Report of the ESI Summit on Broadband and Information Technology Policy
Conference Chairman
Craig R. Barrett, President & CEO, Intel Corporation

Conference Co-Chairs
David Dorman, President, AT&T
John Loose, President & CEO, Corning
Dean O’Hare, Chairman & CEO, The Chubb Corporation

Honorary Congressional Co-Chairs
Sen. Fritz Hollings, Chairman, Committee on Commerce, Science, & Transportation
Rep. Fred Upton, Chairman, Subcommittee on Telecommunications & the Internet
EXECUTIVE SUMMARY

I. Whither Technology’s Economic Potential

- Despite the collapse of the technology investment bubble and the ensuing economic downturn, the potential of technology to power renewed growth has barely been scratched.
- While the NASDAQ bubble may have collapsed, it has nevertheless, put in place the infrastructure on which the next wave of growth and productivity increase will be based.
- As a result, the Information Technology Industry will experience accelerating growth over the next ten years rising from a current rate of 12% of GDP to between 15-25% by 2010.

II. New Economy and Productivity

- Whether or not we truly have a new economy is a matter of opinion and perspectives. Some see a whole new approach to business resulting from the combination of new technology with innovative financing to create an ecology that greatly accelerates innovation and the commercialization of innovation – others note that business is still about selling products and services for more than the cost of production.
- The real significance of the experience of the 1990’s is that through Information Technology we can use assets more efficiently than in the pre-net economy.
- In the end, productivity is the name of the game, and continued application of Information Technology will produce accelerating productivity growth as well as higher living standards in terms of the ability to do and experience things that were simply impossible not long ago.

III. The Net: Fast – Ubiquitous – Inexpensive

- Deployment of high speed Internet capability (Broadband) is of great importance both for achieving higher rates of economic growth and for assuring national security.
- While Broadband deployment is important it will have no effect unless current relatively low rates of consumer uptake are raised substantially. Prices and content offerings must be such as to create strong demand among consumers.
- While in the short run it is important to achieve widespread deployment and use of current generation Broadband technology, our objective in the
medium to long term should be to make very high-speed Internet connections available to everyone.
- Currently, tax, regulatory and enforcement disincentives appear to the inhibiting optimal Broadband deployment and utilization.
- Any stimulus package for regenerating growth should incorporate incentives for deploying and using Broadband services.
- Development of a Broadband policy to rationalize and better enforce regulations and remove disincentives should be a national priority.

IV. The Wireless World

- Wireless Communications are beneficial both in terms of productivity gains and better quality of life.
- Major problems in the wireless world are lack of spectrum availability, and incompatibility of standards.
- The overwhelming need is for more spectrum availability and centralized spectrum management.
- Spectrum auctions also need to be redesigned to prevent them constituting an upfront tax that inhibits investment and deployment of advanced technology.

V. It’s The Content Stupid

- Development of killer applications that will drive consumer demand for Broadband is a necessity.
- Video on demand is the most likely candidate, but its development will require a secure environment for intellectual property.
- The business model will also be an important determinant of eventual demand.

VI. Feeding The Future

- A dangerous gap in research spending is developing. It must be overcome through more government support of research, particularly through enhanced funding of university labs.
REPORT OF THE TECHNOLOGY SUMMIT

INTRODUCTION

The unprecedented growth of the U.S. and global economies during the decade of the 1990s was largely driven by investment in Information Technologies and the impact of those technologies on the overall economy. In the United States during this period, investment as a percentage of GDP rose by over three percentage points; and two-thirds of this increase was in Information Technology. As this investment drove the annual rate of economic growth to over five percent, it also resulted in a near doubling of the all-important rate of U.S. productivity growth. Indeed, the impact of Information Technology activity was so great that people began to speak of the Information Technology Industries, and particularly of the Internet, as a New Economy that would fundamentally transform business, society, and politics. In the global arena, the U.S. performance was so powerful that it lifted Asia out of its financial crisis in record time and sustained strong world economic growth despite sluggishness in Europe, contraction in Japan, and uncertainty in Latin America. In fact, former Treasury Secretary Larry Summers was on the mark when he described the world economy as being like an airplane flying on one engine – the United States.

In the wake of the collapse of the Nasdaq bubble, Information Technology investment has dropped precipitously and the U.S. economy has fallen into recession and taken most of the rest of the world’s economies with it. At the same time, productivity growth has also slowed, calling into question the validity of the very concept of a New Economy. Yet most scientists and many business leaders believe we have barely scratched the surface of Information Technology’s potential to create new products, services, and industries that will generate tremendous new demand and growth and dramatically raise living standards around the globe.

In an attempt to determine more concretely the potential for and the means of using Information Technology to regenerate U.S. and world growth, the ESI Global Forum gathered 140 (list attached) of the world’s key business, government, and academic leaders in the technology sector for a day and a half of round table discussions. The group addressed questions regarding: the future potential of Information Technology; the validity of the New Economy concept; the real impact of Information Technology on productivity; the products and services that are most likely to drive future growth; the steps that need to be taken to realize this potential; and the steps necessary to assure continued development of technology in the future. This report is a summary of the discussion and of the group’s key conclusions.
WHERE CAN TECHNOLOGY GO?

- Despite the current gloom surrounding the Information Technology sector, the Summit participants were virtually unanimous in the view that the best of technology is yet to come and that it will have huge transforming impacts on increasing both economic growth and productivity and on how we live our lives.

