecting the privacy concerns of individuals, and determining who in the value chain bears this responsibility as data flows become increasingly extended.

Participants also cited the need for a common set of terms and references of baseline concepts to foster a more efficient dialogue. One suggestion was a basic taxonomy of personal data types and their related uses. It was noted that such taxonomy could play an important role in resolving central questions around governance (determining permissibility of

uses), accountability (obligations of parties at the time of use) and transparency (how to present individuals with actionable information).

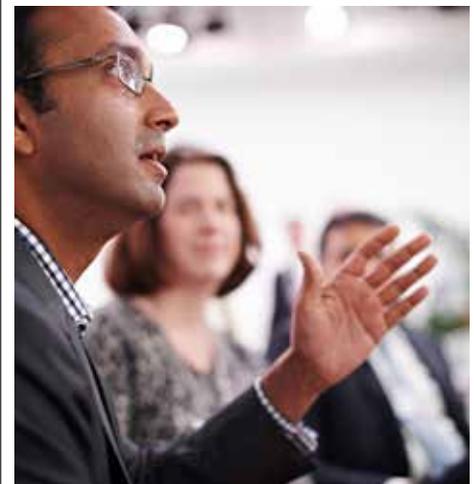
Risk taxonomy

Further consideration was given to the need for a better understanding of privacy risks to individuals. It was observed that in an increasingly connected big data world, the expectations and rights of individuals over their privacy and digital identities remains poorly understood. Participants noted that a first step towards a deeper understanding of these tensions could be the creation of a taxonomy of the privacy risks and their associated harms that data uses can cause for individuals. In the same way that data type and use taxonomies further a more efficient and effective dialogue, a harms and risks taxonomy would play an important role in strengthening trust by orienting accountability, transparency and governance systems around individuals.

The World Economic Forum’s Rethinking Personal Data initiative is committed to advancing the thinking on these important issues by facilitating the global dialogue with all stakeholders. Discussions will continue throughout 2014 with actors from industry, government and civil society, and with the initiative’s Steering Board and working groups.



Bradford L. Smith, Executive Vice-President and General Counsel, Microsoft Corporation, USA



Naveen Menon, Partner and Head, Communications, Media and Telecommunications Practice, APAC, A.T. Kearney, Singapore



Rethinking Personal Data Issue Mapping



Raymond J. Baxter, President, Kaiser Permanente International and Senior Vice-President, Community Benefit, Research and Health Policy, Kaiser Permanente, USA

Delivering on Digital Infrastructure

As global wealth creation increasingly depends on the digital economy, reliance on high-performance, ubiquitous digital infrastructure is growing. This may be put at risk by challenges such as the lack of incentives for investment and innovation, conflicting business models and a diverse set of regulatory environments.

Delivering digital infrastructure

The Forum's Delivering on Digital Infrastructure project identifies the key challenges that stakeholders are facing. While it primarily addresses issues related to the US and EU, where the discussion is most pertinent, it also offers insights on several emerging economies.

The aim of the initiative is to help set the basis for a new vision for digital infrastructure by providing recommendations for policy-makers and industry participants to create a healthier environment for investment and innovation in infrastructure and services.

In this session, chief executive officers and senior executives from the ICT and other related industries, along with key thought leaders, discussed the initiative's findings and recommendations

The stakes are high for digital infrastructure. The digital economy is projected to reach US\$ 4.2 trillion in the G20 countries by 2016. In the last five years the digital economy has grown at over 10% annually, accounting for more than 20% of all economic growth. The Internet is changing how businesses, both large and small operate. As one participant said, "every business is now

an internet business". At the same time, it is important to remember that two-thirds of the world's population still lacks access to the Internet. Providing affordable Internet connectivity to the 5 billion people currently without access will be a critical lever in reducing poverty, improving healthcare and providing access to education in emerging markets.

The challenges

Realizing these opportunities will require tremendous investments into both fixed and mobile digital infrastructure. To ensure that adequate investments are made and that the full transformative promise of the digital economy is realized, several challenges must be overcome.

For example, in Europe, network operators struggle to earn adequate returns on investments due to fragmented markets. Adequate legal frameworks do not exist around online identity, cross-border e-commerce and data sovereignty. While most participants considered the US market healthier, others expressed a need for additional experimentation to find profitable means of delivering ultra-high speed broadband.

In emerging markets, commercial business models often cannot justify investments in infrastructure, particularly in rural areas. Across all geographies, cellular spectrum will increasingly be constrained as mobile data volumes continue to double every two years.

Policy reform

One critical step to encouraging investment in infrastructure and services

is refining policy and regulatory frameworks. Participants agreed that policies should be simple and transparent. Policy-makers must increasingly take into account not only the telecommunications sector, but also the entire ICT value chain. However, participants were quick to add that a broader policy scope should not translate into more regulations.

While regulation is necessary, too much regulation can hamper innovation. In some markets, greater balance between consumer protection and operators' business models is required; in others, barriers to entry and innovation must be lowered.

