Gartner Research

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Gartner's Top Predictions for IT Organizations and Users, 2008 and Beyond: Going Green and Self-Healing

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Predictions for 2008 inevitably will focus on key issues that are top of mind in the areas of "green" IT, consumerization of IT, and the emergence of new acquisition and delivery models for IT systems and services. This Top Predictions report examines the effect these key issues will have, in addition to highlighting some key technologies for the next few years.

Key Findings

- Environmental, or green, issues will directly affect IT decisions related to the purchase of systems, services and the selection of vendors that support the green IT movement.
- Alternate delivery and acquisition models are affecting how IT organizations and users plan for spending, as well as selection of products and services.
- Consumers are changing the way decisions and technology choices are made by IT — and who the decision makers are.

Recommendations

- Establish a green initiative in IT to evaluate compliance and to promote a consistent approach to environmental issues.
- Make IT budget decisions dependent on service-based spending models, such as subscriptions and annuities.
- Establish communications and collaboration initiatives between end users and IT decision makers when selecting new technologies or services.

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STRATEGIC PLANNING ASSUMPTIONS

By 2011, Apple will double its U.S. and Western Europe unit market share.

By 2010, 75% of organizations will use full life cycle energy and CO_2 footprint as mandatory PC hardware buying criteria.

By 2012, 50% of traveling workers will leave their notebooks at home in favor of other devices.

By 2012, 80% or more of all commercial software will include elements of open-source technology.

By 2009, more than one-third of IT organizations will have one or more environmental criteria in their top six buying criteria for IT-related goods and services.

Through 2011, the number of 3-D printers in homes and businesses will grow 100-fold over 2006 levels.

By 2010, end users' preferences will decide as much as half of all software, hardware and services acquisitions made by IT.

By 2011, early technology adopters will forgo capital expenditures and instead purchase 40% of their IT infrastructures as a service.

By 2011, suppliers to large global enterprises will need to prove their green credentials via an audited process to retain preferred supplier status.

By 2012, at least one-third of business application software spending will be as service subscription instead of as product license.

ANALYSIS

1.0 What You Need to Know

Gartner's top predictions showcase the trends and events that will change the nature of business today and beyond. Selected from across our research areas as the most compelling and critical predictions, the trends and topics they address this year indicate a strong focus on individuals, the environment, and alternative ways of buying and selling IT services and technologies. These areas of focus imply a significant groundswell of change that may in turn change the entire industry. Last year, a strong focus on consumers and customers in general was key to the markets our top predictions affected. This year's predictions give the sense that the tide has turned, and now individuals and their concerns are affecting IT more than the other way around.

Self-determination is beginning to take hold in the use and specification of technologies. As users begin to make their own decisions about what technologies they will use, they shift industry dynamics. Apple has had a resurgence of its leadership in the innovative delivery of PC technologies. As users grow frustrated with PCs, the Apple model (if not its prices) begins to become extremely attractive again. And although this interest continues, users are now gaining enough functionality in mobile and wireless devices that it may be possible to leave the laptop at home in favor of the ubiquitous handheld device. Even in the home and business, individual technologies are growing in prominence. Three-dimensional printing has begun to evolve to a price point, and the compactness of devices makes it feasible in the home or in any business. Printing a pair of sneakers may be around the corner.

Alternative delivery and acquisition models such as software as a service (SaaS) further help to emphasize the element of choice as a key determinant of success in the IT industry. Although these models are not new, the emergence of companies that specialize in this model herald the emergence of a "cloud computing" model that will make it easier to deliver IT services of all kinds. In addition, the open-source model continues to evolve, and now vendors and end-user organizations are embedding open-source technologies in their offerings and providing support for it.

Finally, green IT and environmental computing have begun to affect the globe. U.S. companies have trailed in addressing this phenomenon, but the global presence of green IT initiatives extends into all markets. IT is no different in that IT organizations are adding environmental criteria into their buying decisions for products and services. This will lead to the demand by businesses that their suppliers prove they have credentials indicating that environmental responsibility is more than just a message.

Our predictions always cover a wide spectrum of trends, and this year is no different.

1.1 Selecting Predictions

The selection process included evaluating several criteria that define a top prediction. We examined issues such as audience appeal and impact. The average reader of the Wall Street Journal should be able to follow each prediction and its effect on areas of interest. In addition, the predictions are intended to compel readers to action and position them to take advantage of the coming changes, not be damaged by them. Newsworthiness and conciseness of the predictions also played a large role in their selection.

These top predictions are for general technology areas, rather than being specific to industries (see "Gartner's Top Predictions for Industry Leaders, 2008 and Beyond: Start With a Strong Stomach").

All predictions in this report are Strategic Planning Assumptions (SPAs). However, this year, Gartner has removed the probability percentage from its SPAs. Without this confidence indicator, we place a stake in the ground on every position and can track its success as time passes.

In reading these predictions, it will become apparent that our top predictions are pulled directly from research that is topical and ongoing. Our predictions include implications and recommendations for organizations seeking change opportunities. IT professionals must examine these predictions for opportunities to increase their support of consumer-driven requirements and their ability to help the business deliver stronger services to those customers.

2.0 Client Computing

Increasing user frustration with the personal computing experience combined with an increase in user self-determination about technology choices makes Apple once again an attractive choice. The company will continue to innovate and to excite customers with its products while its competitors will struggle to capture any cultural high ground.

Strategic Planning Assumption: By 2011, Apple will double its U.S. and Western Europe unit market share.

Key Findings:

- Apple will sustain its momentum of the past two years and double its combined market share in the U.S. and Western European markets to 9.0% by 2011.

- Apple's gains in market share reflect as much on the failures of the rest of the industry as on Apple's success. In addition to industrial design coolness (which could be emulated), Apple is challenging its competitors with:
    - Software integration that provides ease of use and flexibility (for example, Boot Camp and Parallels)
    - Continuous and more frequent innovation in hardware and software
    - An ecosystem that focuses on interoperability across multiple devices (for example, iPod and iMac cross-selling)
    - Cradle-to-grave support that begins with knowledgeable sales support at the Apple stores and continues throughout a system's life with hands-on technical support and repair from Mac "geniuses" at the Apple Store Genius Bar
- By comparison, such interoperability and support fall short in most competitors.
- The growth prediction recognizes the rising value of Apple's differentiators among a youthful emerging customer base as well as with seasoned users growing frustrated with today's PC experience.
- The prediction is based on the assumption that Apple will release a sub-$800 mobile computer to compete with the expected continued fall in average system prices and Apple's continued ability to execute.
- The prediction assumes that Apple's business model, go-to-market strategy and higher entry-pricing strategies will limit its success in emerging markets:
    - A key factor in Apple achieving this goal will be its ability to maintain service standards as its installed base grows.