- Behind this conclusion were two fundamental insights. While some felt that the technology bubble of the late 1990s resulted largely in a waste of resources, a large majority of the group believed that despite the excesses of the bubble, it had actually created the infrastructure for the next wave of innovation and growth. As one business leader said: “The Nasdaq bubble was a kind of voluntary tax that the investing public paid to put the fundamental structures of the Internet and the information economy in place.”

- Another participant likened the situation to that of the past when the first canals and railroads were developed. “They too sparked speculation that resulted in much excess and many bankruptcies, but the bubbles left behind fundamental foundations that later entrepreneurs were able to use to create the infrastructure of the future,” he said. He added that the immense information infrastructure created by the recent bubble, although currently severely underused, would be operating at more than full capacity in the not too distant future.

- This view was reflected in the results of a poll of the group:

![Poll Result]

- The second key insight was that technological advance is connecting computers at an exponential rate and moving them beyond factories, offices, and even homes into virtually everything from vending machines to roadbeds. As one technologist put it, “In the past, whenever we have found a way to unlock more data and crunch more numbers, the result has been a new wave of innovation. With the current accumulation and
connection of computers, a kind of intelligence emerges that, for example, allows Big Blue to defeat Gary Kasparov at chess. This intelligence will be more and more pervasive and will increasingly empower people by freeing them of the necessity of doing uncreative tasks. Your car will tell the mechanic when it needs to be repaired or will repair itself. It will also more or less drive itself so that you can surf the net, read, or watch CNN while driving.”

- The belief in a new wave of innovation has created strong optimism regarding the future growth of the Information Technology sector as reflected in the results of the following group poll:

**NEW ECONOMY: FACT OR FICTION**

- Despite their optimism for the future of Information Technology, participants were evenly split on the question of whether or not there really is a New Economy.
- Proponents argued that while the New Economy is not an illusion, it is badly misunderstood. As one top economist stated: “People focused on technology and thought that was the New Economy and that it would grow more or less continuously and be more stable than the economy of the past.” In fact, he argued, “the New Economy is the combination of new technology with innovative financing that creates an ecology of innovation that greatly speeds up the commercialization of innovation. Because by definition it accommodates higher risk, it is actually more volatile than the old economy.” Thus the argument was made that the collapse of the bubble, though predictable, was not necessarily a bad thing nor a contradiction of the validity of the New Economy.

- Others extended the point by noting that the New Economy is really a matter of a business culture that embraces risk by allowing for second chances after failure and that is informal, anti-hierarchical, flexible, and aggressive. This New Economy culture, it was noted, arose first in the United States, but is now spreading to China, parts of Europe, and even Japan.

- The skeptics claimed that there is really nothing new under the sun. As one business leader said, “The economy and business hasn’t changed. We still have to make stuff that we can sell for more than our cost of production. The Internet is a technology and NOT a market. The dot.coms confused this distinction.”
Regardless of differences over the significance of the New Economy, there was agreement that technology and innovation have driven our economy for a long time, and these factors together with supportive financing are the keys to continued growth and prosperity.

<table>
<thead>
<tr>
<th>What are the keys to the new economy?</th>
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<tbody>
<tr>
<td>1. Internet                          27%</td>
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<tr>
<td>2. Pervasive computing               22%</td>
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<tr>
<td>3. Venture capital and finance       8%</td>
</tr>
<tr>
<td>4. Tech &amp; finance                    34%</td>
</tr>
<tr>
<td>5. Other infrastructure              10%</td>
</tr>
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</table>

There was also virtual unanimity as to the reason why these items are so important. As one participant emphasized: “The real significance of the developments of the past few years is the fact that through enhanced computing and the Internet we can create supply chains and other processes that result in assets being more efficiently used than in the pre-net economy.”

THE NAME OF THE GAME: PRODUCTIVITY

The significance of the Information Technology revolution rises or falls on whether or not it produces increased productivity growth. The increases in productivity that accompanied the technology boom of the 1990s seemed to support arguments in favor of the significance of Information Technology. However, as productivity growth has declined in the wake of a slowing economy, however, these arguments have increasingly come into question. As was to be expected, summit participants debated the pros and cons passionately.

A pre-release presentation of the McKinsey Global Institute’s report on productivity growth indicated (contrary to press commentary since the recent public release of the report) that Information Technology has had a very substantial positive impact on productivity growth. The report noted that Information Technology spending in the year 2000 was six times the level of 1987 and that this increase coincided with the recent rapid increase in productivity. While accepting the skeptics’ argument that some of the productivity increase has been due to cyclical factors, the report, which focused on detailed analyses of key industry sectors, concluded that there has been a substantial permanent increase in productivity due to the impact of Information Technology.
Technology. In particular, it noted that the rise in productivity growth was concentrated in a few sectors of the economy, such as retailing, securities and banking, and semiconductor production. **Moreover, the growth occurred only when Information Technology was combined with other complementary factors such as new management structures and work procedures.**

- Some participants were concerned that the excess capacity created by the technology bubble would constitute an overhang that would drag productivity growth down for some time. All agreed, however, that the excess would eventually flush its way out of the economy and that we will all be amazed at the kinds of productivity gains the Internet will drive.

