

## WHITE PAPER

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

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### 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.<sup>1</sup>

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.

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<sup>1</sup> 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.

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## 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.

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## 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.<sup>2</sup> 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.<sup>3</sup> 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.<sup>4</sup>

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.

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

<sup>3</sup> "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.

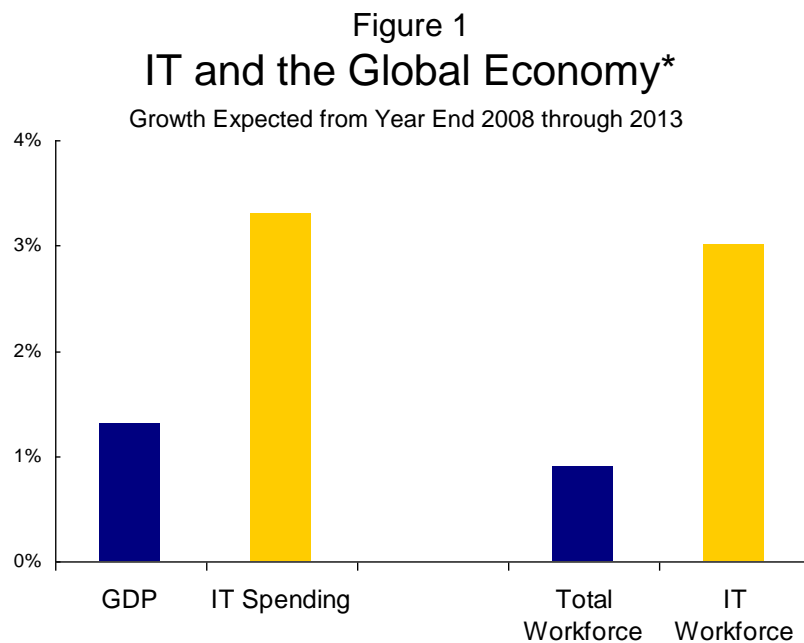
<sup>4</sup> "Computing Productivity: Firm-Level Evidence," Erik Brynjolfsson and Lorin M. Hitt, MIT Sloan School of Management, working paper 4210-01, June 2003.

- ☒ 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

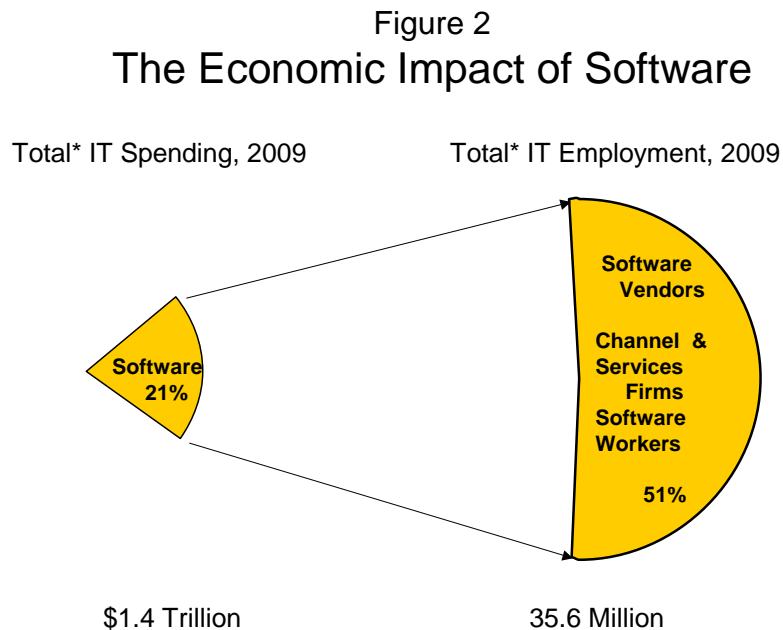
Just as IT is important to an economy, software is important to IT.

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.

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## **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.

