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November 13, 2009

Ex Parte

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: GN Docket Nos. 09-47, 09-51, and 09-137

Dear Ms. Dortch:

On November 12, 2009, Mr. Sri Srinivasan and Mrs. Paula Boyd spoke with Mr. Dave Vorhaus and Mr. Sridhar Prasad. Mr. Srinivasan discussed the various productivity applications and technologies businesses use in conjunction with broadband and the importance of factors such as latency and reliability and how businesses address these issues. Mr. Srinivasan noted that bandwidth constraints tend to emerge in scenarios such as offsite backup for disaster recovery or in scenarios in which small and medium size businesses engage in trickle-feed transactions where they send copious amounts of data throughout the day.

In order to supplement the record, attached is information from a recent IDC study sponsored by Microsoft on the economic impact of information technology, software, and the Microsoft ecosystem.

Pursuant to the Commission's rules, a copy of this letter is being filed electronically in the above-referenced dockets. Please let me know if you have any questions.

Sincerely,

/s/ Paula Boyd

Paula Boyd
Regulatory Counsel for Microsoft Corp.

Attachments

WHITE PAPER

AID TO RECOVERY: THE ECONOMIC IMPACT OF IT, SOFTWARE, AND THE MICROSOFT ECOSYSTEM ON THE GLOBAL ECONOMY

October 2009

Sponsored by Microsoft

EXECUTIVE SUMMARY

Economists have long recognized the important role information technology (IT) can play in a country's development. As the IT sector helps lead us out of the worst global recession in more than 50 years, that role will be even more important. To quantify the direct benefits of IT on local economies as we head toward recovery, IDC has studied the relationship between IT, software, the Microsoft ecosystem and the economies of 52 countries.¹

The study found that not only does IT drive significant growth in skilled jobs, but also that spending on software creates a disproportionate share of that job growth.

The study also found that companies selling products that run with or on Microsoft software, or that service and distribute Microsoft software – the Microsoft ecosystem – play a key role in driving the IT industry's overall contribution to job growth and economic development.

Considering these countries in aggregate, IDC found:

- ☒ IT spending in 2009 for the 52 countries covered will be \$1.414 trillion, or 98% of total worldwide IT spending, and it will grow to \$1.7 trillion in 2013.
- ☒ In the 52 countries, that spending growth means that employment in the IT industry and of IT professionals in IT-using organizations will rise by 5.8 million jobs in the four years from the end of 2009 to the end of 2013, up from a 2009 base of 35.6 million.
- ☒ That represents a growth of 3.0% a year from now through 2013, which is more than three times faster than the growth of total employment.
- ☒ Software drives activity in the services and distribution sectors as well as in IT-using organizations, which means that while spending on packaged software in the 52 countries will be only 21% of total IT spending in 2009, 51% of IT employment will be software-related.
- ☒ The IT market in the 52 countries will drive the creation of more than 75,000 new businesses between now and the end of 2013. Most of these companies will be small and locally owned organizations.
- ☒ The Microsoft ecosystem in these countries – nearly 700,000 hardware, software, services, and channel firms – as well as IT departments in end user organizations running Microsoft software employ 42% of the IT workforce. These employees will pay close to \$500 billion in taxes in 2009.

¹ For a list of the 52 countries, see *Economic Impact Study Methodology and Definitions*, October 2009.

- ☒ In 2009, the vendors in the Microsoft ecosystem in these 52 countries will, themselves, have revenues of more than \$535 billion and, by the end of 2009, will have invested nearly \$180 billion in local economies.
- ☒ For every unit of revenue – dollar, euro, peso, etc. – that Microsoft will earn in 2009, other companies will earn 8.70.

STUDY BACKGROUND

Since 2002, IDC has been conducting studies on the economic impact of IT, software, and the Microsoft ecosystem and partner community on local economies. This impact comes in the form of job creation, related tax revenues, company formation, and increased IT spending. In 2007 we extended that work to include more countries.