- A further point emphasized was the fact that productivity statistics do not capture the full value of new products and processes. **The economy is about maximizing living standards and the value of something like the Internet in terms of the increased connectedness it establishes among people is not reflected in any official statistics.** In any case, the optimism of the Summit participants with regard to the potential of Information Technology to drive continued productivity growth is reflected in the polling chart below.

![Poll Results Chart](image)

- In considering how best to turn this optimistic forecast into reality, Summit participants focused particularly on the potential of the Internet and high speed wired and wireless connections.

**THE NET: FAST – UBIQUITOUS – INEXPENSIVE**

- Summit participants saw the Internet as a revolutionary infrastructure development akin to the advent of the railroad and the telephone in its significance. Their belief that deployment of broadband (high-speed) capability will be essential to the regeneration of economic growth was reflected in the poll results charted below.
How critical is the deployment of broadband for economic growth?

- The sense of the potential of broadband deployment was only heightened by a review of developments in Korea where very high-speed connections are already available to most businesses and over fifty percent of households. The result of government policies aimed at stimulating broadband deployment for purposes of generating future growth and competitiveness, this is by far the highest level of broadband penetration in the world. This has created a market in which eighty percent of stock exchange transactions are done on the Internet, and where online games, video on demand, e-medicine, and Internet television are thriving. Thus, Korea gives us a glimpse at what the future could be.

- It was also the view of the Summit that the Internet came of age during the crisis of September 11 when over 1.2 billion instant messages were sent within the two hours after the terror attacks. Originally created as a national security measure to assure communications in chaotic situations, the Internet performed just as intended. In addition to its potential economic importance, a majority of Summit participants saw deployment of broadband capacity as an important matter of national security as well, although a significant minority did not see it as being so important.

How critical is the deployment of broadband for national security?

- While there was a strong consensus on the importance of deploying broadband access as widely and quickly as possible, there was less agreement on exactly what speeds of
connection constitute broadband and on how rapidly broadband is being deployed and taken up by users. One recent study suggests that by the end of 2001 over seventy percent of households will have DSL or Cable Modem connections with speeds ranging from 300 kilobits per second to 1.5 megabits per second available to them. The same study also shows that at current prices of around $50 per month, only about ten percent of potential customers have signed up for service, although the sign up rate is rising.

Aiming for Higher Adoption Rates

[Graph showing percentage of US homes with DSL and Cable availability and take rate from 1999 to 2006.]

Source: Morgan Stanley Dean Witter, July 2001

- This gave rise to extended debate. There were many doubts about the meaning of “available service.” It was pointed out that potential customers often experience great difficulty in actually getting connected to broadband services. Some argued that current line speeds and rates of deployment are adequate and that the real need is for pricing, content, and competition that will create greater demand for broadband service. Others held that the DSL and Cable Modem services currently being deployed are not truly broadband because their line speeds do not allow for the many applications, such as those popular in Korea, that would drive greater demand. Indeed, some noted that current deployments might actually inhibit and delay eventual deployment of true broadband capacity. In this view, users will be reluctant to sign up for service until the service has the capacity to deliver things not possible at current broadband speeds; therefore, rapid deployment of broadband capacity from 10-100 megabits per second is therefore of critical importance.

- In the end, the Summit participants came to two conclusions. More bandwidth is better, although cost is an obvious and important constraint. As reflected in the poll chart below, the majority agreed that we should have ambitious goals for broadband line speeds.
What speed of broadband should our goal be?

<table>
<thead>
<tr>
<th>Speed (mbps)</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>100</td>
<td>53</td>
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- At the same time, however, participants tended to believe that rapid market penetration should be a key goal and that, for the time being, lower speeds are acceptable if the take-up rate by households rises more rapidly.

In your opinion, which of the following is more important?

1. 80 million households with 600kb access 67%
2. 20 million households with 6MB access 25%
3. Unsure 8%

- This led to extended discussion of the obstacles to broadband deployment and penetration and what to do about them. The matter essentially boiled down to two issues – regulatory policies and financial incentives and disincentives. As the polling chart below indicates, virtually everyone is unhappy with current regulatory policies.
However, the strong, general dissatisfaction with the regulatory situation did not necessarily mean that Summit participants were of one mind on what is wrong. In fact, participants were divided and even at odds on specific regulatory issues. Some called for stricter enforcement of current regulations, while others argued for loosening and even removal of some regulations. Where some saw a need for more competition or even for structural separation of content providers and data carriers, others spoke of natural monopolies and the need for financial incentives.

In this regard it was pointed out that schools, libraries, and large companies have high-speed connections while most small businesses, many residences, and virtually all those in rural areas, whether businesses or residences, do not. It was noted that this is the real digital divide, and that it confounds the notion of the Internet being a leveling force because it actually puts small business at a disadvantage and creates further pressures for concentration of population and jobs in key metropolitan areas.

In considering this issue, some recalled the origins of the airlines and the interstate highway system and the federal government support that made them possible on the basis of their potential significance for national defense, and wondered if the Internet should be the object of similar incentive programs. Thus when asked about the best approach to stimulating broadband deployment and penetration, participants put financial incentives high on the list along with regulatory change. (Again, it is important to keep in mind that different players want different and sometimes opposing changes in regulatory policy and procedures.)
A majority of the Summit participants also felt that any package the administration and the Congress might now consider for stimulating the economy should include short-term incentives for deployment and use of broadband service. On the other hand, a significant minority either disagreed with that view or was unsure that this would be a good idea.