Market Implications:

- Any share gain from Apple helps to erode Microsoft's dominance in the PC market.
- Intel gains — not in processor market share, but in stronger competition between Apple and Microsoft, which leaves Intel more room to set PC industry standards.
- HP, Toshiba and Sony, as well as Dell in the U.S., are the PC manufacturers most likely to be threatened by Apple's success.
- Most of the market share will come from consumer purchases and small businesses because Apple has shown no inclination to support large businesses. However, that will not stop business users from requesting Macs or going around their IT departments to buy Macs. Apple will also need to increase, or at least defend, its education market share.

Recommendations:

- IT managers must be prepared to field more requests to connect Apple products to the corporate network.
- PC vendors should actively explore ways to offer physical customer service points and better software integration.

- PC vendors must accelerate efforts to develop brand attributes and segment-focused designs.
- The PC industry should explore how online experiences can be integrated into a more-compelling and painless cradle-to-grave PC ownership experience.
- The PC industry must accelerate efforts to deploy an industry virtualization platform through which many of the experience issues can be improved.

Analysis By: Charles Smulders and Leslie Fiering

3.0 Client Computing

Energy use produces CO_2 . As time goes on, tracking and accounting for CO_2 emissions will become a priority and even a selection criterion. Companies that select hardware will care which suppliers manage their energy use in an environmentally conservative way.

Strategic Planning Assumption: By 2010, 75% of organizations will use full life cycle energy and CO_2 footprint as mandatory PC hardware buying criteria.

Key Findings:

- Manufacturing, distributing and using most IT equipment are energy- and material-intensive.
- Until recently, end-user enterprises were not aware of that fact, nor were they concerned about it.
- Those enterprises that are both aware and are concerned about it remain a small, but rapidly growing, minority.
- The media hype surrounding green IT continues to drive the increased awareness of the environmental issues associated with IT.
- Limited carbon labeling will start to appear on a small and very selective range of consumer products in 2008. This will start posing the issues related to embodied energy and carbon in people's minds.
- The change in behavior will come as enterprises face increasing pressure to tackle climate change, and as their own maturity and sophistication about measures to tackle it increase. We believe that will happen for the majority of enterprises in 2010.
- Most technology providers have little or no visibility of the full life cycle energy and CO_2 footprint of their products. However, some have started the process of life cycle assessments (LCAs) or at least are asking key suppliers about carbon and energy use in 2007 (see "Dell Should Focus on Cutting Supply Chain CO2 and Energy") and will continue into 2008. Most others will start some level of more detailed life cycle assessment in 2008.
- The area of carbon accounting, tracking and carbon product labeling (beyond just IT) will explode during the next two years. However, it will be complex, oversimplified, crude and it will lack standards, so it will have limited impact until at least 2010. Regardless of the lack of appropriate standards and common metrics, enterprises will demand the information; they will use whatever they can get, and technology providers will respond.

- Although we might see limited information and an attempt to differentiate in 2008, the leading technology providers will start to seek differentiation of their products on full life cycle energy and CO_2 requirements in 2009.

Market Implication:

- By 2010, enterprises will have the desire and information available (even if limited) to start making product and service choices based on full life cycle energy and CO_2 footprints.

Recommendations:

- Technology and service providers should start undertaking an LCA pilot for a key product family, to develop the competence. If a full LCA is not possible, they should at least start gathering energy and greenhouse gas emission data for their supply chains, and plan on building on that competence. A key first step will be deciding the boundaries to what they want to include.
- Enterprises wanting to reduce their CO_2 footprints, as opposed to cutting their energy consumption, should start asking technology providers for information about the carbon footprint of the products they are interested in, but should not expect reasonable information until 2009. Even then, it will be limited by lack of standards and only will be at selected product family levels.
- Organizations should seek clarification of how any carbon footprint has been calculated, what's been included, what's been excluded and how far down the supply chain the calculation has gone.
- In the meantime, enterprises looking for environmental criteria should make use of the eco-labels such as Electronic Product Environmental Assessment Tool (EPEAT) silver and gold and Energy Star 4.

Analysis By: Simon Mingay, Charles Smulders and Leslie Fiering

4.0 Client Computing

The prospect of leaving the laptop in its docking station at home is not remote. The ability of pocket devices to provide processing power, presentation richness and mobility is making a future of only small devices on business junkets a near-term reality. Will applications, mobile device services and innovative products help obviate the need for the ubiquitous laptop?

Strategic Planning Assumption: By 2012, 50% of traveling workers will leave their notebooks at home in favor of other devices.

Today, constraints exist in ultrasmall mobile devices in terms of performance as well as keyboard and screen ergonomics. It's tough to read a large spreadsheet on a two-inch screen. Storage is limited. Applications that are tightly bound to the full Windows desktop have limited functionality on portable OSs. As a result, traveling workers who want to leave their notebooks at their home base and use these devices as notebook substitutes are either totally frustrated or willing to make desperate compromises.

Key Findings:

- Even though notebooks continue to shrink in size and weight, traveling workers lament the weight and inconvenience of carrying them on their trips. They want to know why they can't have full PC functionality in something the size of a BlackBerry.

