Executive Summary

Between 1998 and 2004, the Intel IT organization transformed itself from a mediocre IT operation to one approaching world-class status, where it was consistently rated as a strategic business partner by a majority of Intel executives. This article describes that transformation.

Based on post-transformation analysis and research, it appears that four strategies were particularly important in redefining Intel’s IT organization’s business contribution:

1. Managing the IT budget, where the goal was to create a sustainable economic model through careful cost management;
2. Managing IT assets and value chain, where the goal was to develop IT as a corporate core competency;
3. Managing IT for business value, where the goal was to optimize the business value of IT;
4. Managing IT like a business, where the goal was to run IT like a market-driven service organization, running IT as efficiently and effectively as possible in support of Intel’s goals.

By simultaneously addressing all four strategies, Intel IT improved its efficiency and significantly increased IT’s business value. Also, an extensive survey of 50 CIOs found that maturing these strategies is statistically significantly related to achieving increased value from IT in other enterprises.

TRANSFORMING INTEL IT: THE INTEL IT BUSINESS PLAN 2000

Enabling business transformation through IT is an increasing priority for CIOs. Often, however, the IT function must transform itself first, before it can become a true catalyst and enabler of overall business transformation. A constant struggle for most CIOs is defining how IT can add value to the business. Most IT organizations are trying to build capabilities that cut costs, increase revenues, and support business innovation. But, because they are saddled with legacy systems, convoluted processes, and out-of-date expertise, many of them are viewed as business liabilities rather than strategic assets. Despite the emergence of IT governance, enterprise architecture, service management, and a variety of other approaches to enhance the value of IT, many IT organizations have not been able to transform their roles in the organization.

In the late 1990s, an Intel employee communications magazine ran an April Fool’s edition with the headline story “Intel IT wins an Intel Achievement Award.”

1 Jeanne Ross was the accepting Senior Editor for this article.
3 The author would like to thank Jeanne Ross for her thorough and careful editing of this paper, Doug Busch for his leadership during the IT transformation and review of the paper, Professor John Hughes for helpful comments and advice on the paper and Barbara McNurlin for her careful work in making this a better paper. The author would also like to thank his colleagues at Intel IT who participated in the transformation of Intel IT.
Such an achievement was far from the realm of possibility. IT was held in low esteem throughout the company. Not long afterward, Intel IT began its six-year transformation from being a mediocre organization to being one considered a strategic business partner by 80% of Intel’s executive team.

This transformational journey began with a new CIO, Louis Burns. Burns came to the job with a passion for operational discipline and customer orientation. His goal was to stabilize IT and initiate change, such as organize IT around the customer, rather than around IT functions.

Burns created a vision for Intel IT to “enable” Intel, and he focused on developing leadership skills within IT. By summer 1999, he had accomplished foundational improvement work, which included re-organizing Intel IT around the customer and centralizing infrastructure spending. He then returned to the business, to lead Intel’s chipset organization, and was succeeded as Intel’s CIO by Doug Busch, an Intel IT director with a strong technology background.

Building a Foundation for Success

Doug Busch had a long-standing belief that IT was not delivering the competitive value that it could. He built on the foundation established by Burns by creating a new IT mission and vision that aligned with Intel’s 2000 corporate objectives. His transformation vision was that Intel IT would be recognized as a key contributor to Intel's success, both inside and outside of Intel. His new IT mission was to fuel Intel’s success with outstanding strategic leadership and IT services.

To drive the transformation, he launched an initiative in 1999 to build a business plan to transform IT. I was asked to lead and assemble a small team of IT managers and employees to build this plan. We were given a key boundary condition: take an objective approach to running Intel IT like a business by building the business plan at arm’s length from Intel. At this point, the IT organization’s scope included infrastructure, shared services for enterprise applications, and a number of vertical functions, including office computing, manufacturing computing, and engineering computing.

Our IT plan focused on four strategies. The following names for these strategies, however, did not become fully clear until after the transformation had occurred:

- **Managing the IT budget.** The goal of this strategy was to gain control of spending performance against plan, then systematically reduce costs to create headroom for further strategic investment. The end goal was to create a sustainable economic model for IT that would help optimize the business value of IT to Intel.

- **Managing the IT assets and value chain.** This strategy aimed to systematically improve the capability of the IT organization—to even make it a core capability for Intel. Improvement would come by using multidimensional assessment tools to prioritize improvement plans against identified gaps and issues.

- **Managing IT for business value.** The focus in this strategy was to shift from looking at Total Cost of Ownership (TCO) to looking at the Business Value of IT. This model would (1) enable IT to prioritize needed IT investments, (2) measure the value of the investments, and (3) institutionalize a common repeatable process for allocating resources (people, money, etc.) against these priorities.