- The significance the participants attributed to the potential of broadband connections, and the differences among them regarding how to assure optimal levels of deployment and use, led to discussion of the possible need for development of a national broadband policy. Participants from the United Kingdom noted that, like his counterpart in Korea, Prime Minister Blair has made deployment and penetration of broadband services a matter of the highest national priority in order to assure Britain’s competitiveness in the future. Others pointed out that of the G7 countries, the United States is one of only two that do not have a national broadband policy. On the other hand, several participants argued that any such policy runs the risk of having government bureaucrats pick winners and losers and of locking us into technologies and structures that might not be optimal.
from a market and business point of view. When polled at the end of the debate, the participants voted strongly for development of a national policy, but with the guidelines that any such policy must be neutral with regard both to technologies and companies.

THE WIRELESS WORLD

- All participants agreed that the proliferation of wireless devices and services is providing multiple benefits in terms of economic growth, increased productivity, and particularly convenience and quality of life:

| In your opinion, what will be the main benefit of an increasingly “wireless world”? |
|------------------|------------------|
| 1. Increased productivity | 20% |
| 2. Increased convenience/ quality of life | 69% |
| 3. Economic growth | 11% |

- Several participants emphasized the point that the wireless boom was a significant part of the economic growth of the past decade. The number of wireless users grew exponentially, rising from 15 to 115 million in the United States, and penetration rates approached one hundred percent in several countries.
- This experience, it was agreed, provided several lessons for the future. First, because it is limited in the face of rapidly rising demand, spectrum is extremely valuable and any delay in making it available for the most highly valued usage is very costly to society. Secondly, the record on predicting applications, demand, and modes of usage is very poor. At one point, a well-known consulting company predicted 900,000 mobile phones to be in use by the year 2000. Of course, the prediction was ridiculously short of the hundreds of millions of phones actually in use by that time. Thirdly, while we cannot predict what the killer applications will be, we have found that competition is essential; rapidly falling prices have driven entirely unexpected demand and have led to an increase in investment in wireless infrastructure on several orders of magnitude.

- Looking to the future, it is expected that wireless will be an increasingly important part of the broadband era. For optimal development of wireless capacity, however, participants felt three main issues must be addressed: spectrum availability and allocation, compatibility of standards, and user applications.

| In your experience, what has been the biggest obstacle to the advancement of wireless communications in the United States? |
|---|---|
| 1. Lack of spectrum | 23% |
| 2. Lack of killer apps | 21% |
| 3. Lack of compatibility | 40% |
| 4. Inadequate technology | 8% |
| 5. Cost | 9% |

- Summit participants engaged in heated discussions and debated the pros, cons, and future of WAP, iMode, 2.5G, 3G, and 4G. All agreed, however, that for any of these advanced services to succeed more spectrum must be made available. The problem is more acute in the United States than in Europe and Asia because of the immense amount of spectrum occupied by the Defense Department, inflexibility arising from the requirement that spectrum holders cannot change their usage of the spectrum, and the fact that responsibility for management of the spectrum is divided between several agencies. Thus, a major conclusion of the Summit was that there is a crying need for centralized spectrum management, at least in the United States.
The question of how to allocate spectrum got particular attention because of the recent huge bids for 3G spectrum in European spectrum auctions that have subsequently resulted in financial distress for many of the bidders and their lenders and suppliers. Many participants expressed a concern that the way auctions are currently designed effectively constitutes a tax in advance that may inhibit investment and deployment of advanced capacity. There was also concern that governments think of spectrum auctions as a convenient way to raise money for a wide range of programs having nothing to do with telecommunications. This all led to a conclusion by a majority of participants that while auctions are the best way to allocate spectrum, they should be designed so as to entail payment in line with cash flow generation and to circulate funds back to the sector for purposes of compensating incumbents for moving to different areas of the spectrum. A number of participants, however, warned that government should not become the banker or partner of the telecommunications sector.

### Should achieving central spectrum management be a national priority?

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<th>1. Yes</th>
<th>2. No</th>
<th>3. Unsure</th>
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<tr>
<td></td>
<td>80%</td>
<td>13%</td>
<td>7%</td>
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### Should auctions be designed to relieve up-front costs and recirculate dollars to the sector?

<table>
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<tr>
<th></th>
<th>1. Yes</th>
<th>2. No</th>
<th>3. Unsure</th>
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<tbody>
<tr>
<td></td>
<td>58%</td>
<td>32%</td>
<td>10%</td>
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- The problem of incompatible standards was also the object of a great deal of discussion. It was recognized that part of the great success of Europe in wireless communications was the establishment of the GSM standard on a common basis. At the same time, some participants warned of the danger that lack of competition between standards could inhibit technological advance. Generally, however, Summit participants leaned in the direction of the need for a significant rationalization of the standards setting process both in the United States and internationally. The possibility of having one device and one number that would work worldwide was seen as a huge potential spur to demand and growth.

IT’S THE CONTENT, STUPID!

- Much conference discussion focused on the question of killer applications that would either lead consumers to demand more and better broadband or that would arise in response to improved broadband availability.