- The result is pent-up demand for new types of devices or new strategies of packaging and accessing personal computing environments when away from the office. Keen to meet this demand, vendors are developing solutions in several areas:
    - New classes of Internet-centric pocketable devices at the sub-$400 level enabled by Intel's Ultra Mobile Platform silicon.
    - Server and Web-based applications that can be accessed from anywhere (such as Google Apps).
    - New class of application: Portable personality that encapsulates a user's preferred work environment, enabling the user to recreate that environment across multiple locations or systems (for example, MojoPak, PortableApps or LogMeIn). The portable personality can be stored on a server, on the Web or on a device the user carries, such as a flash drive or an external USB drive — even an iPod or a smartphone — and then delivered to a target PC at the desired location.
- What these have in common is that the users' applications are not tied to specific devices. The applications can be stored in a variety of locations, or carried with the user and accessed by different devices — whether the traditional ones we use today or the coming class of Internet-centric devices.
- Most current solutions are immature. Most of the hardware solutions are constrained by price and lack of performance, which will be addressed as Intel's new silicon platform matures in 2009. Web-based applications are just now hitting the market and are still in the early test phase. The growing number of server-based products mostly rely on broadband connectivity. The portable personality solutions are still, for the most part, consumer grade.

Market Implications:

- For the next three years, most new hardware products will be "expensive market research" as vendors try to hone in on the right combination of form factor, features, services, software bundles and price points that will attract users.
- Portable personality solutions will continue to spring up. Most will demonstrate only rudimentary awareness of security issues and scalability. However, several do have a security focus, and others are showing a keen understanding of enterprise computing requirements. These early successes will pave the way for a broad host of followers. As a result, kiosks and docks in hotel TV systems will become more popular.
- The dark side of these alternatives is that data breaches caused by undersecured and/or shared data removable media will escalate until more security awareness is built in and IT learns how to re-architect security infrastructure to deal with the new threats. In addition, the proliferation of device types will create asset management headaches for IT departments.
- Frustrated users are likely to adopt their own immature solutions before secure, industrial-grade solutions are available and, certainly, before most IT departments have realized that there was a problem.

Recommendations:

- Recognize that these notebook alternatives will never be notebook substitutes. For creating deliverables and dealing with large files, full-featured desktops and notebooks

will still be required. Expect most alternatives to be suitable for short two- or three-day trips or for narrowly defined vertical applications.

- Apply workstation-style criteria for security, privacy and tracking to portable personalities. If you can't emulate what can be done on a workstation, you will fail to meet compliance requirements.
- Be prepared to manage a wider variety of client device types. Include this requirement in the selection criteria for all client computing management solutions.

Analysis By: Leslie Fiering

5.0 Open Source

The use of open-source technology to enhance and evolve commercial products has become a commonplace strategy. Vendors will continue to leverage this movement by embedding open source into products, while end-user organizations will use stable open-source projects as a competitive differentiator against companies that refuse to acknowledge that open source is now enterprise-ready.

Strategic Planning Assumption: By 2012, 80% or more of all commercial software will include elements of open-source technology.

Key Findings:

- It has become impractical for mainstream IT organizations to avoid or ignore the influence of open source across a wide variety of industry market segments. Doing so will put organizations at a serious disadvantage against competitors that are leveraging mature, stable and well-supported open-source technologies for significant return-on-investment and total-cost-of-ownership opportunities. Moreover, open source is entering IT organizations embedded in market-leading products (not open source) from a wide range of vendors, including IBM, Oracle, BEA Systems, SAP and many others.
- The most pervasive strategy by which vendors are enjoying the benefits of open source is by embedding it within their IT solutions. This is an "indirect revenue" strategy where open source is present in a product (hardware or software) but is not directly exposed to the customer. Through these efforts, vendors enjoy a competitive advantage by leveraging high-quality code at minimal cost. In these cases, however, the open-source element of the solution is not its principal focus. A vendor might, for example, embed the Apache XML parser in its enterprise ERP application. The vendor is then free to commit its resources to areas of unique business value rather than the inner workings of lower-level system software. This benefit is passed directly on to the customer through high-quality software and potentially lower costs than competing packages.
- The strategy is not without risk to provider and consumer. Ideally, the vendor must be able to support its solution as a whole. It must be capable of supporting technical issues of embedded open source, but it must also be capable of providing the same level of legal support (for example, warranty and indemnity).

Market Implications:

- Although many IT organizations are finding value in directly adopting open-source solutions, a larger number are adopting open source indirectly embedded within a wide range of other software and hardware solutions, but these products will not be licensed as open source.

- The growing presence of open source within commercial software solutions is testimony that enterprise customers cannot ignore the larger industry impact of the open-source software model. Embedded open-source strategies will become the minimal level of investment that most large software vendors will find necessary to maintain competitive advantages during the next five years; exceptions will exist, but they will become increasingly rare during the next decade.
- The most successful vendors will find ways to leverage open source in technical synergy — focusing their core engineering efforts on true value-added features and functionality above the "commoditized" layer of open-source software. These vendors will integrate with open-source solutions, embed open-source technology as a foundational building block and compete directly with open source only as a last resort.

Recommendations:

- Enterprise customers: Examine the strategies of each vendor you do business with. Determine how the vendor is defending its business model from the threats of open-source commoditization, and also look deeper to see how the vendor is creating synergy with the open-source model. Technology providers that execute on both principles will be best-positioned during the next five to 10 years.
- IT organizations: Determine which software assets are licensed as open source and which others have embedded open-source code in them and query commercial software suppliers for this information as well. All IT solutions must be examined to ensure compliance with licensing terms.
- Plan for and commit to continue a rigorous "full disclosure" audit process for future software acquisitions that includes not only external third-party channels but also in-house and work-for-hire solutions as well.

Related Research:

"Establish an Enterprise Open-Source Policy to Maximize Value and Minimize Risk"

"Findings: Open-Source Adoption Priorities Will Shift in Mainstream IT"

"Hype Cycle for Open-Source Software, 2007"

"Managing Open-Source Service and Support"

Analysis By: Mark Driver

6.0 IT Management

Climate change has been the catalyst that has put "environmental sustainability" on the agenda for a rapidly increasing number of enterprises, even if they have a narrow view on what "environmental sustainability" means to them. Although media coverage of green IT is way ahead of where most IT organizations actually are with their environmental programs, 2007 marked a tipping point in concerns related to the environment. Significant regional variations remain, with Western Europe 12 to 18 months ahead of the U.S. In eastern and central Europe, along with many parts of the Asia/Pacific region, it remains a complete nonissue. However, we are witnessing a real and sustained change in the priorities attributed to environmental issues, as demonstrated by the positions being taken by large enterprises such as Tesco, Wal-Mart, Marks and Spencer, BT Group, GE, utility companies and others.