A single digital market

Of all the regulatory topics discussed, establishing a single digital market in Europe was a clear priority for participants. In the end, digital infrastructure is important because it enables the delivery of digital services. Without a market where digital goods and services can travel freely across borders – just as physical goods already do – Europe cannot achieve its full potential for a digital economy. A single digital market would also encourage greater entrepreneurship in digital services within Europe by enhancing the market opportunity and scale potential for European start-ups.

Individual breakout groups addressed four specific issues:

1. How regulators could use a lighter touch to manage the rapidly evolving ICT sector
2. How to grow digital services sectors, highlighting the potentially paradoxical need for governments to create the right educational and business environment, while subsequently letting bottoms-up innovation thrive
3. How IP interconnection agreements—the wholesale contracts that dictate how data is shared between networks—should evolve as online traffic continues to grow (participants agreed that more diversity in the types of agreements could be valuable to manage different use cases, but several also raised concerns about potential risks to innovation)
4. How to encourage different types of innovation in infrastructure, identifying business model innovation as the key lever to grow connectivity in emerging markets

Solutions

To overcome these challenges to digital infrastructure, governments and businesses need to collaborate to develop and implement practical solutions.

Several specific ideas were raised during the discussion. First, heads of government and leaders of industry should come together to sign a commitment to the digital economy. Second, to help speed regulatory reform private companies should take a more active role in drafting regulation. Finally, a global fund should be formed to help finance digital infrastructure investments in emerging markets; to reduce the investment burden, network operators should share infrastructure and information in these geographies.

With significant agreement on both the opportunities and the challenges facing digital infrastructure, participants were confident that real progress could be made in 2014.



Toomas Hendrik Iivess, President of Estonia



Manoj Kohli, Managing Director and Chief Executive Officer, Bharti Airtel Limited, India



David Thodey, Chief Executive Officer, Telstra Corporation, Australia, and Carlos M. Jarque, Executive Director, International and Corporate Affairs, América Móvil SAB de CV



Padmasree Warrior, Chief Technology and Strategy Officer, Cisco, USA



Manuel Kohnstamm, Senior Vice-President and Chief Policy Officer, Liberty Global, Netherlands



Ben J. Verwaayen, Chief Executive Officer, Verwaayen Business Services, United Kingdom

Governors Meeting for Information Technology

The Information Technology Governors and special guests from government convened to discuss the impact of digital hyperconnectivity across multiple industries and policy domains. The conversation focused on the profound changes of the “Internet of Things” revolution, the ability of industry to maintain the delicate balance between privacy, security and trust, and the fragmentation of the Internet.

As digital technologies continue to change the world, it was widely agreed that two narratives are emerging – one of a “techtopia” and the other of a “cybergeddon”. In a techtopia, increased connectivity and the Internet of Things revolution will drive gains through greater efficiencies, new business and social engagement models. This optimism is counterbalanced by the cybergeddon narrative – a conversation about the new risks, threats and uncertainties around technology.

The Internet of Things revolution

There was widespread recognition that information technology is not only a driver of efficiency, but also of fundamental transformation. By 2015, there will be more networked devices than people on the planet. These will include household appliances, cars and doctor prescribed pills – anything will become a computer.

The Internet of Things revolution is changing the way one lives, works, plays, learns and makes decisions. As one commentator noted, “It’s exciting that the digital revolution is only at the beginning.” As smart devices become more of a

medium of daily life, there was broad agreement that the effects will be disruptive and transformative, with profound impacts across multiple industries, such as healthcare, agriculture and education. There was broad consensus that the IT industry could take a leading role in partnering with other industry players, understanding how this opportunity could be leveraged for social and economic gain, including creating employment.

Balancing the privacy, security and trust equation

While it was widely noted that opportunities for increased digital technologies are tremendous, participants also expressed caution about the industry’s ability to strike the right balance between privacy, security and trust. As a result of leaked security agency documents detailing the existence and functions of classified surveillance programmes, 2013 represented a watershed year for the Information Technology industry.

With heightened sensitivities of increased security and surveillance risks, industry participants expressed deep concern on the impact of these events on their respective company’s reputation and business. While there was widespread recognition that there is a need to strengthen trust throughout the complex ecosystem and across all stakeholders, it was widely noted that greater resilience can only be achieved with greater transparency and accountability.



William H. Gates III, Co-Chair, Bill & Melinda Gates Foundation, USA



Tony Fadell, Founder and Chief Executive Officer, Nest Labs, Inc., USA

Internet fragmentation

The Internet has been regarded as an engine for growth and innovation. However, the events of 2013 have brought increased politicization to how the Internet should be governed. As a result, participants expressed concern that the borderless nature of the Internet may change, becoming more Balkanized, with borders being erected. This has the possibility to change the Internet as we know it, stifling innovation and slowing technological progress. Participants widely embraced the notion of an open Internet, governed by a broad range of decision makers, including industry, government and civil society. There is huge opportunity for a multistakeholder approach to take concerted action on this issue.