- All agreed that there has been one killer application to date: Napster. However, it was pointed out that this essentially entailed getting copyrighted materials for free over the Internet and raised severe problems of legality and morality that resulted in its closure. Thus the question of a killer application for which consumers are willing to pay remains an important issue, maybe the key issue.

- It was agreed that at the moment, video entertainment is the most likely candidate, along with new uses such as e-medicine, e-learning, video conferencing, etc., to emerge in response to broadband availability. But for these to succeed, the problem of software piracy must be overcome. As one participant emphasized, video on demand with VCR functionality will more likely drive consumer demand than anything else in the short term. But we need a secure environment for entertainment companies to put their products online.

- The problem here is lack of agreement between the electronics industry and the entertainment industry on how to provide the secure environment. Years of negotiations have yet to be successful. No one wants the government to mandate a standard for fear of getting locked into the wrong technology. But some suggested that the government should give a deadline to the companies, after which if they had not agreed the government would take matters into its own hands.

- Some suggested the problem was not so much “the content, stupid! “ as “the business model, stupid!” The objective is to allow honest people (which is most of the population) to stay honest. Thus the question of price arises. If the price of a download were reduced to $.75, the temptation toward piracy would be greatly reduced while the number of transactions would be increased. The problem, said some, is more pricing than theft. But, of course, all agreed that the objective must be a model that is profitable to the producer as well as desirable to the consumer.
The session ended with an exhortation to the industries to redouble their efforts at reaching agreement on protection standards and procedures.

FEEDING THE FUTURE

In looking toward the future, Summit participants noted that the Internet and other key technologies of today are the result of research efforts begun twenty and thirty years ago. There was concern that similar efforts are not adequately being pursued today. It was noted that over the past fifteen years, corporate spending on basic research has declined significantly and that government R&D spending has also declined, with the exception of funding for health related research.

Summit participants felt strongly that the research gap must be overcome through greater government funding of basic research, particularly in the physical sciences.

In your opinion, which of the following is more important to improve?

1. More government research  51%
2. More government development  4%
3. More corporate research  16%
4. More corporate development  6%
5. Shift from NIH funding to sciences  12%
6. More research on human behavior  10%

The group also had very strong feelings about the role of universities in undertaking basic research. Most participants believed that U.S. universities are superb in the research area and that the best way to spend government money is to give it to the universities.
It was also strongly felt that the R&D division of labor should assign the R to the government and the D to the private sector.

<table>
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<th>Should government:</th>
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<tr>
<td>1. Fund government labs more</td>
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<tr>
<td>2. Fund universities more</td>
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<tr>
<td>3. Support more gov’t/industry projects</td>
</tr>
<tr>
<td>4. Do more technology targeting (a la DARPA)</td>
</tr>
<tr>
<td>5. Support more corporate R&amp;D with tax incentives</td>
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Where are the returns likely to be greatest and needed most to get us on track?

<table>
<thead>
<tr>
<th>Where are the returns likely to be greatest and needed most to get us on track?</th>
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</thead>
<tbody>
<tr>
<td>1. Private investment in research</td>
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<tr>
<td>2. Public investment in research</td>
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<tr>
<td>3. Private investment in development</td>
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<tr>
<td>4. Public investment in development</td>
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Finally, there was unanimous agreement on the importance of increasing the output of skilled technical people by improving the teaching of science and mathematics.

What is the most effective approach to address the workforce shortages in the new economy? Please rate the following recommendations on a scale from 1 (least effective) to 5 (most effective).

A. Establish national K-12 education standards and tie it to annual assessment
B. Better pay for highly skilled teachers – particularly in math and science courses
C. Provide more scholarships for students to complete math, science, engineering and technology degrees
D. Increase the number of H1B visas
E. Scholarships for training teachers
F. Work-based learning experiences/apprenticeships
G. Vouchers/school choice

Average Response to all Polls

- A: 3.5
- B: 3.9
- C: 3.8
- D: 2.9
- E: 3.9
- F: 3.4
- G: 2.6
Program

ESI GLOBAL FORUM 2001 TECHNOLOGY SUMMIT:

EMPOWERING INNOVATION FOR GROWTH

Thursday, October 4

6:00 p.m.  Reception

7:00 p.m.  Dinner (State Room)

Welcoming Remarks:
Clyde Prestowitz, President, Economic Strategy Institute

Introduction: Setting the Stage
Craig Barrett, President & CEO, Intel Corporation, and Chairman, ESI Global Forum 2001

Dinner Speakers:
Introduction by Dean O’Hare, Chairman & CEO, The Chubb Corporation, and Co-Chair, ESI Global Forum 2001

Topic: State of the World Economy
Speaker: Kenneth Rogoff, Economic Counsellor, International Monetary Fund

Topic: The Economic and Security Nexus
Speaker: Hon. Andrew Pinder, e-Envoy, United Kingdom

Friday, October 5

7:30 a.m.  Registration and Continental Breakfast

8:00 a.m.  Session I: Information Technology – Transforming the Global Economy (State Room)

For two generations, information technology has been transforming the global economy as well as peoples’ lives. Despite recent market difficulties, the potential of IT to create new industries and raise global living standards remains enormous. In the wake of terror and recession, the potential of IT to drive growth and enhance productivity will be key to renewed prosperity and security.