Strategic Planning Assumption: By 2009, more than one-third of IT organizations will have one or more environmental criteria in their top six buying criteria for IT-related goods and services.

Key Findings:

- An increasing number of CEOs are perceiving the strategic risks and opportunities associated with the perception and the reality of climate change. That, along with pressure to be seen as setting an ethical agenda for the enterprise, is driving a proliferation of corporate social responsibility (CSR) policies.
- Most enterprise management teams will remain motivated primarily by cost savings or cost avoidance during the next two years, and they will engage in an environmental agenda to the extent they believe they can achieve those two goals.
- Over the long term, three factors will have the most impact on the scale and scope of the change: combined energy and carbon costs, the impact of climate change on brand values and customer behaviors, and government and regulatory measures (including carbon-trading schemes).
- Pressure to increase energy efficiency and reduce CO_2 and other greenhouse gas emissions will come from the supply chain and the investment community (such as the Carbon Disclosure Project; www.cdproject.net), with enterprises being obligated to declare their energy efficiency measures and CO_2 footprints.
- Enterprise data centers are struggling to keep pace with the increasing power requirements of the infrastructures they are being required to run.
- Power grids in high-density urban centers are similarly struggling to meet demand.
- Public-sector enterprises are pushing pressure down the supply chain to improve environmental performance.
- There is substantial potential to improve the environmental footprint, throughout the life cycle, of all IT products and services, without any significant trade-offs in price or performance.
- During 2008 and 2009, we anticipate IT organizations will steadily transition from just focusing on power consumption to a broader concern about their CO_2 footprints.
- We anticipate that inappropriate end-of-life disposition of IT equipment will receive greater exposure during 2008 and 2009, particularly from nongovernmental organizations.
- It is likely that, within five years, most large IT service providers will be required to participate in a carbon cap and trade scheme.

Market Implications:

- Although most IT organizations will come under pressure to address energy efficiency, a much smaller proportion will be required to act on a broader environmental agenda. That pressure will come from their stakeholders, including customers, senior executives, the group responsible for CSR and employees.
- That action plan will start with pushing pressure down the supply chain, because it is easy and quick to do.

- The motives for action will be a mix of cost saving or avoidance, and security, risk and environmental reasons, but the stated reason will more often be expressed as the latter because it is expedient to do so.
- While IT organizations concerned about environmental sustainability need to address a broad spectrum of issues, the reality is that most will focus on the climate change programs of their suppliers, and the energy efficiency of products and services being offered.
- By 2009, at least one-third of IT organizations will consider the energy efficiency of servers, PCs and other IT hardware just as important as performance.
- By 2009, at least one-third of private-sector and most public-sector RFPs in Western Europe and North America will include compliance with relevant eco-labeling standards or will specify selected criteria covered by the eco-labels — in particular, EPEAT silver and gold (or many of the criteria covered by IEEE 1680) and Energy Star 4.
- Enterprises will demand evidence from service organizations that their operations are more energy-efficient than the existing incumbent's and that they have a program to reduce CO_2 emissions. They will similarly start discussing who is responsible for and who benefits from carbon costs or credits.
- Enterprises will seek increased assurance about appropriate end-of-life disposition procedures.
- IT organizations will move from their focus on product power efficiency to asking service providers about their energy-efficiency measures.
- Service contracts being signed now will need to take into account the cost of carbon.
- More than one-third of IT organizations will mandate environmental assessment criteria, particularly energy efficiency and CO_2 footprint, as part of their top selection criteria, alongside the usual key buying criteria of price, performance, support and service levels, strategic alignment, and technology road map.

Recommendations:

- Technology and service providers must ensure they have the information, processes and skills in place to respond to RFPs requesting environmental performance-related information.
- Technology and service providers will need to demonstrate environmental and price performance.
- Technology and service provider account management teams must be able to talk credibly about how their company's business operations, selected products and services can meet the environmental criteria and specifically address the issues of CO_2 footprints and energy efficiency.
- Service contract terms and conditions will need to be extended to cover carbon costs and credits, and to resolve the issue of who pays for the carbon and who benefits from any credits that accrue.
- IT organizations should be careful about confusing its environmental and cost goals (see "Conflating Lean and Green Is Unwise").

- IT organizations should challenge any technology or service providers charging a significant premium for products or services with greater energy efficiency.

Analysis By: Simon Mingay

7.0 Emerging Trends and Technologies

The ability to print a three-dimensional (3-D) object is available to us today. Decreasing costs of printers and materials are about to make it affordable and possible for many companies to print models of an object before manufacturing begins. Even enthusiasts will build 3-D printers and begin to enjoy the uniqueness of printing a physical object.

Strategic Planning Assumption: Through 2011, the number of 3-D printers in homes and businesses will grow 100-fold over 2006 levels.

Key Findings:

- Recent advances in 3-D printers and scanners — in particular, lower cost and higher quality —- have significantly lowered the barriers to entry for companies that wish to have physical samples or models of the products they are developing or marketing.
- Printers priced less than $10,000 have been announced for 2008, opening up the personal and hobbyist markets.
- Service bureaus are offering models from photos or 3-D representations such as avatars.
- Open-source "fabber" designs from sites such as fabathome.org are bringing the price still lower, albeit for a niche enthusiast market prepared to build the printers. They are also exploring printers that can use multiple materials in the same model.
- A third-party report on 3-D printers (Wohlers Report 2007) puts 2006 units shipped at just over 3,000. Based on the significant price/performance improvements and the potentially broad and disruptive impact of this technology, we estimate that, by 2011, more than 300,000 units will have been sold to homes and businesses.

Market Implications:

- Current applications focus on one-off or small-run models for product design and industrial prototyping, and "3-D faxing" of a model to a remote location with a 3-D printer to show the model's precise appearance before manufacturing. As the creation of 3-D models becomes cheaper and easier through advances in 3-D scanners and 3-D design tools, the market will expand to architecture, geospatial maps, medical applications and small-run manufacturing.
- As costs fall and applications expand, a growing number of companies will buy 3-D printers for their premises.
- In the hobbyist and consumer markets, the technology will be used for artistic endeavors and custom or vanity applications, such as the modeling of children or pets.
- Demand for scarce 3-D design skills will explode in both the consumer and business arenas.