Joseph M. Tucci, Chairman and Chief Executive Officer, EMC Corporation; John T. Chambers, Chairman and Chief Executive Officer, Cisco, USA



Marc R. Benioff, Chairman and Chief Executive Officer, Salesforce.com, USA



Benjamin Netanyahu, Prime Minister of Israel; Pierre Nanterme, Chairman and Chief Executive Officer, Accenture, France



Information Technology Community Governors Lunch

Cross-Industry Governors Meeting on the Hyperconnected World

The hyperconnectivity context

Hyperconnectivity is changing the world, and its extensive implications are only beginning to be understood. The increasing digital interconnection between people – and things – places society squarely at the start of a new revolution, the data revolution.

By 2020 there will be 50 billion networked devices, shaping and informing everyday life, from the things we buy to the way we work, and how governments are run. Every part of life will be gathered, sorted and analysed – for good or for bad. Today's devices are getting better and more pervasive, creating more data.

Such unprecedented levels of automatic data collection and use require significant changes in how personal data is dealt with. Participants expressed concerns that such data has to be protected and used responsibly, and businesses have to do this irrespective of the government. If data flows are not secured and validated, significant problems can occur, especially with the increase in hyperconnectivity (e.g. hacking into a traffic system and changing all lights to red is a problem; changing them all to green is a much bigger problem). If the security issue can be solved, there is no limit to the benefits digital connectivity can bring.

Risks and opportunities

Hyperconnectivity will create vast risks and opportunities for individuals, organizations and society as a whole.

Society may be approaching a time where there will not be any job that a

computer cannot take over, and this issue goes to the core of how economies function. There may be opportunities for those equipped with the right skills, but there are risks for those without, and can potentially further global inequality.

Hyperconnectivity is creating a whole new level of security risks, from accidents and flash crashes to cyberterrorism and increased surveillance. This could lead to a world in which humans face data and decision overload, reduced serendipity and increased self-validation, as well as a changed nature of human relationships.

Opportunities of hyperconnectivity are even larger. Exponentially increasing knowledge and reduction of errors and waste through increased efficiency of all processes have the potential to create a much smarter and more sustainable society. Automation and blurring industry and geographical boundaries have the potential to facilitate great value creation, especially when coupled with open innovation and product development.

Next steps

To build a better hyperconnected world, conditions need to be created that will catalyse opportunities while actively managing risks. To that end, three different classes of actions are proposed:

- Building a better hyperconnected world will require digitally literate individuals, governments and organizations, which all need to learn how to best understand and use the new potential offered.

- To catalyse opportunities and manage risks in the long run, it is crucial to enable secure and trusted data flows that preserve benefits of hyperconnectivity while retaining human freedoms and dignity.
- In the short term, common global digital infrastructure has to be protected and strengthened to avoid overregulation and/or fragmentation. It is a shared imperative to keep the Internet global and open.



Hyperconnectivity description



Carlos Brito, Chief Executive Officer, Anheuser-Busch InBev, USA; Eric Sprunk, Chief Operating Officer, Nike; Fadi Chehade, Chief Executive Officer, Internet Corporation for Assigned Names and Numbers (ICANN), USA; Harry Hohmeister, Chief Executive Officer, Swiss International Air Lines, Switzerland



Irene B. Rosenfeld, Chairman and Chief Executive Officer, Mondelez Global, USA; Apurv Mishra, Founder, Glavio Wearable Computing, India; Alejandra Guzman, Senior Community Manager, Media, Entertainment & Information Industries, World Economic Forum, USA; Robert E. Beauchamp, Chairman, President and Chief Executive Officer, BMC Software, USA; Nizan Guanaes, Founder and President, Grupo ABC, Brazil; Stefan von Holtzbrinck, Chief Executive Officer, Holtzbrinck Publishing Group, Germany



André Kudelski, Chairman of the Board and Chief Executive Officer, Kudelski Group, Switzerland; Natarajan Chandrasekaran, Chief Executive Officer and Managing Director, Tata Consultancy Services, India; Jon Fredrik Baksaas, President and Chief Executive Officer, Telenor Group, Norway



Paul Sagan, Executive Vice Chairman, Akamai Technologies Inc., USA; Scott Painter, Founder and Chief Executive Officer, TrueCar, USA; Marissa Mayer, Chief Executive Officer, Yahoo, USA; Pieter Nota, Executive Vice-President and Chief Executive Officer, Philips Consumer Lifestyle, Royal Philips, Netherlands



Governors Meeting for Telecommunications

The following provides an overview of the key themes addressed at the Telecommunications Industry Governors Dinner.

Unprecedented opportunities

The telecommunications sector is poised for strong growth, with unparalleled opportunities to play an enabling role in society. As the world sets new long-term goals for the post-2015 development agenda, the communications sector will be a vital component to address these challenges.