• The economic significance of information technology

• Where will IT be 10 years from now?
• The past and future impact of IT
• Opportunities for a major increase in global IT investment

Presentations: 8:00 – 8:20 am
James Manyika, Partner, McKinsey & Co.
David Tennenhouse, Vice President and Director of Research, Intel Corporation

Roundtable: 8:20 – 8:40 am
Gerard Baker (moderator), Washington Bureau Chief, Financial Times
Hon. Martin Baily, Senior Fellow, Institute for International Economics, and former Chairman, Council of Economic Advisers
Hon. Rick Boucher, U.S. House of Representatives
Michael Capellas, Chairman & CEO, Compaq Computer Corporation
Michael Cox, Senior Vice President, Federal Reserve Bank of Dallas
Robert Shiller, Stanley B. Resor Professor of Economics, Yale University

Moderator-led Delegates Forum: 8:40 – 9:30 am

9:30 a.m. Break

9:45 a.m. Session II: The New Economy – Fact, Fiction, and Future
• Was it an illusion?
• Why did it stall, and why didn’t we see it coming?
• How do we get it back on track?
• Which models work and which don’t?
• What are the future drivers of growth?
• How does the new security environment affect technology and the new economy?

Presentation: 9:45 – 9:55 am
Michael Mandel, Economic Editor, Business Week

Roundtable: 9:55 – 10:15 am
Harris Miller (moderator), President, Information Technology Association of America
Alfred Berkeley, Vice Chairman, NASDAQ
Scott Kriens, Chairman & CEO, Juniper Networks
Douglas Frederick, President, EDS
Ron Insana, CNBC
Morton Topfer, Counselor to the CEO and Member of the Board, Dell Computer Corporation
Moderator-led Delegates Forum: 10:15 – 11:00 am

11:00 am

Session III: Feeding the Future

Today’s IT industry rests on a foundation developed over many years. This session will deal with the foundations of the future.

• What kind of R&D do we need?
• Are we spending enough and in the right way?
• Public-Private partnership in the IT sector: Has the relationship changed after the tragic events of September 11?
• Workforce development and the search for talent: Education reform and migration of skilled workers

Presentation: 11:00 – 11:10 am

Irving Wladawsky-Berger, Vice President for Technology and Strategy, IBM Corporation

Roundtable: 11:10 – 11:30 am

Hon. Bruce Mehlman (moderator), Assistant Secretary for Technology Policy, U.S. Department of Commerce
Ira Magaziner, President, SJS, Inc.
Thomas Magnanti, Dean, School of Engineering, Massachusetts Institute of Technology
Hon. Dave McCurdy, President, Electronics Industry Alliance
Hon. Andrew Pinder, E-Envoy, United Kingdom

Moderator-led Delegates Forum: 11:30 – 12:15 am

12:15 p.m.

Lunch (East Room)

Luncheon Speakers:
Topic: A View From the Hill
Hon. Fred Upton, Chairman, House Subcommittee on Telecommunications & the Internet

Topic: The Role of Technology in U.S. Foreign Policy
Norman Neureiter, Science and Technology Adviser to the Secretary, U.S. Department of State

2:00 p.m.

Session IV: A Communications Network for the Information Age – Fast, Ubiquitous, and Inexpensive (State Room)
The advent of the Internet and the promise to create secure, reliable systems has the potential to deliver information on demand universally. But how that potential is realized is yet to be determined.

- Broadband: how broad is broad?
- Is accelerated deployment important – if so, how do we do it?
- Experience of other countries
- Lessons of terror and implications of war on communications networks

Presentations: 2:00 – 2:20 pm
Kilnam Chon, Korea Advanced Institute of Science and Technology (KAIST)
Hon. Reed Hundt, Senior Advisor, McKinsey & Co., and former Chairman, Federal Communications Commission

Roundtable: 2:20 – 2:45 pm
Clyde Prestowitz (moderator), President, Economic Strategy Institute
Hon. Michael Copps, Commissioner, Federal Communications Commission
Robert Crandall, Senior Fellow, Brookings Institution
Hon. David Edmonds, Director-General, Office of Telecommunications (OFTEL), United Kingdom
Richard Ellenberger, CEO, Broadwing
Robert Taylor, Chairman & CEO, Focal Communications Corporation

Moderator-led Delegates Forum: 2:45 – 3:30 pm

3:30 p.m. Break

4:00 p.m. Session V: The Wireless World: Everyone Talking to Everything

A major driver of growth in the 1990s, wireless communications is striving to get to the next generation after hitting some potholes along the way.

- Spectrum – How much and how to get it?
- Will “3G” Fly?
- Experience of Asia and Europe with spectrum auctions
- More than a telephone?

Presentation: 4:00 – 4:10 pm
Robert Pepper, Chief, Office of Policy and Plans, Federal Communications Commission

Roundtable: 4:10 – 4:40 pm
Clyde Prestowitz (moderator), President, Economic Strategy Institute
John Giere, Vice President, Ericsson
Hon. Jean-Michel Hubert, Chairman, French Telecommunications Regulatory Authority (ART)
Hon. Kevin Martin, Commissioner, Federal Communications Commission
Eli Noam, Center for Tele-Information, Columbia University
Dennis Roberson, Senior Vice President & Chief Technology Officer, Motorola

Moderator-led Delegates Forum: 4:40 – 5:30 pm

5:30 p.m. Session VI: It’s the Content, Stupid!

• The drivers: Content and Killer Apps
• Privacy & Encryption
• Intellectual property rights protection
• Digital Rights Management and its impact on the IT industry
• The borderless Internet?

