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## Top 19 Technology Trends for 2008



*An opinion paper by Technology Futures, Inc.*

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For the fourth year running, Technology Futures, Inc. (TFI) provides a list of forward-looking trends for the coming year that will have significant impact on companies that use technology for competitive advantage. These predictions differ from our normal activities where TFI traditionally looks further out into the future. Commenting on the list, author David Smith (Vice President, TFI) states, “2005 and 2006 were periods spent building capacity and capabilities. 2007 and 2008 are years of transition. We saw in 2007 tipping points in several technology areas, such as broadband penetration and the death of single core processing chips.” He continues, “2008 will be a dynamic year impacted by possible actions such as the potential financial instability including the threat of recession, changes in the geopolitical environment, and further changes to the landscape of business.”

The list below provides more information on these trends and others that will be of great consequence to those involved with global business, technology business process, science and universities, government agencies, federal labs, corporate labs, and technology savvy consumers.

## Top 19 Technology Trends for 2008

**1. Green, Green, Green—during 2008, everything turns green.** The greening of information technology (IT) started in 2007, but will pick up speed and spread to all parts of both the corporate and consumer domains. This includes efforts at conserving power, more efficient procedures, less travel, and many other activities to save resources. Some

companies will step up to the challenge, but look for major shifts in R&D budgets and collaborative partnerships to reflect this trend.

**2. Peer-to-peer (P2P) rebrands itself and becomes an ad-supported connection between consumers, business, and content producers.** This connection is an extension to the pace of adoption of Reed's Law, the law of increasing global enterprises arising from group-group connections. Video and collaborative applications will be the driver. The drive toward ad hoc, multi-party collaboration will increase because of the P2P nature and its impact on trust.

**3. The IT industry's key players dramatically increase the migration of core offerings.** Applications, business intelligence, storage, imaging, CRM, etc. will migrate to online delivery models as a key method for profitably serving high-growth markets, particularly small and medium-sized businesses. Web mashups that combine data from more than one source into one integrated tool will be the dominant model for the creation of composite enterprise applications and will peak around 2012. Mashup technologies will evolve significantly over the next five years, and application leaders must take this evolution into account when evaluating the impact of mashups and in formulating an enterprise mashup strategy.

**4. The fabric of the enterprise computing and data center begins to change considerably.** New definitions of what a server is, new definitions of bladed workstations, and even a massive change in storage will occur. As server virtualization use continues to expand to a wider range of users and industries, a growing number of companies will opt to use iSCSI as the supporting SAN fabric for the servers being consolidated.

**5. Flash memory hits the mainstream in a big way.** Against popular opinion, last year we accurately predicted the mainstreaming of flash with several fabs being put into production, and the vast majority of these fabs producing flash chips. We saw major technology companies introducing computers without disk drives, with flash being considerably faster and more durable than current disk drives. Those predictions have proven true, with 64GB now available, affordable, smaller solid-state disks will be hitting the mainstream in a big way, leading to more crash-resistant and faster laptops. Flash-based storage makes a move toward the datacenter both as a green and a faster access option. Flash-based storage, whose cost/GB is rapidly approaching magnetic disks, offers the additional benefits of 10 times the performance, higher storage densities, and much lower power consumption. Flash also makes handheld devices more competitive to laptop PCs.

**6. Voice no longer drives communications.** It is more than just voice. The march toward digital convergence and unified communications picks up steam. In the business enterprise, IP telephony has reached about 25% of the global market, with most organizations testing the waters for wider deployment. The movement of Microsoft and

others into this space will enhance its uptake. The growth of presence information and collaborative tools will move from the consumer space into the enterprise with the goal of integrating business communication with workflows and common business applications.

**7. Significant growth driven by WiFi is apparent across communications hardware providers and carriers.** 2008 will be the year to watch for significant growth across communication hardware providers and carriers in the number of users with WiFi-enabled cell phones, and even the takeoff of WiFi on airplanes. Carriers who embrace WiFi will deliver significant value-add to their subscribers through a full browsing experience and easy access to Web services and other communications options. One-to-one cell conferencing appears and new location-centric collaboration emerges.

**8. A new paradigm arrives in the wireless markets.** As the precursor appeared in 2007, 2008 will see increased transformation as mobile network operators open up their networks. Look for a new paradigm in pricing, equipment, and services. This change is based on mounting pressure from Web gadgets and open development efforts such as Google's Android and the Open Handset Alliance. Mobile network operators will have to begrudgingly open up their networks to any device and any application. Mobile networks will not only open up to outside handsets, devices, and applications, but media content, search, social networks, conferencing, shopping, and a variety of services will all be standard parts of the mobile network experience.