Recommendations:

- Allocate 3-D printing as an exploration project within IT's R&D or emerging technology activities.
- Demonstrate the capability to business units such as marketing, product development, and customer services and strategy. Consider the following ideas:
  - Replacement parts distribution (perhaps temporary parts — as a holding replacement until the high-wear piece is available)
  - Mass customization applications (such as personalized models or accessories)
  - Design of facilities, manufacturing plants, offices, campuses and more
- Colleges and universities should evaluate 3-D printers in computer graphics, design and engineering programs.

Analysis By: Jackie Fenn

8.0 Emerging Trends and Technologies

A reduction in technology uniqueness as well as an increase in technology commoditization has made IT-related choices more approachable for end users. As a result, those users are determining what hardware, software and services they will use at home and at work.

Strategic Planning Assumption: By 2010, end users' preferences will decide as much as half of all software, hardware and services acquisitions made by IT.

The rise of the Internet has changed expectations of end users and consumers. In addition, the ubiquity of IT-related technologies and services has made computing more approachable than ever before for the average individual in developed and developing countries. These trends have led to an emerging phenomenon we call end-user self-determination. End users are now making decisions about technology products and their use for personal and business applications. Because of this, IT organizations are addressing user concerns through planning for a global class of computing that incorporates user decisions in risk analysis and innovation of business strategy.

Key Findings:

- Technology availability and ubiquity have increased dramatically during the past 10 years as part of the Internet phenomenon and as part of the mobility and consumer electronics movement. This has led to more-consistent involvement in technology applications by end users.
- The simplicity of technology solutions has provided users with the ability to make their own choices (in some cases) rather than relying on IT staff to choose technologies. Now, personal e-mail packages (such as GMail), instant messaging (AOL), laptop computers, mobile devices (such as iPhones), personal IP-based telephony (Skype), collaboration suites (ZOHO), and even personal networking and storage preferences are commonplace.
- The consumerization of IT is an ongoing process that further defines the reality that users are making consumer-oriented decisions before IT-department-oriented decisions.
- It is no longer uncommon for end users to configure networks at home, to establish service for global connectivity, to purchase and maintain large storage capacity, or to make decisions about support of laptops and personal computers. The 2007 Predicts

report indicated a movement toward companies encouraging employees to purchase their own laptops and the service contracts that go with them.

- Virtualization technologies now enable IT organizations to provision two images for corporate laptops and desktops. One image is the corporate standard, which is locked down from changes. The other is a user image set up to enable the user to modify it at will without affecting the corporate image.
- Users are bringing personal technology into the workplace and expecting to use it as part of their jobs. For example, redirection of corporate mail to personal e-mail clients and vice versa is a growing risk for IT organizations.
- IT organizations are providing guest networks to accommodate nonstandard PC connectivity to those visiting their companies.
- Risks of unmanaged technology decisions are becoming apparent as IT organizations struggle to shut down user-introduced technologies or to accommodate them in a secure and predictable fashion.

Market Implications:

- Unexpected and unplanned shifts in buying patterns will cause IT organizations to have to rationalize their technology portfolios during the next five years. An example case is the re-emergence of Apple as a critical IT supplier for enterprises. Macintosh laptops are growing as a percentage of personal laptop ownership, but are not the established choice for the majority of enterprise deployments. This will lead to the increased requirement of virtualization technologies as a way to accommodate both environments. It will also lead to IT organizations incorporating multi-PC strategies rather than limiting users to one.
- IT decisions will come under budget pressure as individual business units seek to have more freedom of choice in technologies. This will further complicate the division in companies where technology is controlled in distributed divisions, limiting centralized control. However, in these companies, the ability to deliver the technologies desired may become simpler.
- Budgets allocated to risk management and technology coordination efforts will need to increase by 15% to 20% over 10 years. Unmanaged technology introductions will introduce security risks (such as leaks, unsecured software, back doors and malware through user-owned technology). Many companies will allocate this budget to the prevention of introduction of user technologies. However, the longer-term approach will be to manage user choices through expanding them in a collaborative fashion.

Recommendations:

- Establish a program of technology innovation that includes end-user-driven selection criteria. This will enable companies to expose the issue of end-user preferences as a corporate-driven initiative, which has the dual effect of embracing change while maintaining a coordinating role.
- Do not waste budget on a blanket attempt to regain control of decisions regarding technology use and introduction. This may work in the short run, but it will be unsuccessful long term as technology choices become more numerous and user familiarity with them becomes more commonplace.

- Sponsor technology fairs intended to familiarize end users with technology choices, your reasons for decision making and the risks associated with technology decisions.

Related Research:

"Gartner's Top Predictions for IT Leaders, 2007 and Beyond"

"Consumerization Gains Momentum: The IT Civil War"

"The Impact of Personal Infrastructure on the Enterprise"

"Community Source: When Users Can and Want to Retain Control"

Analysis By: Daryl Plummer

9.0 IT Services and Sourcing

SaaS is an alternate delivery model from the licensed software model. Customers subscribe to use hosted software solutions and do not need to maintain them on their own. This model will shift the use of capital expenditures from buying things to paying for use.

Strategic Planning Assumption: By 2011, early technology adopters will forgo capital expenditures and instead purchase 40% of their IT infrastructures as a service.

Key Findings:

Changing roles of IT, new enabling technologies and new business models are the three major forces propelling Type A companies toward acquiring IT infrastructure as a service instead of a capital asset.

Type A companies are defined as those "leading-edge technology adopters that are frequently one of the first companies to pilot leading-edge technology." In practice, they are also often first to adopt new business models. Type A companies can be in any industry and of any size. Many startup companies are Type A. In 2006, Gartner interviewed 788 buyers of IT in six countries (U.S., U.K., Germany, the Netherlands, Australia and Singapore) and asked how likely they would be during the next two years to acquire, locate and manage IT hardware products in a variety of ways. About 25% of Type A companies replied they intended to acquire their hardware as a service, with the provider owning (and sometimes locating and managing) the hardware infrastructure.