Presentation: 5:30 – 5:50 pm
Al Sikes, President, Hearst Interactive Media
Hon. Mozelle Thompson, Commissioner, Federal Trade Commission

Roundtable: 5:50 – 6:15 pm
John Markoff (moderator), The New York Times
Robert Holleyman, President, Business Software Alliance
Preston Padden, Executive Vice President, Walt Disney Corporation
Steve Patrick, Co-Founder, GlobalEnglish
William Raduchel, Executive Vice President & Chief Technology Officer, AOL Time Warner
Michael Salsbury, Executive Vice President & General Counsel, WorldCom

Moderator-led Delegates Forum: 6:15 – 7:00 pm

7:00 p.m. Reception

7:30 p.m. Dinner (East Room)

Topic: The Role of Technology in the New Security Environment
Speaker: Hon. Chuck Hagel, United States Senate

Summit Summary
Clyde Prestowitz (moderator), President, Economic Strategy Institute
List of Delegates

- John Ackerly, Associate Director, National Economic Council, The White House
- Giles Alston, Senior Consultant, Oxford-Analytica, Inc.
- Robert Atkinson, Vice President, Progressive Policy Institute
- Hon. Martin Baily, Senior Fellow, Institute of International Economics, and former Chairman, President’s Council of Economic Advisers
- Gerard Baker, Financial Times
- Craig Barrett, President & CEO, Intel Corporation
- Haily Bashir, CEO, AccessCapital
- David Beier, Partner, Hogan & Hartson L.L.P.
- Alfred Berkeley III, Vice Chairman, NASDAQ
- Brett Bernstein, Merrill Lynch
- Richard Beutel, Director of Public Policy, Dell Computer Corporation
- Hon. Anne Bingaman, CEO, Valor Telecom
- Hon. Phillip Bond, Under Secretary-designate for Technology, U.S. Department of Commerce
- Hon. Rick Boucher, U.S. House of Representatives
- Paul Brownell, Vice President, National Venture Capital Association
- Christopher Caine, Vice President, IBM Corporation
- Leonard Cali, Vice President, AT&T
- Jeff Campbell, Compaq Computer Corporation
- Michael Capellas, Chairman & CEO, Compaq Computer Corporation
- Angel Cartagena, Chairman, Public Services Commission, District of Columbia
- Kilnam Chon, Korea Advanced Institute of Science and Technology (KAIST)
- James Cicconi, Vice President & General Counsel, AT&T
- Scott Cleland, CEO, The Precursor Group
- Robert Cohen, Adjunct Fellow, Economic Strategy Institute
- Michel Combos, Telecommunications Attache, Embassy of France to the United States
- Hon. Michael Copps, Commissioner, Federal Communications Commission
- Chuck Cosson, Senior Counsel, Vodafone
- Michael Cox, Sr. Vice President, Federal Reserve Bank of Dallas
- Robert Crandall, Senior Fellow, Brookings Institution
- Nelson Cunningham, Kissinger McLarty Associates
- Larry Darby, President, Darby Associates
- Rhett Dawson, President, Information Technology Industry Council
- Monica Desai, Legal Adviser, Federal Communications Commission
- John Dimsdale, Marketplace Radio
- Randall Dodd, Fellow, Economic Strategy Institute
- Carlos Dominguez, Vice President, Cisco Systems
- Hon. Tom Downey, Chairman, Downey McGrath Group, Inc.
- Jere Drummond, Vice Chairman, BellSouth Corporation
- Esther Dyson, Chairman, EDventure Holdings
- Hon. David Edmonds, Director-General, Office of Telecommunications (Oftel), UK
- Richard Elkus, Co-Chairman, Voyan Technology
- Richard Ellenberger, CEO, Broadwing
- J. Michael Farren, Vice President, Xerox Corporation
- James Firestone, Senior Vice President, Xerox
- Brian Fontes, Cingular Wireless
- Monty Ford, CIO, American Airlines
- Brant Free, Senior Vice President, The Chubb Corporation
- Douglas Frederick, President, EDS
- Susan Gaffney-Campanella, Director, Government Finance Officers Association
- M. Denis Gardin, Embassy of France
- John Giere, Vice President, Ericsson
- Rebecca Gould, Director of Government Relations, Dell Computer Corporation
- Paul Grosse, President, Deutsche Telekom
- Hon. Chuck Hagel, United States Senate
- Kathryn Hauser, Senior Vice President, Information Technology Industry Council
- Jerry Hausman, Professor, MIT
- Mark Heesen, President, National Venture Capital Association
- Robert Henske, Senior Vice President, Synopsys
- Lincoln Hoewing, Assistant Vice President, Verizon Communications
Robert Holleyman, President, Business Software Alliance
Michael Holtzman, Senior Vice President, Weber Shandwick
Hon. Jean-Michel Hubert, Chairman, French Telecommunications Regulatory Authority (ART)
Hon. Reed Hundt, Senior Advisor, McKinsey & Co., and former Chairman, Federal Communications Commission
Ron Insana, CNBC
Laura Ipsen, Director of Worldwide Government Affairs, Cisco Systems
Charles Jackson, CEO, Jackson Telecom Consulting
Michael Jacobs, Merrill Lynch
Peter Janak, Vice President & Chief Information Officer, Delphi Automotive Systems