This study is an update of the 2007 study and covers 52 countries, which together account for 98% of total IT spending.

For more information on study methodology and definitions, see the document *Economic Impact Study Methodology and Definitions*, October 2009.

THE IMPACT OF INFORMATION TECHNOLOGY

Since the 1990s, economists have diligently studied the economic impact of IT on firms and countries in terms of the growth of industrial output and improved productivity. For instance, in 2005 Dale W. Jorgenson of Harvard co-authored a study showing that technology's share of world GDP growth had grown from 11% in the late 1990s to 15% in the early 2000s.² In 2007 he co-authored another study that demonstrated how, in the U.S., the share of *growth* in "value-added" in the economy created by the IT industry was five times its share of value added itself.³ Also in 2007, Erik Brynjolfsson of the MIT Sloan School and Lorin M. Hitt of the University of Pennsylvania documented the importance of technology to productivity growth in 500 Fortune 1000 companies.⁴

So it's clear that the IT sector is critical to the world economy and each of the countries we study. But how critical? Consider these findings:

- ☒ Spending on IT in the 52 countries accounted for 2.6% of GDP last year, up from 2.2% five years ago. At forecasted rates of growth, it will surpass 2.8% in 2013.
- ☒ Although the forecasted growth of IT spending is muted since the advent of the global recession and is pegged at 3.3% a year between now and the end of 2013, that still is a rate of growth more than three times the expected rate of growth of GDP in the 52 countries.

² "Information Technology and the World Economy," Dale W. Jorgenson and Khuong Vu, *Scandinavian Journal of Economics*, December 2005.

³ "Industry Origins of the American Productivity Resurgence," Dale W. Jorgenson, Mun S. Ho, Jon D. Samuels, and Kevin J. Stiroh, *Economic Systems Research*, September 2007.

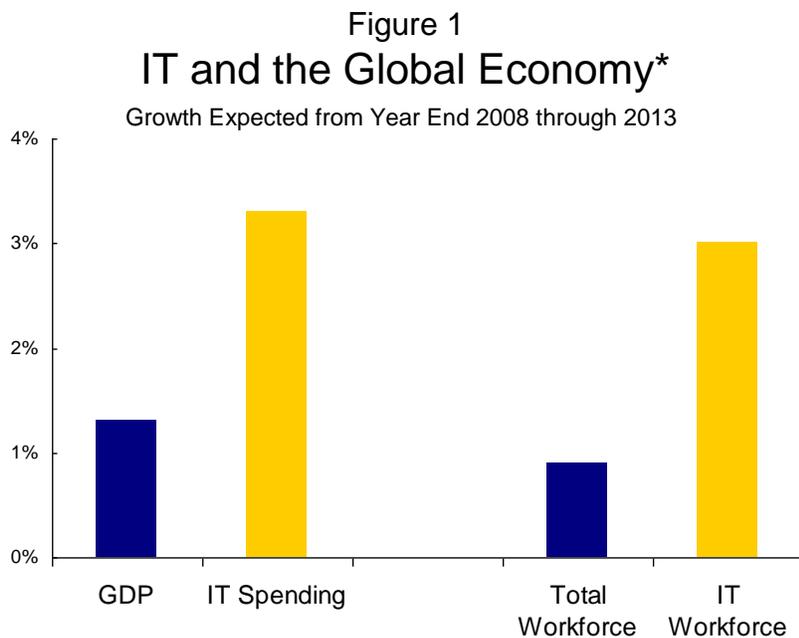
⁴ "Computing Productivity: Firm-Level Evidence," Erik Brynjolfsson and Lorin M. Hitt, MIT Sloan School of Management, working paper 4210-01, June 2003.