In enterprises, the drivers toward technology as a service are:

- Internal IT is moving to a business orientation it sees the organization value and away from operating the infrastructure that is perceived to be of less value, if not negatively.
- Business processes and business applications will share the limelight, leaving much of the infrastructure to move "behind the curtain" into a backroom role.
- Attention on green IT makes the purchase and operation of infrastructure in data centers feel "dirtier" than purchasing power from a "cleaner" external provider.
- Business users especially are becoming comfortable with virtual, unseen infrastructures in their dealings with SaaS as well as most Internet-based interactions in their personal lives.
- Strong desire for increased simplification, flexibility and scalability as opposed to a legacy infrastructure.

Enabling technologies have also played a major role in changing the behaviors of IT buyers. Examples are:

- Increased high-speed bandwidth that makes it practical to locate infrastructure elsewhere but receive the same response time on applications
- Realization that if the standardization inherent in open-source software and SaaS is acceptable, so should the standardization of infrastructure
- An expectation that virtualization of IT servers and storage will make the individual hardware less important than the "experience" created as it all plays together to improve use
- Belief that as service-oriented architecture (SOA) becomes common, "cloud computing" will take off, thus untying applications from specific infrastructure

The third key factor is changing financial models in the IT industry, for example:

- The ease of approval for operating expense vs. capital expense
- Rising energy costs of infrastructure — for example, for powering and cooling a data center
- The cost of constructing new environmentally attractive data centers vs. alternatives where the equivalent power is purchased from another entity that has built and operates the data centers
- Alternative delivery models that offer infrastructure "for free," as in ad-supported and service-supported methods; or "evergreen," in which the provider owns and continually refreshes the infrastructure to best price/performance; or "pay per use," as popularized by Amazon's Elastic Compute Cloud at $0.50 per CPU hour

Because of these forces, the perception of infrastructure as something that must be bought, housed and managed has changed. Companies are now seriously considering alternatives that treat the infrastructure as a service rather than as an asset and that care less where the infrastructure is located and who manages it. Companies are even considering whether they should custom-configure the infrastructure piece parts or purchase a standardized, optimized configuration.

Although the focus of this prediction is on IT hardware; there are major implications for IT software and professional services as well.

Market Implications:

Attention shifts away from the features, functions and benefits of one provider's IT hardware over another's and toward an economically feasible offer that has more to do with simplicity and trusted relationships. This is not a move to traditional outsourcing, with its onerous terms and 100+ service-level agreements. This is not the end of internal IT-operated data centers, although it is a step in that direction.

For IT buyers, the market shift this presages means:

- More choices in how and from whom to procure the infrastructure
- End of single provider "lock-in," along with lower switching costs

- Greater likelihood that businesspeople disillusioned with internal IT can procure their own infrastructure as a service
- Increase in need for services to design an architecture that will integrate whatever is left behind in the internal IT-run data center with what is now running externally at multiple providers

For IT providers:

- Stronger demand for captive and independent finance organizations such as lessors to provide the underpinnings of technology as a service.
- Potential conflict with outsourcing pure-play firms, whose business will be threatened.
- Real danger that the product brand shrinks in importance; while the company brand increases, but changes to a service experience.
- Decision whether to grow their service business or partner with external service providers; and how to treat their reseller channel.
- Financial implications, depending on how fast and to what degree the mix changes of products sold for one-time revenue vs. products sold as a service where the revenue is recognized over what could be years (or could disappear, depending on how the offer is structured); and the largest impact — the need for upfront capital expenditures before revenue is recognized. This is truly an instance of "build it and maybe they will come" or "don't build it, and lose to a competitor."

Recommendations:

For IT buyers:

- Obtain a stronger sourcing function that can evaluate offerings.
- Recognize the decline of existing product evaluation and selection criteria and the rise of new criteria.
- Decide where on the continuum of asset vs. service your comfort zone is.
- Assess appetite of business for this model.
- Get training on how to evaluate and purchase technology as a service.

For IT providers:

- Investigate all alternate delivery models to decide where you will play.
- Keep Wall Street informed of how fast the mix will shift and its impact on your revenue and profitability.
- Build a new client-facing value proposition.
- Build simple economic modeling tools for customers to evaluate the advantages and disadvantages of different models.
- Recognize the business risk — your company could be responsible if your client's applications go down.

Analysis By: Laura McLellan

10.0 ERP Supply Chain Management

"Going green" is no longer just a phrase. Future suppliers will need to be certified green just to remain on shortlists for enterprise consideration. The green movement will pick up steam in 2008 and change the way businesses approach environmental conservation.

Strategic Planning Assumption: By 2011, suppliers to large global enterprises will need to prove their green credentials via an audited process to retain preferred supplier status.

Key Findings:

Buyers have always had the ability to affect social justice and the preservation of the environment by virtue of their choice of suppliers, and many have exercised this power to the extent that it supports an organization's strategy or is not unduly costly. The velocity of global communication is making the world a smaller place, and what was once a matter of internal policy and integrity is becoming a transparent activity. Buyers' sourcing decisions are increasingly exposed to regulations such as the Restriction of Hazardous Substances Directive and to public scrutiny, especially when suppliers (or the suppliers' subcontractors) engage in questionable or illegal activities. Buying organizations must therefore carefully craft their sourcing policies and audit suppliers for compliance, lest inappropriate activities tarnish their reputation.

Companies with strong brands are particularly vulnerable to the negative impact of questionable supplier activities, even when those activities comply with local regulations (which in some countries may be weak). Suppliers that employ child labor, circumvent fair-trade agreements or damage the environment can easily tarnish a buyer's carefully developed brand, whether the buyer played a role in the activity or not, and even when the buyer forbade the supplier to participate in such activities. From this perspective, it makes sense that brand-conscious companies, including Primark, Starbucks, The Body Shop International, IKEA and The Walt Disney Company, have demonstrated their commitment to integrity through sourcing by proactively and publicly promoting and enforcing stringent codes of conduct.