**9. WiMAX continues its consolidation and makes many changes during the year.** The market will consolidate around both device makers and chip companies, but the industry will grow especially in fixed access and sensor applications. M-Taiwan will become the showplace for future applications.

**10. Internet video of all types increases.** From flash-centric social media to enterprise video application to IP HD video these will all be taking market share away from satellite and will begin to impact cable.

**11. Digital convergence enters a new stage of growth, finally beginning to exploit the benefits of horizontal digital convergence.** The need for higher profits, value partnering, and time compression forces traditional companies to look for solutions and capabilities outside of their traditional vertical industries. An example is the health industry looking at the new Nintendo Wii game console, with its motion sensitive controllers, as a way to motivate exercise and physical therapy.

**12. Advertising revenue increases as new applications emerge and as tens of millions of users use immersive worlds and play massively multiplayer online games (MMOGs).** With broadband penetration well up the curve globally (wireline and wireless), the movement of advertising will increase as new applications emerge and as huge numbers of users increasingly use immersive worlds and MMOGs. These new worlds and game sites are some of the stickiest on the Web, resulting in some of the

highest levels of time spent per month online. This indicates they are becoming a primary form of online communication for some users. Look for the launch of asynchronous multiplayer games. The income from advertising will justify free market sustainable residential broadband. The net neutrality issue will be resolved in 2009-2011.

**13. Outsourcing transitions to smart sourcing.** Horizontal convergence will further build upon the transitioning of outsourcing to smart sourcing. Smart sourcing is when organizations utilize the Reed's law approach of self forming groups to help identify, jointly design, and jointly produce products that are not in the organization's core competencies. This is particularly important as the design and product life-cycles continue to compress, and new convergence products reach beyond traditional product lines. With the growth of broadband Internet, smart phones and devices, and various always-on products and tools, the timing is right to exploit these new capabilities.

**14. The corporate and governmental business models move toward ones more dominated by Reed's law of self-forming groups.** Innovation, collaboration, and transformation will be at the top of every leader's list during 2008. Companies are demanding new tools and methods to execute that change within their existing organizations, as well as for the kind of design thinking that transforms cultures. The next change is to stop competing against your competitors. Traditional rivals aren't the biggest worry. Disruptive innovation is hitting corporations from outside their businesses and from outside their traditional industries. The impacts of horizontal digital convergence will bring new white space industries that will be disruptors to traditional industries.

**15. Global warming and the energy crisis continue to have major impacts.** Even with the data centers going green, these impacts will be increasingly felt. With oil production peaking in the next five years and new sources coming online slowly, look for many point solutions that will have little impact. China and India will become leaders in solar power, and the movement to biofuels will create ecological and food challenges for many. 2008 will be the year where LEDs become common for lighting, and new forms of energy storage will leave the labs. Look for new players to emerge, from Brazil with their new oil fields to Google, which is pouring tens of millions of dollars into funding wind, solar, and geothermal power.

**16. Global stability continues to become even more high risk.** China will continue to have its way with other nations' critical information. In 2007, we learned that electronic attacks emanating from the Chinese military had penetrated the German Chancellery, England's Whitehall, and the Pentagon. 2008 will see a continuance of such attacks by China on Western governments and industry. More penetrations of government agencies and labs will be uncovered and publicized. The likelihood of superpower conflict with China, Russia, or both increases, which will make the war on terrorism seem like it's not such a big deal. The likelihood of a regional nuclear exchange increases considerably during the next 10 years.

**17. The worldwide economy will be volatile during the next few years.** Water will become a driver much like oil was in the 20th century. The movement to a cashless society will increase, as digital imaging will progress to the point it will defeat most anti-counterfeiting systems. China will exchange its U.S. currencies for Euros and other currencies, which will cause the dollar to decrease in value and adversely impact the stock market. The U.S. consumer economy will slow, maybe into recession, with a resulting impact on the world's economy. Specifically, this will weaken the business models based on consumer and internet advertising. Advertisers, entrepreneurs, and investors will switch their attention to B2B business.

**18. The age of bio continues to grow in importance.** New products from the industry consolidations of 2006/2007 begin coming to market in 2008/2009. Digital convergence also impacts the age of bio with evidence-based medicine being enabled by the horizontal convergence of multiple industries.

**19. Social applications come into prominence built around the growth of pervasive communications and computing.** The growth of all the elements above will make 2008 the toughest year ever for CIOs. The same elements that are driving consumers to the social networking and social media sites will enter the enterprise marketplace and CIOs will lose control because of their business impact.

*TFI excels at relating emerging trends to the specific interests of clients and providing a future-focused analysis of what developments and opportunities can be expected in the near and more distant future in a particular industry or organization. If you believe TFI can be of assistance to you in this area, please contact us. We welcome your inquiries.*