- ☒ IT spending provides revenues for more than 1.2 million companies selling or distributing hardware, software, and services. Those companies, in turn, employ more than 13 million people (2009). Another 22-plus million IT professionals work in IT-using organizations.
- ☒ The IT sector, vendors and in-house IT departments, should add 5.8 million new jobs in the 52 countries from the end of 2009 through 2013 – mostly high-quality, high skilled jobs. The expected growth rate of the IT labor force is 3.0% a year from the beginning of 2009 through 2013, 3.4 times the growth rate of the overall global non-farm labor force.
- ☒ Together, these employees and companies will pay nearly \$1.2 trillion in taxes in 2009. In the next four years (2010 through 2013), that will create net *new* tax revenues of \$370 billion from this year's level.

The advantages of a growing IT sector are more extensive than the raw numbers alone suggest. IT jobs tend to be higher skilled than most others, particularly in emerging economies, and countries with higher levels of computerization can be more competitive in world markets. During the 1997 Asian financial crisis, for instance, IDC noticed that the countries with higher levels of computerization were able to recover sooner.

And the academic research connecting investment in IT to a nation's productivity and ability to innovate offers a view of positive economic benefits from IT extending far beyond those covered in this research.

Figure 1 compares some metrics of IT growth to economic growth in the 52 countries.



Source: IDC Economic Impact Study, 2009; *aggregate of 52 countries studied

THE ECONOMIC IMPORTANCE OF SOFTWARE

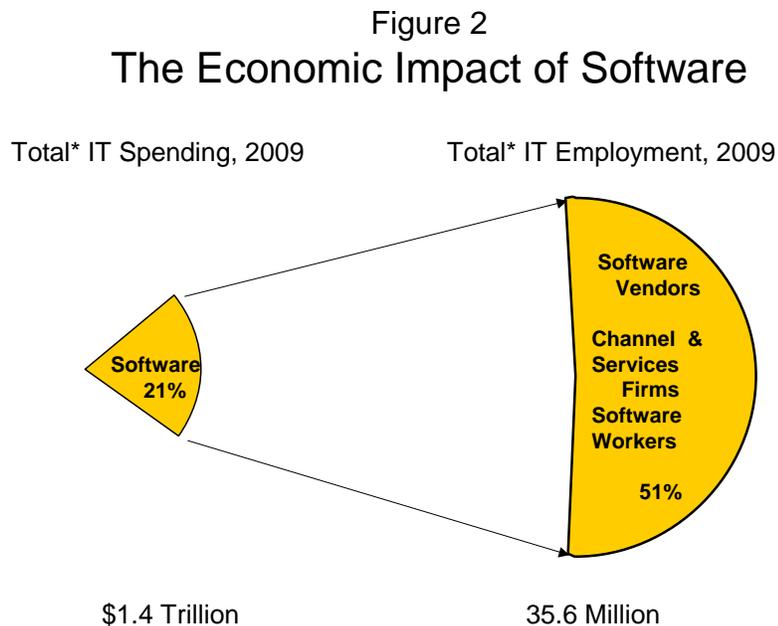
Just as IT is important to an economy, software is important to IT.

On an aggregate basis, packaged software – operating systems, applications, and development tools for everything from ultra portable computers to large mainframes – accounts for 21% of total IT spending in the 52 countries.

But that spending engenders spending *outside* the software industry. Because software is more complex to sell, service, and support than hardware, dollar for dollar, software generates more downstream economic activity than hardware.

IDC's analysis of the IT services market, for instance, shows that for every dollar of packaged software sold, there is another \$1.24 in revenue to IT service firms. That software revenue and additional services revenue also drive revenue in the distribution channel. These multiple revenue streams pool to help fund employment.

As a result, that 21% of IT spending mentioned above drives 51% of IT employment, as shown in Figure 2.



Source: IDC Economic Impact Study, 2009; *aggregate of 52 countries studied

The importance of software to the IT economy in the 52 countries is clear in the following ways:

- ☒ Spending on software is growing faster than spending on IT overall – 4.8% a year between 2008-2013, compared to 3.3% for all IT spending.
- ☒ During 2009, total IT employment in the 52 countries dropped a fraction of a percentage point – yet software related employment grew 4%.