The ICT sector should be seen as a natural asset (not a taxable asset) and at the heart of the transformation of society in terms of redefining healthcare, education, job creation and many other dimensions of inclusive growth. As tens of millions of new applications, connected devices and new processes emerge, it will be essential for the ICT sector to share insights and best practices on key innovations and enabling policy frameworks with multiple stakeholders.

With the opportunities and challenges becoming ever more global, the industry will need to cooperate and to establish regulatory relationships in a much earlier phase in order to realize a solid and enabling partnership.

Understanding the economics of ICT

The sector has plenty of incentives to invest. The question is where are the impediments for investing? What are the constraints holding the sector back? One constraint is the financial return. Operators have collectively invested

trillions of dollars in communications infrastructure, yet the returns on that investment remain relatively low. The demand for digital services continues to grow at unprecedented volumes and the challenge for operators is to ensure the incentives to invest remain. Ensuring that policy-makers and regulators understand the real world economics of the sector is vitally important; operators need to be understood more effectively.

The ICT sector is focusing on an array of social challenges that were literally impossible to effectively address 10 years ago. Yet despite this ability to create new approaches for education, job creation, health, financial inclusion, regulators simply do not see the massive amounts of investment needed to deliver this impact.

Coordinated cooperation and recognition of the fundamental role of regulators will be essential to build strong relationships at a local and global scale. The growing complexity of technology and spillover in adjacent fields will require interaction with an ever wider body of regulatory bodies that can only be managed by early involvement and strong relationships

Additionally, a consolidated market with clear rules for how to compete will be essential for continued growth throughout Europe. The road to a more consolidated market will require a number of pre-conditions to occur. There needs to be simple and effective regulations that reduce some of the complexity in the market.



01: Hamadoun I. Touré, Secretary-General, International Telecommunication Union (ITU), Geneva; Global Agenda Council on the Future of the Internet

02: Sunil Bharti Mittal, Chairman, Bharti Enterprises, India; Marcelo Claure, Founder and Chief Executive Officer, Brightstar, USA

03: Sun Yafang, Chairwoman of the Board, Huawei Technologies, People's Republic of China

Establishing a trusted digital economy

To truly embed itself into society, industry leadership will need to focus on being transparent and accountable. As the era of big data and the Industrial Internet approaches, operators will be fundamental in defining how technical, commercial and legal systems can uphold core social values and norms. Industry leaders will have to focus on increasing trust through the eyes of consumers and governments. To gain trust takes a long time and true commitment to principles and transparency; trust can be quickly lost.

The decentralized and complex nature of the networks that will serve as the platforms for future development makes resilience and security a key goal for the industry. Comprehensive security can only be realized by a collective and holistic approach with the individuals' interest put first; the industry should learn its lessons from the risks and limitations that were the result of a fragmented security approach in the initial wired communication networks. Tapping the potential of empowered consumers will require a high degree of customization and individualization, but when unlocked these markets can provide significant growth for the industry in the long term.

Identity as an enabler for the Internet of Things

New forms of identity management will be important to enable trust as the complexity and diversity of the networked systems increases. Identity in the context of the industrial Internet is a unique and powerful enabler for operators to explore. Embedded SIM technology holds much promise in that regard for cars, machines and devices.

For people, there is a need for identity systems to be highly secure, yet flexible enough to allow individuals to control the specifics of sharing personal attributes to navigate the digital world. The lack of a trusted and secure identity is one of key constraints holding back the growth of the social dimension of the digital economy. To allow the right ecosystem for low-cost models to develop, regulators should find ways to minimize the burden on these models, while at the same time protecting the consumer and reducing systemic risks.

Smart regulation

Delivering on the promise of transformation will require smart regulation that encourages innovation and investment. Central to this approach will be the need for standardization that can foster interoperability at global scale. The "Internet of everything" will require unprecedented amounts of interconnectivity to ensure that the collective intelligence is shared widely. A world of smart but isolated things will be suboptimal; really smart standardization is essential.

Transformative innovation is also critical. There are those that see the world as it is and ask why (scientists) and those that see the world and ask why not (entrepreneurs). Both types are needed to dream big and to implement.



Michael T. Fries, President and Chief Executive Officer, Liberty Global, USA; Jon Fredrik Baksaas, President and Chief Executive Officer, Telenor Group, Norway and Chair of the Governors for the Telecommunications Industry for 2014



José María Álvarez-Pallete, Chief Operating Officer, Telefónica, Spain; Risto Siilasmaa, Chairman of the Board of Directors and Interim Chief Executive Officer, Nokia Corporation, Finland; Abdulaziz A. Al Sugair, Chairman, Saudi Telecom, Saudi Arabia; Neelie Kroes, Vice-President and Commissioner for the Digital Agenda, European Commission, Brussels; John T. Chambers, Chairman and Chief Executive Officer, Cisco, USA



Telecommunications Community Governors Dinner

Risk and Responsibility in a Hyperconnected World

Digital technologies provide an important platform for innovation and growth, and as the world becomes more connected, it becomes increasingly important to ensure security, resilience and trust in this digital domain. Now in its third year, the World Economic Forum's Risk and Responsibility in a Hyperconnected World initiative has made tremendous progress in raising awareness, understanding and action of cyberthreats.