James Jarrett, Vice President, Worldwide Government Affairs, Intel Corporation
Susan Kalla, Sr. Vice President, Friedman Billings Ramsey
Roberta Katz, CEO, Flywheel Communications
Brian Kelly, Senior Vice President, Electronic Industries Alliance
Hon. William Kennard, Managing Director, The Carlyle Group and former Chairman, Federal Communications Commission
Michael Kennedy, Motorola
David Kirkpatrick, Fortune
Ken Klein, Director of International External Affairs, Xerox Corporation
Scott Kriens, Chairman & CEO, Juniper Networks
Robert Lees, Secretary General, Pacific Basin Economic Council
David Levy, Vice Chairman, Levy Forecasting Center
Justin Lilley, Senior Vice President, Bertelsmann
John Loose, President & CEO, Corning
Peter Lucht, Senior Manager, WorldCom
Ira Magaziner, President, SJS, Inc.
Thomas Magnanti, Dean of Engineering, Massachusetts Institute of Technology
James Mahoney, Vice President, Micron Technology, Inc.
Sebastian Mallaby, The Washington Post
Michael Mandel, Business Week
James Manyika, Partner, McKinsey & Co.
Hon. Kevin Martin, Commissioner, Federal Communications Commission
Dan Maydan, President, Applied Materials, Inc.
Marsha McBride, Chief of Staff, Federal Communications Commission
Dave McCurdy, President, Electronics Industries Alliance
Clark McFadden, Partner, Dewey Ballantine
Hon. Bruce Mehman, Assistant Secretary for Technology Policy, U.S. Department of Commerce
Hon. Allan Mendelowitz, Chairman, Federal Housing Finance Board
Harris Miller, President, ITAA
George Moore, Executive Vice President, Solectron
Stuart Moore, Co-Chairman and Co-CEO, Sapient
Peter Morici, Senior Fellow, Economic Strategy Institute
Julie Moses, Embassy of the United Kingdom to the United States
Ellis Mottur, former Assistant Secretary, U.S. Department of Commerce
Norman Neureiter, Science and Technology Adviser to the Secretary, U.S. Department of State
Dan Niles, Managing Director, Lehman Brothers
Eli Noam, Center for Tele-Information, Columbia University
William Nuti, Senior Vice President, Cisco Systems
Dean O’Hare, Chairman & CEO, The Chubb Corporation
Tom Osha, Broadwing
Preston Padden, Executive Vice President, Walt Disney Company
Steve Patrick, Co-Founder, GlobalEnglish
Doug Patterson, CEO, Community of Science, Inc.
Robert Pepper, Chief, Office of Plans and Policy, Federal Communications Commission
Butch Pfremmer, Chief Technology Officer, Welocalize
Hon. Andrew Pinder, E-Envoy, Government of the United Kingdom
Peter Pitsch, Communications Policy Director, Intel Corporation
Clyde Prestowitz, President, Economic Strategy Institute
William Raduchel, Executive Vice President & Chief Technology Officer, AOL Time Warner
Tema Razavi, President, Nihon Information Co.
Timothy Regan, Vice President, Corning
Katherine Reynolds, Bloomberg News
Kenneth Rogoff, Economic Counsellor, International Monetary Fund
William Rouhana, CEO, Winstar Communications
Dennis Roberson, Senior Vice President & Chief Technology Officer, Motorola
Richard Russell, Chief of Staff, Office of Science & Technology Policy, The White House
John Ryan, Principal & Chief Analyst, RHK, Inc.
Michael Salsbury, Executive Vice President & General Counsel, WorldCom
Robert Samuelson, Newsweek
R. Wayne Sayer, Applied Materials
George Scalise, CEO, Semiconductor Industry Association
W. Scott Schaefer, President & CEO, QuantumShift, Inc.
Frank Semple, President (Network), Williams Communications
Michael Sheridan, Partner, Mohr Davidow Ventures
Robert Shiller, Stanley B. Resor Professor of Economics, Yale University
Gregory Sidak, Fellow, American Enterprise Institute
Al Sikes, President, Hearst Interactive Media
Joseph Simon, Director, Bureau of Competition, Federal Trade Commission
Daniel Solito, Vice President, Cisco Systems
Josh Steiner, Managing Principal, Quadrangle Group
Ravi Suria, Duquesne Capital Management
William Sweeney, Vice President, EDS
Toru Takahashi, Vice Chair, Internet Association, Japan
Hon. Thomas Tauke, Senior Vice President, Verizon Communications
Robert Taylor, Chairman & CEO, Focal Communications Corporation
David Tennenhouse, Vice President and Director of Research, Intel Corporation
Hon. Mozelle Thompson, Commissioner, Federal Trade Commission
Morton Topfer, Counselor to the CEO and Member of the Board, Dell Computer Corp.
Simon Towler, Embassy of the United Kingdom to the United States
Jeff Trauberman, Boeing Corporation
Grace Trent, Executive Director, Office of the Chairman, Compaq Computer Corporation
Casey Triggs, Federal Trade Commission
Michael Tyler, CEO, Tyler & Co.
Hon. Donald Upson, Secretary of Technology (VA)
Hon. Fred Upton, Chairman, House Subcommittee on Telecommunications & the Internet
Wendell Van Auken, Partner Emeritus, Mayfield