- ☒ Although software-related jobs will account for just over half the total IT employment in the 52 countries in 2009, they will account for 65% of IT-related taxes because the jobs are generally higher skilled and higher paid than general IT jobs.

IDC believes that IT will help lead the economies of the 52 countries into recovery, and that software-related activities will lead IT.

THE CONTRIBUTION OF THE MICROSOFT ECOSYSTEM

As software helps drive the IT "economy" and IT helps drive the global economy, the extensive Microsoft ecosystem helps drive the software economy.

The ecosystem measured here includes those companies that sell PCs, servers, storage, and smart handheld devices running Microsoft software; software vendors that write applications that run on Microsoft platforms; resellers that sell and distribute these products; and service firms that install and manage Microsoft-based solutions, train consumers and businesses on Microsoft products, and service customers for their own applications. It also includes companies that do combinations of these functions.

Encompassing nearly 700,000 companies in the 52 countries, this ecosystem is not only large but also diverse, ranging from large, name brand OEMs to small firms that build a few systems a year for a handful of customers, from the big application software companies to small, entrepreneurial companies writing applications in local languages, from multinational service firms to three-person shops selling value-added solutions into niche markets.

IDC estimates that more than two thirds of the companies in the ecosystem are small, local companies – often dealing with equally small, local IT using organizations.

At first glance, it may come as a surprise that the Microsoft ecosystem is as big as it is. But on further reflection, it shouldn't. In the 52 countries studied, 44% of the hardware sold in 2009 (by value) will run Microsoft operating systems, and 56% of software sold (by value) will run on Microsoft operating systems.

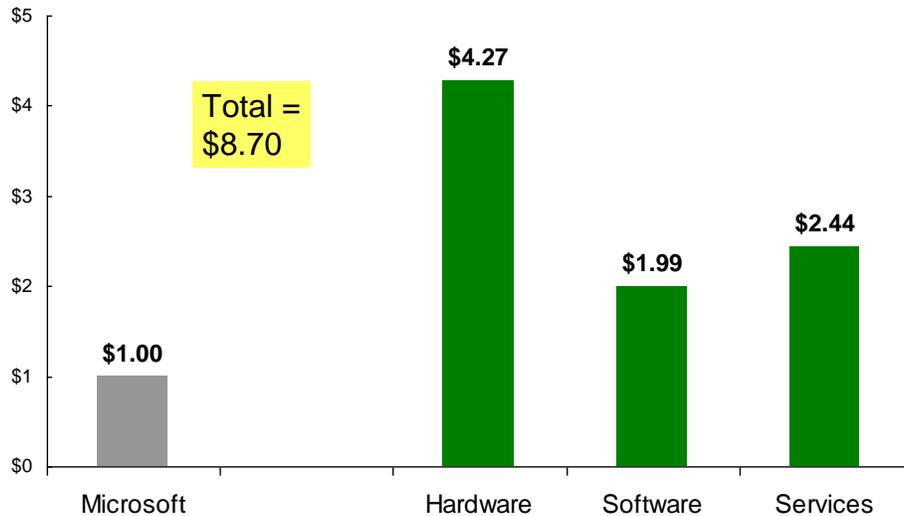
Microsoft's business model, of selling through partners, means that most of the sales of this hardware and software (and attendant services) run through the income statements of these companies.

Other metrics about the ecosystem, besides the number of companies.

- ☒ Companies in the Microsoft ecosystem employ 6.1 million people. IT-using organizations employ another 8.8 million IT professionals who work with Microsoft software or the products and services based on it.
- ☒ Together, those 14.9 million people account for 42% of the people working in the IT industry or as IT professionals at user organizations in the 52 countries.
- ☒ In 2009, the Microsoft ecosystem in the 52 countries will generate nearly \$537 billion in revenues for themselves. For every dollar (or other unit of currency) Microsoft will make in 2009, companies in that ecosystem will make \$8.70.