A proactive approach to cyber security

This session showed that more work needs to be done to move from a reactive to proactive state. It was evident during the discussion that many organizations are still trying to combat individual threats rather than solve the systemic issues that drive cyber events.

To take proactive action, organizations must have a clear vision of the changes that will affect the way they conduct day-to-day business. However, many participants urged caution when trying to frame the future. With advancements such as data mining and big data analytics, connected devices and artificial intelligence, the real question was if these historical scenarios went far enough to capture the possibilities of the future.

In addition to understanding and forecasting potential challenges in the future, it was evident that more would be required from governments. Many emphasized that government action in this area does not mean regulation or policy action. But rather, it was critical

that governments develop an understanding and behaviour that prepares them to respond to cyber events, and that this needed to be done with collaboration from the business sector.

Tackling the issues

During the session participants focused on the following issues:

- Tackling risk management across the supply chain and exploring market-based risk transfer mechanisms.
- Restoring the trust between governments, businesses and the public.
- Identifying new capabilities, countries must develop as the threat progresses and evolves.
- Measuring the economic impact of cyber events.

Session outputs

- The belief that standards and strategies at the national and international level were key for any discussions on cyber resilience.
- Given that talent is a scarce resource in this field and that it is currently concentrated in the private sector, partnerships between the government and the private sector are needed to define good standards and policies.
- There needs to be a way for companies to share problems quickly; there are currently technical obstacles inhibiting this.
- To better utilize and insulate from attacks originating from the supply



Benjamin Netanyahu, Prime Minister of Israel



Diego Molano Vega, Minister of Information Technologies and Communications of Colombia

chain, there needs to be clear alignment across the ecosystem.

- Each organization across the supply chain has to adopt standards – technical, commercial, regulatory – which are harmonized across organizations.
- Any standards or policies developed by the private sector need to take place across the supply chain and must be dynamic by nature.

Based on this consensus, the Organization of American States (OAS) announced its intention in 2014 to further build out a framework for collaboration with a focus on actions that could be taken from a community, international and national policy basis, and systemically. This presents collaboration opportunities with the World Economic Forum.



Brackett Denniston, Senior Vice-President and General Counsel, General Electric, USA



Darrell E. Issa, Congressman from California (R), 49th District, US House of Representatives, USA



Ngairé Woods, Dean, Blavatnik School of Government, United Kingdom



Rosemary Leith, Director, World Wide Web Foundation, United Kingdom



Tim Berners-Lee, Professor of Engineering, MIT Computer Science and Artificial Intelligence Laboratory, USA



Pierre Godé, Vice-Chairman, LVMH Moët Hennessy - Louis Vuitton, France; **Adam Blackwell**, Secretary of Multidimensional Security, Organization of American States (OAS), Washington DC; **Rod Beckstrom**, Founder and Chief Executive Officer, The Rod Beckstrom Group, USA

Relevant Sessions in the Annual Meeting 2014

Official Programme



Augie K. Fabela,
Co-Founder and
Chairman Emeritus,
VimpelCom, Netherlands

The Big Brother Problem

What are the consequences of growing public alarm over personal privacy, data security and the lack of transparency in the gathering of data by public and private organizations?

- Failure to manage data collection properly not only threatens the basic human right to privacy, but it also causes societies to be less safe and companies to forfeit trust of their customers.
- Being proactive in terms of alerting customers about security breaches and acknowledging data collection practices can minimize future problems for companies.
- Respect for the rule of law, transparency and clear guidelines regarding data use must be central to the collection of digital information.



Michael Gregoire, Chief
Executive Officer, CA
Technologies

Collaborate to Innovate

How can market leaders engage with entrepreneurs to spark innovation?

- If market leading corporations do not bring in entrepreneurs, they will be disrupted and eventually lose market share from a lack of innovation.
- Entrepreneurs, on the other hand, need the help of larger, more networked and resourced corporate leaders.
- To forge healthy win-win relationships, corporations need to better support entrepreneurs from within and nurture partnerships from the outside.



Tom Leighton,
Chief Executive Officer,
Akamai Technologies,
USA

CEO Series: Cracking the Code on Cyber Resilience

How are businesses responding to cyberthreats against confidential information and critical infrastructure?

- Ironically, the Internet, cloud computing, standardized software and other technological innovations that are making business operations more efficient and productive are also making it easier for criminals to commit cyberattacks.
- The sophistication and determination of cybercriminals continue to grow exponentially, as do those involved in government and corporate espionage and terrorism.
- CEOs and corporate boards are increasingly becoming aware of the threat, but not everyone knows how to respond to it effectively.
- It is essential for companies and governments to develop a wide spectrum of security capabilities in a world of well-funded and highly motivated cybercriminals.