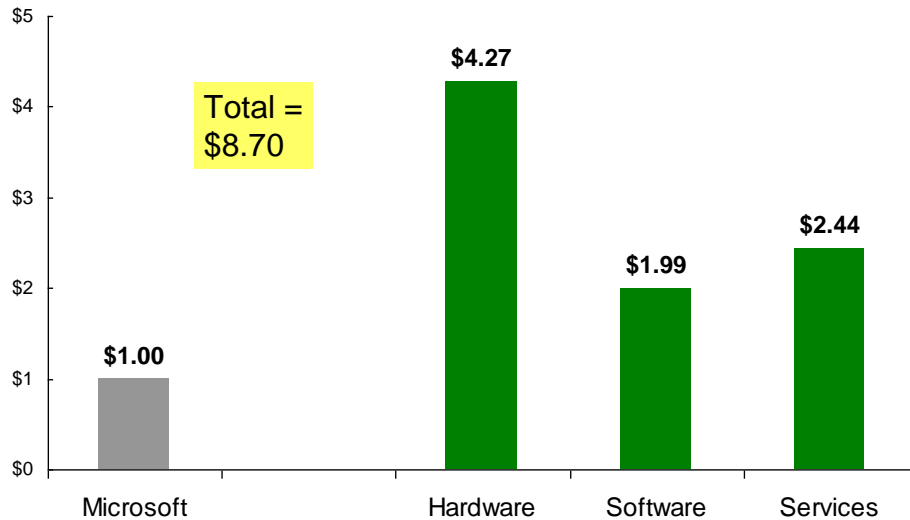
Microsoft's business model, of selling through partners, means that most of the sales of this hardware and software (and attendant services) run through the income statements of these companies.

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.

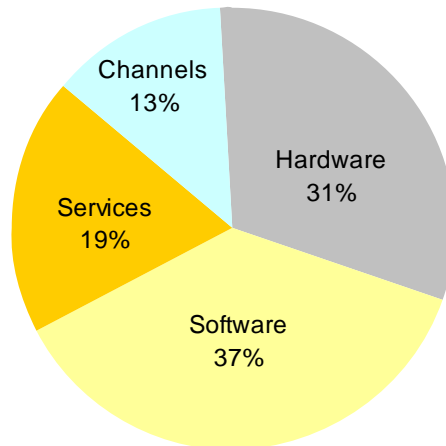
While this migration has not been enough to radically change the hardware ratio (which is largely driven by spending on PCs), it has driven up the ratio of total software running on Windows and the attendant services.

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:

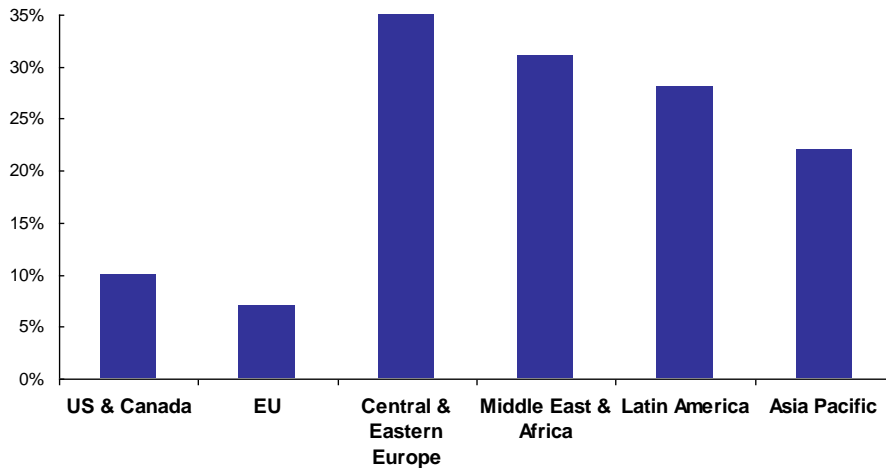
- ☒ The emerging countries on our list of 52 – all countries excluding the U.S., Canada, Australia, Japan, New Zealand, and Western Europe – will account for 32% of GDP in 2009. However, because they have higher growth economies, they will account for more than 70% of net *new*<sup>5</sup> GDP growth 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.

<sup>5</sup> 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.<sup>6</sup> 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.<sup>7</sup>

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.

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

<sup>7</sup> 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 |
|-----------------------------------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Spending (Million USD)</b>           |            |            |            |            |            |            |            |
| 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%       |
| <b>IT Contribution</b>                  |            |            |            |            |            |            |            |
| 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%       |
| <b>IT Employment</b>                    |            |            |            |            |            |            |            |
| 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%       |
| <b>Cloud plus Clients</b>               |            |            |            |            |            |            |            |
| Net New Business Revenues (Million USD) | -          | -          | 57,724     | 135,823    | 237,841    | 370,068    |            |

Source: IDC Economic Impact Study, 2009

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