Figure 3 breaks down the ecosystem revenues per unit of Microsoft revenues by category.

Figure 3
Ecosystem Revenues* vs. Microsoft Revenues*



Source: IDC Economic Impact Study, 2009; *aggregate of 52 countries studied

Over the years, the hardware ratio to Microsoft revenues has stayed relatively flat, while the software and services ratios have gone up. One reason for this is the migration of server spending away from mid-range and high-end (mainframe) systems to volume servers, which more often than not run Microsoft operating systems.

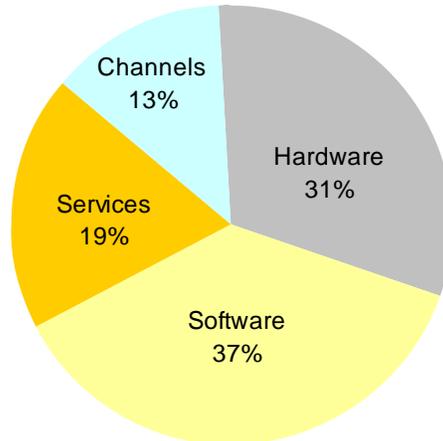
While this migration has not been enough to radically change the hardware ratio (which is largely driven by spending on PCs), it has driven up the ratio of total software running on Windows and the attendant services.

To obtain these revenues, ecosystem companies have to invest in research, development, marketing, sales, and support for Microsoft-related products and services. By the end of 2009, spending by the ecosystem in the 52 countries on these areas should be more than \$179 billion. IDC estimates that nearly 75% of this money will be spent in-country.

Figure 4 shows the breakdown of this investment by company type.

Figure 4 Investment* by the Ecosystem

Includes spending on R&D, test and development, sales and marketing, administration, and training



Source: IDC Economic Impact Study, 2009; *aggregate of 52 countries studied

EMERGING VERSUS MATURE ECONOMIES

The IDC study reveals the growing importance of emerging markets to the global economy. While they account for a small percentage of total IT spending, they account for a large percentage of the *growth* in IT spending. This dichotomy translates to a significant impact on employment and new company formation. For example:

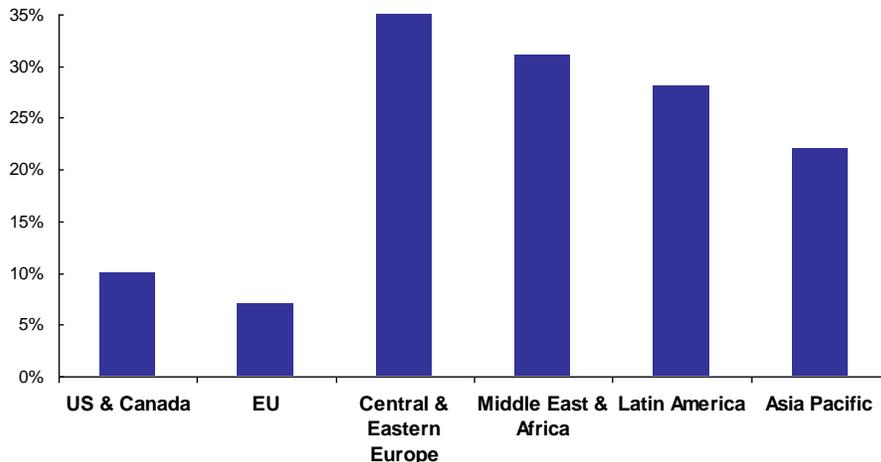
- ☒ The emerging countries on our list of 52 – all countries excluding the U.S., Canada, Australia, Japan, New Zealand, and Western Europe – will account for 32% of GDP in 2009. However, because they have higher growth economies, they will account for more than 70% of net *new*⁵ GDP growth during the next four years.
- ☒ Because IT has not penetrated their economies as much as it has in the mature markets, in 2009 the emerging countries will account for only 21% of IT spending. But over the next four years, they will account for more than 50% of net *new* IT spending.
- ☒ Because of their growing economies, lower labor rates, hardware exports, and large number of companies, in 2009 they will account for 39% of IT-related employment. Yet over the next four years they will account for 70% of *new* IT-related jobs.
- ☒ Finally, while they will account for 30% of IT companies in 2009, they will account for 60% of those formed between now and the end of 2013.