José María Álvarez-
Pallete, Chief Operating
Officer, Telefónica, Spain

Consumers, Makers and Disruptors

How are the values and aspirations of today's youth reshaping the creative and consumer industries?

- Technology is radically changing how brands and retailers interact with young consumers around the world.
- New Millennials from China to India to the UK are changing how they interact with companies, what they demand of them and what they want for the future.
- The pace of this change is only accelerating.



Viviane Reding, Vice-President and Commissioner, Justice, Fundamental Rights and Citizenship, European Commission, Brussels

Diplomacy and Warfare in the Digital Age

From drones to data leaks, how is the digital age transforming diplomacy and warfare?

- Disruptions caused by the Internet and the digital age mean that nothing will ever be the same again; not only has diplomacy changed, so has warfare.
- The limits of battlefields in the cyber world are unclear; the principles of distinction between combatants and civilians and proportionality of attack, now applied to conflicts, are not in place for cyberattacks.
- At present, cyberspace is largely lawless, lacking in legal or political rules that would apply to either diplomacy or warfare; fast action is required to create rules and conventions for deterring cyberwarfare.
- A show of cooperation among governments to create rules for security in a world of cyberthreats would help regain the trust of citizens. Diplomats, soldiers and politicians must move quickly to catch up to evolving cybertechnology.



Michael T. Fries, President and Chief Executive Officer, Liberty Global, USA

Embracing Hyperconnectivity

How is hyperconnectivity affecting individual and societal norms and behaviours?

- Hyperconnectivity is increasing digital interconnection of people – and things – anytime and anyplace.
- Technology has enabled people to multitask at an unprecedented rate, changing the way our brains work and how we make decisions.
- Despite the benefits of a hyperconnected world, more time needs to be spent offline to allow time for people to think and be creative.



Paul Jacobs, Chairman and Chief Executive Officer, Qualcomm, USA

Disruptive Innovation Ahead!

What technology-driven innovations will disrupt the global marketplace in the year ahead?

- Consumers, clients and competitors have access to huge amounts of real-time information about products, services, events and everything else that is happening at a given time.
- For businesses, the challenge of reading and satisfying constantly changing customer desires and needs requires disruptive innovation every two or three years.
- Change via technology-enabled disruptive innovation is inevitable and companies must respond correctly and rapidly to new expectations or risk being left behind.



Chander Prakash Gurnani, Managing Director and Chief Executive Officer, Tech Mahindra, India

From Hyper to Healthy

With technologies once considered enabling becoming a source of stress, how can organizations maintain a healthy workforce?

- Technology in the workplace can harm memory, reduce concentration and increase stress, impacting employee well-being and productivity.
- To reduce stress in the workplace, companies should encourage and facilitate working from home and healthy living.
- Chief executives should own and demonstrate a humane corporate culture, encouraging communication and ending the stigma attached to rest and relaxation.

Relevant Sessions in the Annual Meeting 2014

Official Programme *(cont'd.)*



Sunil Bharti Mittal,
Chairman, Bharti
Enterprises, India

The India Outlook

With elections on the horizon, how can India's leaders accelerate growth while restoring investor confidence?

- While the Indian economy has stabilized and the government has made progress in areas such as FDI in aviation, telecoms and multi-brand sectors, industry is not responding to the government's moves.
- At the SME level, the demand for credit is very high, which shows that investments are taking place.
- If the world is getting hyperconnected, India's great strength lies in its huge number of smart, young people joining the job market.
- As Indian consumers get more connected, they will start using technology in a more aggressive way, both to drive the emergence of SMEs and also to push grassroots social agenda.



Ajay S. Banga, President
and Chief Executive
Officer, MasterCard, USA

Money and Markets in a Hyperconnected World

From trading currencies to tracking Twitter trends, how are digital and social technologies transforming markets?

- The use of cash is still prevalent, however, the trend is towards electronic payments; use of electronic payments can reduce costs of cash, some forms of crime, and can be particularly useful in reducing corruption and theft.
- Mobile phone-based money transfer and microfinance services can bring financial services to the "unbanked", which is approximately 78% of the African population.
- Big data analysed with algorithms is improving risk prediction and management; however, there are some risks in substituting data analysis for human judgement.



Juliana Rotich,
Co-Founder and
Executive Director,
Ushahidi, Kenya; Social
Entrepreneur; Global
Agenda Council on
Data-Driven Development

Innovation Unlimited

How can organizations reap the benefits of open and collaborative innovation?

- Innovations are collaborations, where people build on the work of others within and outside their organizations to come up with something new.
- One way for companies to ensure continuous innovation is to keep blue-sky research at the corporate or holding company level, which is not subject as much to short-term investor expectations as are subsidiaries or operating units.
- The internal collaboration platform should be structured as broadly as possible, not just along a single product or brand.
- Bringing customers, suppliers and other parties into the collaboration web can be invaluable, as outside perspectives and ideas enrich internal collaboration.
- APIs – application programming interfaces – are very useful for open collaboration, and may be the future of innovation, assuming that corporations share them in the spirit of open collaboration.