The recent rise of the green issue — the push for addressing human-driven greenhouse-gas-based climate change — is playing out in a similar way. Those organizations with strong brands are helping to forge the first wave of green sourcing policies and initiatives. These policies go well beyond minimizing direct carbon emissions or requiring suppliers to comply with local environmental regulations. For example, the Richmond Council of South West London has completed a successful trial proving it can run its entire fleet on recycled cooking oil; Home Depot is working on evaluation and audit criteria for assessing supplier submissions for its new EcoOptions product line; Wal-Mart is tasking its suppliers to reduce energy consumption; and Timberland has launched a "Green Index" environmental rating for its shoes and boots. If global warming concerns continue to gain visibility, we expect an increasing number of organizations from all industries to proactively adopt environmentally friendly policies that address internal operations and supplier selection.

Buying green in any meaningful way will not be an easy task. The power-consumption level and type of the products will figure into the evaluation, as will the energy required to manufacture the product or deliver the service; and the costs involved in transporting the goods where applicable to the buyer. The choice of second- and third-tier suppliers will also eventually play a role in the carbon footprint of each purchase alternative. With a growing number of organizations claiming successful green initiatives, and the lack of standards to assess these options, buyers will struggle to quantitatively compare options. This situation will be aggravated by the inevitable pressure on suppliers to overstate results or offset new green reductions by cutting corners elsewhere, just as lead paint, melamine and kickbacks have found their way into the global supply chain. The use of carbon offsets and a proposed carbon fuel tax promise to help

companies assess the green impact of their sourcing choices, but these initiatives are not fully formed, and longer term, they are not likely to solve the problem completely. Buyers will have to assume the responsibility of validating the impact of their suppliers' environmental activity and the credibility of the underlying data they provide to support their green claims, possibly driven by legal or regulatory requirements.

Market Implications:

As buying organizations push to factor the environmental impact of product and supplier selection into their sourcing choices, many business applications and processes will be affected. Organizations will likely re-engineer their internal operations as a first step, because this is under their direct control. The supply base will be the next logical area to attack, to harness suppliers' help to reduce greenhouse gases and to mitigate the risk of simply passing problems down the supply chain. There is a lack of software applications to support green management, including carbon accounting and supplier green credentialing, so organizations will develop their own solutions or manually track their green efforts until software vendors catch up.

Software alone will not be sufficient, however, because it will not solve the lack of adequate, reliable compliance data. The most serious impediment to the greening of the supply base is the lack of broadly accepted standards for measuring an organization's carbon footprint. A secondary issue is the validity of the reported footprint. Supplier self-reporting, the simplest and quickest way to obtain green data, will not be reliable enough, because a few suppliers will inevitably submit misleading credentials. An adequate solution will therefore require the buyer to audit its suppliers for compliance or rely on an independent third party to certify green compliance data.

A variety of groups are attempting to attack the twin issues of green standards development and green credential auditing. A few large companies are providing leadership by developing their own programs. Several nonprofit organizations and consortia have sprung up, such as the World Business Council for Sustainable Development. A variety of independent, for-profit rating agencies will be vying for the green rating job, because auditing suppliers is a costly, time-consuming undertaking, and (assuming that eventually buyers will audit suppliers to similar or even the same criteria) it will be wasteful to subject suppliers repeatedly to the same evaluation. Even though the independent agency model has great long-term potential, many agencies will struggle because of the inherent difficulty in creating a profitable certification business model. For example, Office Depot canceled its contract with Asia Pulp and Paper (APP) due to the supplier's activity in rain forests, even though the Forest Stewardship Council (FSC) had awarded APP its green certification. The issue was that the FSC had dropped the required level of pulp from certified forests from 100% to 50% to survive. When it required 100% compliance, the FSC was able to attract only three supplier customers.

Buying organizations will be held accountable for their roles in helping preserve the environment, and they should consider the green footprint, along with traditional metrics such as price, quality, service and delivery, in their sourcing decisions. Large buyers and, in particular, those buyers with a brand name will push to demonstrate their accountability to avoid supplier-related damage to their brand assets. Building a green supply base will be costly, and many organizations will promote their green activities as consumer-confidence building rather than averting risk. It will take time for most organizations to move past internal operations greening, and we will see several years of effort before there are any broadly accepted carbon and other greenhouse gas accounting standards. By 2012, we will see significant progress toward the creation of standards and audit practices, and it will become a common requirement for suppliers to present their green credentials to their largest customers.

Recommendations:

Organizations with a brand built on integrity:

- Aggressively take the lead to drive carbon footprint measurement and accountability into the supply chain in 2008.

Less visible organizations:

- Take a "wait and see" attitude until 2009, or focus for now on your carbon footprint.

All organizations pushing suppliers to reduce their carbon footprint:

- Consider using an independent agency for audit and compliance, but carefully evaluate the agency's business model, carbon accounting methodology, audit policies and credibility.
- Audit the agency periodically and verify its ratings.
- Push business application vendors to support green initiatives by facilitating supplier audits, supplier credentialing and supplier qualification history.
- Update supplier sourcing and performance evaluation criteria to include product/service energy consumption, the volume of packaging and supplier carbon/greenhouse gas emission rates.
- Be informed of new emissions legislation.

Related Research:

"EU's Energy-Using Product Directive Heralds Arrival of Ecological Product Profiles"

"Wal-Mart Pilot Project on Energy Use Portends Coming Change"

"Use Existing Standards for a Quick Start to Green Procurement"

"A New Wave of SCM Innovation Must Address Climate Change Concerns"

Analysis By: Debbie Wilson

11.0 Software

Software vendors finally get the message in 2008. Everyone needs a strategy for delivering software services through the global Internet cloud. Leveraging SaaS, as well as open-source offerings, will change the basic balance of licensed vs. subscription-based software for today's independent software vendors (ISVs) and technology users.

Strategic Planning Assumption: By 2012, at least one-third of business application software spending will be as service subscription instead of as product license.

Key Findings:

- A fundamental characteristic of SaaS is that the user organization pays for software services in proportion to use. This is fundamentally different from the fixed-price perpetual license of the traditional on-premises technology.
- Endorsed and promoted by all leading business application vendors (Oracle, SAP, Microsoft) and many Web technology leaders (Google, Amazon), the SaaS model of deployment and distribution of software services will enjoy steady growth in mainstream use during the next five years. Business applications offered as SaaS typically utilize use-based subscription pricing. Thus, we project a steady increase in subscription spending on enterprise business software.