Figure 5 shows IT job growth by region. Note that the percentage growth is the number of IT jobs at the end of 2013 divided by the number at the end of 2009.

⁵ The term “net new” refers to the difference between the level of the current year and the level of the baseline year. In this case, the aggregate “net new” GDP growth is the sum of the differences from the 2009 level and the levels in 2010, 2011, 2012, and 2013.

Figure 5 IT Job Growth by Region

Total Growth Expected from 2009-2013



Source: IDC Economic Impact Study, 2009; *aggregate of 52 countries studied

GROWTH THROUGH INNOVATION

While we have been in the midst of this global recession, IDC has maintained that we are also in the midst of a technology renaissance.⁶ Seven years after the third major high tech crash in the last 50 years, the industry is flush with new technology, from new servers and client devices and new storage and networking technologies, to new software architectures and delivery models.

Together, these new technologies are ushering in what may be a new paradigm of computing, known variously as cloud computing, cloud services, dynamic IT, and software plus services. IDC's coverage of this new paradigm is extensive.⁷

This new paradigm, which IDC sees as part of a long-term industry transition in the way that client-server computing was a transition from the mainframe era, involves the use of Internet-based services (including storage and applications) and intelligent clients (including handheld devices, PCs, and servers).

The promise of this new way of computing is that businesses, governments, and educational institutions will be able to lower the capital costs of IT and increase the amount of their IT budgets that can be devoted to innovation, rather than to maintenance of legacy applications and infrastructure. IDC research indicates that as much as 75% of IT budgets is allocated into such application maintenance and infrastructure support.

⁶ IDC Chief Research Officer, John Gantz, speaking at IDC *Directions 2009*, San Jose, March 4, 2009.

⁷ See <http://www.idc.com/research/cloudcomputing/index.jsp>; IDC uses the term "Cloud Services." Microsoft generally uses the term "Software Plus Services" in reference to this new computing style.

This increased ability of organizations to vector IT dollars into innovation will have long-term economic benefits – from more efficient customer self service and faster product development, to lower barriers to entry for first time organizational and consumer users of IT.

This new type of computing is in its infancy – while IDC estimates that this year it will account for just over 1% of IT spending, that percentage may triple over the next four years. Despite this small footprint, the economic benefits are significant. If that amount of IT spending is applied to innovation more effectively than it is today, IDC estimates that cloud services could add \$800 billion in net *new* business revenues to the economies of our 52 countries between the end of 2009 and the end of 2013.

SUMMARY AND OUTLOOK

The IDC research reinforces the conclusions drawn in academic research – namely, that IT is good for local economies. Within the IT sector, the software sector has an impact that extends well beyond simply spending on software packages. And within that software sector, the global ecosystem that has developed around Microsoft products has become a positive economic force for local economies.

The economic benefits quantified in this study help countries grow, create new jobs, improve the quality of their labor force, and support the formation of new companies. Ultimately, these economic benefits help drive productivity improvements within a country, increase competitiveness, and foster local innovation. That is welcome news as economies around the world strive to recover and develop sustainable patterns of growth.

The table below summarizes some of the key IT industry metrics for the 52 countries covered in the study.