- **Managing IT like a business.** This strategy aimed to create a new business operating model for IT, which involved developing a new finance model that would cost out each IT service or product. This new focus required transforming Intel IT into a market-driven service organization, with vertical service lines that have full end-to-end accountability for definition, delivery, and pricing of customer-oriented products and services.

Turning the IT@Intel Business Plan into Reality

In the second week of 2000, the IT@Intel business plan was presented to 100 senior global IT managers in a week-long, face-to-face meeting in Sacramento, California. By the end of the week, these managers had fleshed out the plan and presented their plan to the senior IT leadership team. The business plan listed the current AS-IS and desired TO-BE states of key characteristics of the IT capability, as shown in Figure 1.

During the meeting, six teams met in break-out sessions to create business plans for the six vertical
service lines. An overall plan and the six specific business plans formed the integrated business plan, which became the blueprint for transforming IT.

A new function—business operations—was created to drive the execution of the plan and be responsible for evolving the “running IT like a business” approach. Other organizations took responsibility for other components of the transformation. For example, my organization—IT People, Intellectual Capital, and Solutions—led the new assessment and improvement processes and helped develop the people asset. Global Engineering, led by Bill Sayles, led the cost reduction effort.

A key goal of this transformation effort was to win the Intel Quality award, Intel’s highest quality award because winning it would signify a significant transformation in the way IT performed. In October 2000, Intel IT won this prestigious award. Since then, improvement efforts have continued.

Following are descriptions of the four key strategies: managing the IT budget, managing IT assets and value chain, managing IT for business value, and managing IT like a business.

**Managing the IT Budget**

In his opening presentation for the 2000 budget planning cycle, CIO Busch introduced the concept of achieving a sustainable economic model for the IT budget. Prior to this time, IT’s financial performance had been unpredictable, with both overruns and underspends. Busch’s goal was budget variances no larger than 0.5% from plan.

Simply making this goal visible resulted in an immediate performance improvement, which demonstrated the age-old axiom: “You get what you measure.” Intel IT also introduced the breakthrough practices of systematic cost reduction and cost maps. These practices focus on actively managing down the highest-cost IT products and services by systematically evaluating different cost-reduction opportunities, such as negotiating service level adjustments, nurturing disruptive technology, renegotiating with suppliers, etc.

As examples, consider the following two Intel initiatives for managing costs. One substituted a disruptive technology for an existing infrastructure. The other redesigned the workflow of PC support.

**Introducing Linux in Intel Engineering Computing.** To deliver faster Intel microprocessors to meet the challenge of Moore’s Law, the computing demand for the design of these processors was growing at more than 100% a year. Faced with this unsustainable demand for IT capital expenditures, the CIO authorized use of the disruptive technology Linux to help solve this problem. Intel introduced Linux into its Intel Architecture servers, which replaced the RISC/Unix platform used to design its microprocessors. In so doing, Intel saved more than $700 million over four years, through the end of 2004.

**Redesigning the Intel Employee PC Support Process.** In 1997, Intel’s Desktop Environment Support Model was one-on-one, which required many technicians. In addition, appointments were often missed because employees were away from their desk when the technician called to fix their PC. Overall, support costs were approximately $7 million a year,
and going up—and customer satisfaction was going down.

To shorten mean-time-to-repair to two hours, Intel IT analyzed the problem, and discovered two things. One, employees in America were highly mobile. Some 60% used notebook computers at least part-time. And two, notebooks accounted for the majority of repair requests.

In response, the PC service team implemented a “pull” PC service center model to replace the “push” model. Instead of technicians going to customers’ desks, customers would bring their notebook to a PC service center. Despite early skepticism, this process redesign worked very well. Support costs dropped by $1.5 million and customer satisfaction jumped 20%.

**Expanded Funding Options.** In addition to reducing costs, IT also developed the concept of expanded funding options to grow and increase the leverage of IT funding. The goal was to attract new sources of funding to complement IT investments. To support this goal, the CIO raised the priority of IT-initiated projects that had co-funding from business partners. He also approved a proposal to establish an IT innovation organization that would focus on future-oriented solutions and enable innovation across IT. Within a year of its establishment, more than 50% of its funding came from internal customers within Intel, and additional funding came from an Irish government research grant and research co-funding from the European Commission.

Using such systematic cost reduction approaches, Intel IT reduced IT costs while meeting increased demands. The growing demand for IT services is reflected in Figure 2.

The declining IT budget, shown in Figure 3, demonstrates a significant improvement in IT efficiency and productivity. A combination of systematic cost reduction practices and taking advantage of Moore’s law enabled this improved performance.6

By 2004, Intel IT approached achieving a sustainable economic model for the IT budget by delivering increased service volume with a lower IT budget. Achieving that goal would require persistent, systematic cost reduction and then using the savings to meet ongoing demand and invest in the future.