Randall L. Stephenson,
Chairman and Chief
Executive Officer, AT&T,
USA

The New Digital Context

What societal, economic and technological forces are reshaping the digital landscape?

- Digital technology is transforming every aspect of life at breakneck speed; half a billion smartphone users today will increase to 4-5 billion in six months.
- It is critical for companies to be informed about and responsive to their customer's individual needs through digital technology; every company will become a service company in the future due to continuous connectivity with customers.
- From a political and legal perspective, big data and the processing power available from big data have profound implications in the areas of information sharing, privacy and trust.



Mark Bertolini, Chairman, Chief Executive Officer and President, Aetna, USA

The New Healthcare Context

What societal, economic and technological forces are reshaping the healthcare industry?

- Mental health disorders represent a huge unmet need for novel treatments. These disorders further affect patient care due to co-morbidity with other diseases where they can adversely affect treatment compliance.
- There is need for significant investment in basic research in order to fuel the applied/translational activities that lead to innovative drugs or devices.
- Data security and interoperability of diverse data sets represent major concerns and challenges in converting data into information, and eventually into actionable knowledge.
- There is a major opportunity for entrepreneurs in the area of getting a patient's family trained and supported in participating in healthcare delivery.



Gina McCarthy, Administrator, US Environmental Protection Agency, USA

Responding to Global Risks

From natural disasters to digital wildfires, how can global businesses build resilience to systemic shocks?

- Global risks demand global responses; no single actor, nation or region can deal with systemic issues such as climate change, cyberterrorism or social inequality on their own.
- Strengthening resilience requires overcoming challenges to collective action through international cooperation among business, government and civil society.
- Government and business leaders need to rethink how they approach shared risks.
- Preparedness needs to be enhanced; often risks are well known, but there are insufficient investments in risk mitigation.



Omobola Johnson, Minister of Communication Technology of Nigeria

Regulating Innovation

How should regulatory and policy frameworks be designed to foster science and technology-driven growth?

- Governments tend to like innovation, but not disruption. As such, the natural tendency of governments is to regulate.
- Rather than trying to follow the recipe of Silicon Valley, governments should focus on their local competitive advantages and develop innovation ecosystems organically.
- One form of effective government support is to establish business incubators, which helps plug the gap between an idea and execution.
- Special economic zones were also cited as an effective mechanism to encourage innovation; government can do more in terms of immigration reform and tax breaks for small businesses.



Natarajan Chandrasekaran, Chief Executive Officer and Managing Director, Tata Consultancy Services, India

Solving the Employment Equation

What sectors, skills and policy innovations will reduce structural unemployment?

- Unemployment among youth in particular is one of the greatest risks to growth in the global economy in the coming years.
- Consensus emerged that solving unemployment over the long term requires economic growth and greater consumer demand.
- Fostering the development of small and medium-sized businesses, improving digital infrastructure and arming young people with skills to compete in the global marketplace are some of the alternatives for breaking out of the collective inaction and averting the unrest and economic decline that could come from long-term structural unemployment.

List of Participants

Governors Chairs

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| Pierre Nanterme | Chief Executive Officer | Accenture | France |
| Jon Fredrik Baksaas | President and Chief Executive Officer | Telenor ASA | Norway |

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| Marcelo Claure | Founder and Chief Executive Officer | Brightstar Corporation | USA |
| Gavin Patterson | Chief Executive Officer | BT Group | United Kingdom |
| Michael Gregoire | Chief Executive Officer | CA Technologies | USA |
| John T. Chambers | Chairman and Chief Executive Officer | Cisco | USA |
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| Michael T. Fries | President and Chief Executive Officer | Liberty Global Plc | USA |
| William H. Gates | Chairman | Microsoft Corporation | USA |
| Chen Ximin | Chief Operating Officer | Neusoft Corporation | People's Republic of China |
| Ivan Tavrín | Chief Executive Officer | OJSC MegaFon | Russian Federation |
| Nasser Marafih | Group Chief Executive Officer | Ooredoo | Qatar |
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| Bill McDermott | Co-Chief Executive Officer | SAP AG | USA |
| Mikael Hagström | President | SAS | USA |
| Abdulaziz A. Al Sugair | Chairman | Saudi Telecom Group | Saudi Arabia |
| Natarajan Chandrasekaran | Chief Executive Officer and Managing Director | Tata Consultancy Services Ltd | India |