IT Profile and Forecast: 52-Country Total

	2008	2009	2010	2011	2012	2013	08-13 CAGR
Spending (Million USD)							
IT Hardware	576,607	534,326	546,228	579,414	611,058	643,493	2.2%
Software	297,027	301,787	313,298	330,997	352,197	375,904	4.8%
IT Services	574,534	578,077	593,658	617,952	647,249	680,193	3.4%
Total IT	1,448,168	1,414,190	1,453,185	1,528,363	1,610,504	1,699,591	3.3%
IT Contribution							
IT/GDP (%)	2.6%	2.6%	2.6%	2.7%	2.7%	2.8%	
IT Tax Revenues (Million USD)	1,214,911	1,181,969	1,205,339	1,249,107	1,296,246	1,347,374	2.1%
Total Number of IT Companies	1,237,134	1,232,740	1,244,769	1,265,662	1,287,334	1,310,041	1.2%
IT Employment							
Total Number of Employees	35,649,969	35,632,203	36,554,211	38,068,687	39,689,016	41,419,007	3.0%
Total Software-Related Employees	17,480,359	18,161,964	18,567,617	19,072,445	19,705,026	20,405,814	3.1%
Cloud plus Clients							
Net New Business Revenues (Million USD)	-	-	57,724	135,823	237,841	370,068	

Source: IDC Economic Impact Study, 2009

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UNITED STATES

AID TO RECOVERY: THE ECONOMIC IMPACT OF IT, SOFTWARE, AND THE MICROSOFT ECOSYSTEM ON THE ECONOMY

October 2009

Sponsored by Microsoft

KEY FINDINGS

Economists have long recognized the important role information technology (IT) can play in a country's development. As the IT sector helps lead us out of the worst global recession in more than 50 years, that role will be even more important.

To quantify the direct benefits of IT on local economies as we head toward recovery, IDC has studied the relationship between IT, software, the Microsoft ecosystem and the economies of 52 countries, including US.

Key findings for US:

- ☒ IT spending in 2009 will be \$488 billion. From the end of 2008 to the end of 2013, IT spending will grow 2.3% a year, compared to GDP growth of 0.5% a year.
- ☒ IT-related activities will generate \$512 billion in taxes in 2009. Over the next four years that means more than \$166 billion in aggregate net *new* taxes.
- ☒ That spending growth means that employment in the IT industry and of IT professionals in IT-using organizations will rise by 1,035,000 jobs in the four years from the end of 2009 to the end of 2013, up from a 2009 base of 10,105,000.
- ☒ That represents growth of 1.6% a year from now through 2013, while overall employment is expected to shrink.
- ☒ Software drives activity in the services and distribution sectors, as well as in IT-using organizations, which means that while spending on packaged software will be only 29% of total IT spending in 2009, 67% of IT employment will be software-related.
- ☒ The IT market will drive the creation of nearly 13,000 new businesses between now and the end of 2013. Most of these companies will be small and locally owned organizations.

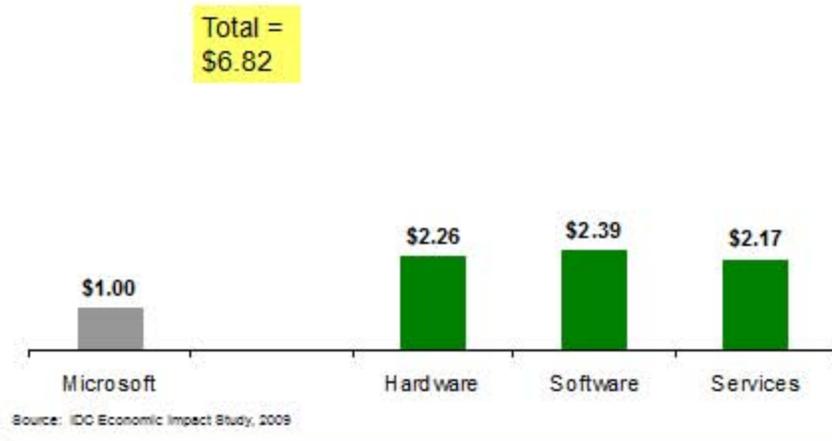
For more information on the global IDC study, see *Aid to Recovery: The Economic Impact of IT, Software, and the Microsoft Ecosystem on the Global Economy*, October 2009. For details about methodology and definitions, see *Economic Impact Study Methodology and Definitions*, October 2009.