**Managing the IT Assets and Value Chain**

The IT strategic direction set by CIO Busch in 2000 contained the vision of making Intel IT a core strategic capability for Intel. IT management focused on developing three IT assets: IT infrastructure, IT people, and IT-business relationships.7 Intel IT launched or accelerated specific initiatives to improve these assets and the value chain that used these assets to create value.

**Improving the IT infrastructure.** To improve the infrastructure, Intel shifted to notebook computing, followed by aggressive adoption of wireless communications—to support a more flexible and productive workforce.8 In addition, a standardization initiative, followed by a server consolidation initiative, reduced infrastructure unit costs and improved infrastructure reliability and performance.

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6 Intel took advantage of Moore’s Law (i.e., double processing power every 18 months, delivered at lower or equal costs) by using a variety of approaches, such as server consolidation (a smaller number of more powerful servers replacing a larger number of older), thereby improving performance, while reducing costs.


8 Both of these transitions were supported by comprehensive pilots and a documented business case prior to widespread deployment.
In 1999, Intel’s server environment was out-of-control. It took IT several years to gain control, through reference designs, server standardization, consistent landing zones, consistent data center operations, application co-existence, etc. IT got so good at managing its servers, in fact, that its purchasing dropped to near zero for 18 months (except in engineering computing), as it reused existing capacity.

**Improving the IT people asset.** To systematically improve its people, Intel IT used the People Capability Maturity Model. It also launched a seven-step strategy for building a 21st Century IT organization. The strategy focused on building leadership, customer, and adaptability skills.

**Improving the IT-business relationship.** To improve the IT-business relationship asset, Intel IT enhanced the IT marketing organization and created a new account management strategy that focused on key internal customers.

To improve the IT-business relationship, Intel IT also surveyed end users and executive customers every six months to measure their satisfaction and identify ways to improve. This process was called the IT Vendor of Choice program.

Figure 3: Intel IT Budget Trend—Achieving a Sustainable Economic Model (Source: Intel APR)

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Figure 4 shows the customer satisfaction results from 1999 to 2004. Notice the sustained high satisfaction levels following the improvement efforts that began in 2000. At that time, Intel introduced a cyclical process for identifying and addressing key issues. With each survey cycle, corrective action plans were put in place to address the key issues identified.

Due to the focused improvement efforts, an average of 80% of the business executives surveyed viewed the IT organization as a strategic business partner—as shown in Figure 5. IT management’s goal was to achieve an 80% rating. When the rating has dropped below that level, IT management has redoubled its efforts.

Satisfaction of the surveyed end users almost mirrored the executives’ satisfaction levels, confirming that Intel IT had made great progress in improving its IT-business relationships.

Intel IT also used SAM-lite, a tool based on the Malcolm Baldrige quality award, to assess its IT capability and prioritize improvement actions. Intel IT used this tool to holistically assess its organizational performance against multiple dimensions, including supplier management, strategy development, and organization results. The goal was to identify and improve systematic processes, which, in turn, would produce and sustain incremental improvements. By

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analyzing the SAM-lite results, Intel IT has identified major opportunities and generated action plans to improve performance. And, by repeating SAM-lite every six months, management has tracked trends in performance.

Intel IT essentially doubled its capability (as measured by its SAM-lite score) by continuously prioritizing and assessing improvements from 2000 through 2004. It also regularly surveyed its own IT employees, asking their views of the IT organization’s effectiveness. These surveys produced honest insider views on IT’s effectiveness.

As Intel IT matured, it became clear that another asset could be developed and used to create value. This asset was intellectual capital. Conventional wisdom states that IT provides strategic advantage by providing a stream of superior solutions to the business. While this statement is correct, CIO Busch recognized that IT could become a strategic asset to Intel by influencing and sharing Intel IT experience with customers. One approach would be to become an early adopter of emerging Intel products, using the so-called “eat your own dog food” strategy.

A colleague, Bert Cave, initiated a high-touch program to provide a structured process for Intel’s sales and marketing organization to take advantage of IT expertise at key customer accounts. In parallel, my organization created a program to capture codified IT expertise in a series of white papers.

As a result, the IT@Intel program leveraged IT expertise in the field. But this was countercultural for IT, as well as for the sales and marketing group. Busch had to push hard to get the IT folks to capture our lessons. He set employee bonus goals to encourage them to capture their intellectual capital and he encouraged the sales team to treat the IT organization as an asset. These actions led to the biggest change in Intel employees’ perception of IT—and genuinely delivered measurable additional Intel revenue.

Managing IT for Business Value

In the mid to late 1990s, many enterprise IT organizations were not measuring IT value. They were even struggling to manage the cost of distributed PC platforms. Total cost of ownership (TCO) became a de facto methodology to help manage costs across many enterprise IT organizations.