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| Vineet Nayyar | Chairman | Tech Mahindra Limited | India |
| José María Álvarez-Pallete | Chief Operating Officer | Telefonica SA | Spain |
| Sipho Maseko | Group Chief Executive Officer | Telkom SA SOC Limited | South Africa |
| David Thodey | Chief Executive Officer | Telstra Corporation Ltd | Australia |
| Vivek Y. Ranadive | Chairman and Chief Executive Officer | TIBCO Software Inc. | USA |
| Jo Lunder | Chief Executive Officer | VimpelCom Ltd | Netherlands |
| T. K. Kurien | Chief Executive Officer and Executive Director | Wipro Limited | India |

Industry Associate Governors

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| Gary Norcross | President and Chief Operating Officer | FIS | USA |
| Ashok Vemuri | Chief Executive Officer | iGATE | India |
| Fadi Chehade | Chief Executive Officer | Internet Corporation for Assigned Names and Numbers (ICANN) | USA |

Global Growth Company Shaper Governors

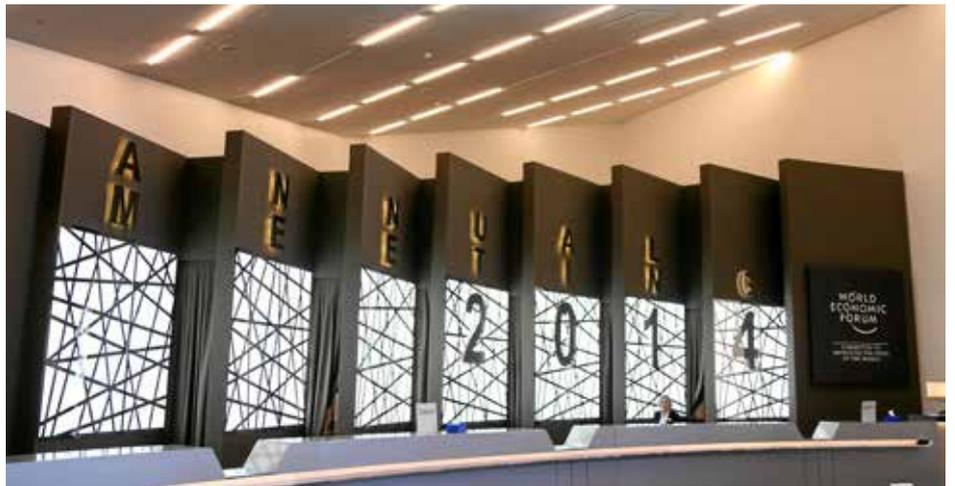
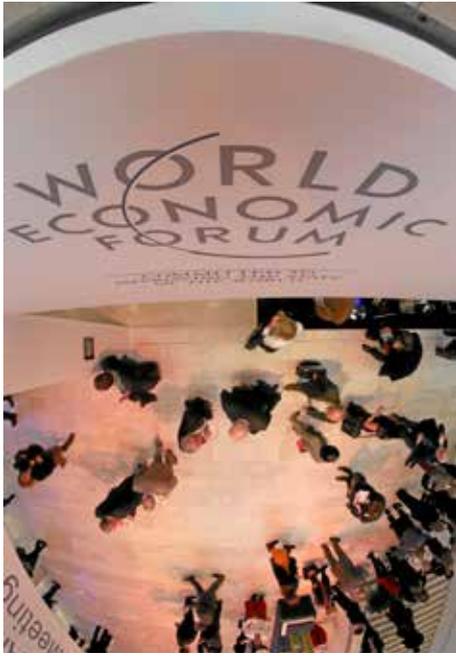
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| Eugene Kaspersky | Chairman and Chief Executive Officer | Kaspersky Lab | Russian Federation |
|------------------|--------------------------------------|---------------|--------------------|

Industry Guests

| | | | |
|-----------------------|--|-------------------|----------------|
| Randall L. Stephenson | Chairman and Chief Executive Officer | AT&T Inc. | USA |
| Anne Bouverot | Director-General and Member of the Board | GSMA | United Kingdom |
| Risto Siilasmaa | Chairman of the Board of Directors and Interim Chief Executive Officer | Nokia Corporation | Finland |

Special Guests

| | | | |
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| Neelie Kroes | Vice-President and Commissioner for the Digital Agenda | European Commission | Brussels |
| Bekele Geleta | Secretary-General | International Federation of Red Cross and Red Crescent Societies (IFRC) | Geneva |
| Hamadoun I. Touré | Secretary-General | International Telecommunication Union | Geneva |
| Diego Molano Vega | Minister of Information Technologies and Communications | Ministry of Information and Communications Technologies | Colombia |
| Navi Pillay | UN High Commissioner for Human Rights | Office of the High Commissioner for Human Rights (OHCHR) | Geneva |
| Benjamin Netanyahu | Prime Minister | Office of the Prime Minister | Israel |
| Adam Blackwell | Secretary of Multidimensional Security | Organization of American States (OAS) | Washington DC |
| Rod Beckstrom | Chief Security Adviser | Samsung Electronics | USA |
| Darrell E. Issa | Congressman from California (R), 49th District | United States House of Representatives | USA |



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