- The SaaS model is not destined to replace on-premises computing altogether in the near future. The share of subscription-based software services in mainstream enterprises will continue to increase; however, most users will combine subscription and perpetual license funding of software.
- Open-source technologies are acquired by user organizations under a free technology license, paired with a (sometimes mandatory) fee-based support subscription. This model also encourages user organizations to adopt subscription pricing for software (most applicable to application infrastructure technologies).
- Adoption of open-source software has become widespread. In certain technology markets (such as OS, application servers and database management systems), open-source products successfully compete with closed-source alternatives and gain market share. This trend also increases the share of subscription spending in enterprise IT.
- Open source is not destined to replace closed source completely, and most users will continue to combine use of both technology sources. Here again, most users will combine the use of perpetual license and subscription funding of software.
- SaaS brings subscription pricing to the markets of business software solutions. Open source brings subscription pricing to software infrastructure. Fueled by both of these trends, subscription pricing will continue to gain share of the overall software spending.

Market Implications:

- Subscription pricing can benefit the users and the providers of business software solutions. This is especially true in the case of the SaaS model, where the pricing is not only subscription-based but also proportional to use. Users of such software services are relieved from the high costs of overcapacity that is characteristic of on-premises software deployment. Service providers are meanwhile assured of a consistent stream of revenue and are relieved of the requirement to sell large numbers of new licenses every year to maintain steady revenue growth.
- Delivering use-based subscription pricing that is profitable for the service provider imposes certain requirements on the vendors' operations and platform technology. The basic isolated tenancy of SaaS, used in most opportunistic SaaS offerings today, requires that the service provider allocate separate instances of all required platform technologies for each tenant. In that case, although the user organization pays only for the use, the service provider organization still must pay for an overcapacity of resources to guarantee the required service-level agreement. To escape this shifting of costs from user to vendor, the platform technology for SaaS must be a SaaS-enabled application platform (SEAP). Such platforms are multitenant. They are able to dynamically share computing resources between multiple tenants and can dramatically improve efficiency of a SaaS offering.
- The best resource utilization in a SaaS environment is achieved when it is used by a large number of tenants of different behavior patterns. In that case, there are always some tenants that are active and some that are passive, thus balancing the use of the computing resources over time. However, to provide the required service levels for a large number of tenants in a shared computing environment, the service providers must turn to advanced platform technologies, using the best practices of Extreme Transaction Processing (XTP). XTP capability, along with the multitenant capability, is an essential element of a leading SEAP.

- Only a few examples of proven SEAP are in production today, and most of the XTP technology comes from small visionary vendors with modest abilities to execute. The growing adoption of SaaS-style business applications will force most leading platform technology vendors to offer SEAP and XTP technologies as key parts of their flagship software infrastructures. This will likely force these vendors to re-architect some or most of their internal platform technology and, in many cases, offer new programming models for ISVs and enterprise IT departments. Thus, the transition to SaaS and the use-based subscription model will amount to a new round of platform technology upgrades in the next five years.

- A software vendor that is transitioning from a perpetual license revenue practice to a subscription revenue practice will be likely "punished" by the Wall Street valuation, as its annual revenue would likely experience temporary decline. To avoid this problem, many well-established software vendors remain committed to the license pricing model despite the clear market trend toward subscription pricing. The software vendors that were established from inception as open-source or SaaS software vendors do not have to face this problem and thus enjoy an advantage over the established leaders. Thus, the subscription model of software pricing may also serve as a platform for the emergence of new software market leaders.

Recommendations:

- Vendors of software platforms must invest in SEAP technology or face decline in market share. The "low-hanging fruit" of isolated tenancy for SaaS will not prove to be a sustainable competitive position against genuine multitenant application platforms as a service (APaaS).

- SEAP technology will mostly be purchased by service providers, not user organizations. Application ISVs will choose an APaaS for their applications, and hosting providers will choose a SEAP to offer an APaaS to the ISVs. Vendors of platform software must look for strategic partnerships to ensure adoption of their SEAPs by third-party APaaS hosts and SaaS-style application ISVs as well. Some platform vendors may decide to be their own hosting providers, but this choice can only be considered by the largest of platform software vendors because of the costs and risks involved.

- Although most users will continue to combine on-premises and SaaS software solutions, for the ISVs offering the same application for both on-premises and SaaS deployment (dual deployment model), this is a high-cost proposition. ISVs should establish aggressive strategies to encourage all users of their applications to choose only the SaaS model and aim to eliminate the dual approach, when possible.

- User organizations must evaluate the trade-offs of SaaS and on-premises application deployments as well as subscription vs. license pricing with the consideration that a fixed subscription price, while lower initially, typically breaks even with the perpetual license costs during the period of up to three years. After that threshold is crossed, subscription becomes more expensive overall than license pricing. However, subscription pricing that is use-based may be of greater benefit to users. Users must insist on use-based pricing for SaaS.

- Users should realize that SaaS software providers that use true SEAP technology to enable their applications are functioning at lower costs than those that use basic platform technologies and are forced to use isolated tenancy SaaS. Thus, these software providers are able to pass the cost savings to their users. Moreover, as the number of tenants of a SaaS application increases, the isolated tenancy costs increase,

but the per-tenant operations cost of a genuine multitenant APaaS decreases. Users must give preference to SaaS applications that are based on SEAP over those based on the now-prevailing pre-SaaS application server platforms.

Related Research:

"Introducing SaaS-Enabled Application Platforms: Features, Roles and Futures"

"The Birth of the Extreme Transaction-Processing Platform: Enabling Service-Oriented Architecture, Events and More"

"Salesforce.com Enters the Application Platform Market at Dreamforce"

"Predicts 2008: SaaS Gathers Momentum and Impact"

Analysis By: Yefim Natis

Note

Recently, Gartner conducted an independent survey of its clients. Your direct feedback is underpinning the activities we have under way to continually improve our research. This year's Predicts report is one example of those changes.

You told us to simplify the number of different terms we use. In the past, we used two different terms to identify our most important statements about the future. We are now standardizing on one term — Strategic Planning Assumption (SPA).

You told us that you value our research most when we are direct. Your confidence in our advice comes from the facts and assumptions we provide in supporting our positions. The numerical probabilities we used with SPAs outlived their usefulness. Starting with this report and going forward, we will no longer use numerical probabilities.

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