THE MICROSOFT ECOSYSTEM

The Microsoft ecosystem in US includes those companies that sell PCs, servers, storage, and smart handheld devices running Microsoft software; software vendors that write applications that run on Microsoft platforms; resellers that sell and distribute these products; and service firms that install and manage Microsoft-based solutions, train consumers and businesses on Microsoft products, and service customers for their own applications. It also includes companies that do combinations of these functions. Note these additional findings:

- ☒ As a group, companies in the Microsoft ecosystem in US will generate more than \$169 billion in revenues for themselves in 2009. For every USD Microsoft will make in US in 2009, companies in the local ecosystem will make \$6.82.
- ☒ To generate those revenues, companies in the local ecosystem will drive nearly \$60 billion of investment, most of it in the country.
- ☒ Companies in the Microsoft ecosystem employ 1,070,000 people; IT-using organizations employ another 2,535,000 IT professionals who work with Microsoft software or the products and services based on it.
- ☒ Together, these employees will account for 36% of IT-related employment in 2009 and 39% of IT-related taxes in the country.

Ecosystem Revenues vs. Microsoft Revenues



GROWTH THROUGH INNOVATION

Seven years after the third major high tech crash in the last 50 years, the industry is flush with new technology, from new servers and client devices and new storage and networking technologies, to new software architectures and delivery models.

Together, these new technologies are ushering in what may be a new paradigm of computing, known variously as cloud computing, cloud services, or dynamic IT. Microsoft calls it Software plus Services.

The promise of this new way of computing, which involves the use of Internet-based services and intelligent clients and devices, is that businesses, governments, and educational institutions will be able to lower the capital costs of IT and increase the amount of their IT budgets that can be devoted to innovation, rather than to the maintenance of legacy applications and infrastructure.

This new type of computing is in its infancy – while IDC estimates that this year it will account for a little less than 2% of IT spending in the US, that percentage may triple over the next four years. Despite that small footprint, the economic benefits can be significant. If that amount of IT spending is applied to innovation more effectively than it is today, IDC estimates that cloud services could add more than \$166 billion in net *new* business revenues to the US economy between the end of 2009 and the end of 2013.

SUMMARY AND OUTLOOK

The IDC research reinforces the conclusions drawn in academic research – namely, that IT is good for local economies. The economic benefits quantified in this study will help US grow, create new jobs, improve the efficiency of its labor force, and support the formation of new companies. The economic benefits not quantified in this study but referenced in the academic research help drive productivity improvements throughout a country, increase competitiveness, and foster local innovation.

The table below summarizes some of the key IT industry metrics covered in the study.

	2008	2009	2010	2011	2012	2013	08-13 CAGR
IT Profile and Forecast: United States							
Spending (Million USD)							
IT Hardware	154,074	136,683	136,042	138,321	141,359	144,710	-1.2%
Software	137,880	141,266	147,172	155,447	165,439	176,402	5.1%
IT Services	207,053	210,537	215,652	222,804	230,686	238,946	2.9%
Total IT	499,007	488,487	498,866	516,572	537,484	560,058	2.3%
IT Contribution							
IT/GDP (%)	3.5%	3.5%	3.6%	3.7%	3.7%	3.8%	
IT Tax Revenues (Million USD)	522,893	512,156	524,591	542,821	563,319	583,922	2.2%
Total Number of IT Companies	316,387	313,556	315,336	318,581	322,359	326,321	0.6%
IT Employment							
Total Number of Employees	10,283,063	10,105,423	10,254,020	10,514,301	10,817,846	11,140,468	1.6%
Total Software-Related Employees	6,557,236	6,763,853	6,779,321	6,822,702	6,883,521	6,936,809	1.1%
Cloud plus Clients							
Net New Business Revenues (Million USD)	-	-	13,111	29,516	49,568	73,734	
Source: IDC Economic Impact Study, 2009							

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