Intel IT has tracked the TCO of PCs since 1995, as shown in Figure 6. Initially, it focused on managing the TCO of its distributed PC platforms. Having this cost information not only drove down overall IT costs, but also provided the financial information to make “value” decisions.

For example, by comparing the TCO of desktop and notebook platforms in a pilot study, Intel IT developed...
a business case to change its mix of desktops to notebooks, for the majority of Intel employees, from 80:20 to 20:80, based on employee productivity gains. While the laptops cost more, their value was higher. Accurate TCO data proved fundamental to making this business decision—a decision that fundamentally changed how Intel operates.

In 2002, Busch set a target for IT to deliver $100 million in new value without increasing spending. CEO Craig Barrett and CFO Andy Bryant were skeptical, but they agreed to the IT organization having this metric as a key goal in the employee bonus program.

An IT business value program office was established to manage this program, headed by John Johnson, an IT director. The goals of the business value program were to create a credible and recognized process to measure IT value, to validate that work was on track to achieve stated goals, to include business-unit value in IT investment decisions, and to recognize the accomplishments of value creators.

To emphasize the importance of this program, and to motivate IT employees to support it, a proportion of the annual bonus of every Intel IT employee depended on achieving the $100 million goal. This impetus helped inculcate business value thinking into Intel IT’s culture.

While results in the first six months of 2002 were lower than hoped, a major push in the second half of the year delivered new value of $180 million for the year. In 2003 and 2004, Intel IT did even better, creating new value of $419m and $479m respectively.11

During this time, Intel IT’s business value methodology evolved to embrace portfolio management. Intel IT grouped similar investments and assigned a target budget to each group. Then, it managed and measured the value of each group of investments, rather than the value of individual investments.

To provide a data-driven methodology for choosing investments, I developed and introduced a Business Value Index into the IT planning cycle for year 2000. This methodology helped decision makers compare disparate types of investments using a multidimensional set of hard and soft measures. The use of BVI requires investment proposers to rate the value of their investments against weighted criteria for three investment vectors: business value, IT efficiency, and financial attractiveness.

Over several years’ time, Intel IT iterated and improved this methodology.12 The BVI methodology

Figure 5: Intel IT Vendor of Choice Survey (2001 – 2004)

![Strategic Partnership Trend](image)

12 For a detailed description of this methodology, see Chapter 4 in op. cit., Curley, 2004
is an investment support tool, which, in combination with portfolio management, has helped IT maintain a project portfolio that aligned with Intel’s overall strategy.

**Managing IT Like a Business**

A key goal of the IT transformation was to run Intel IT like a business by adopting standard business practices and processes to improve performance, alignment, and operating efficiency. A key part of the Intel IT business plan was to create an IT business operations organization to manage implementation of the business plan and adoption of appropriate business practices across Intel IT.

New approaches to product costing and asset management proved fundamental to running Intel IT like a business. Even though Intel IT was viewed as a cost center, it actually had few cost center practices in place.

The business operations organization, led by Molly Olson, began by developing a comprehensive view of Intel IT’s product and service costs. This listing became known as the MOAT (Mother of All Templates). This information first provided accurate unit cost data to management for IT products and services, and subsequently helped management manage demand and cost reduction goals.

For example, in 2001, Intel IT changed its approach to chargeback. It replaced coarse IT allocation (total IT spend divided by the number of employees in a division) with consumption-based chargeback. Each Intel division was charged for its IT consumption. Thus, the division general managers gained visibility into the IT services their division was actually consuming. This visibility put them in control of increasing, decreasing, or stopping particular IT services. This new approach to chargeback led to more efficient use of IT resources and increased business-IT alignment.

In parallel, Intel IT began to adopt a “service” mindset. A comprehensive analysis of customer segments allowed IT to better focus its solution delivery. At the same time, Intel IT introduced data-driven root methodologies in its technical assistance center to more quickly isolate faults, uncover root causes, and better comply with service level agreements.

The goal of the IT@Intel business plan was to create internal service organizations that were “market driven,” focusing on specific vertical service lines. These IT organizations had full end-to-end accountability for defining, pricing, and delivering IT services to their service line. IT flex services teams also provided fast-response services as well as volume discounts on external bodyshop services.

As Intel IT improved its ability to manage IT like a business, management began to “invest” in researching
future solutions. Funding for an IT Research and Development Council was increased, and I established an IT innovation organization.

Also, since 2001, Intel IT has also published an annual IT report, similar to the company’s annual report to stockholders. This report summarizes IT’s performance and outlook for the future. It has improved IT communications with the business.

In addition, Intel’s sales and marketing organization has shared IT testimonials and future-looking innovations from the IT@Intel program and the IT innovation centers. As a result, parts of Intel IT have been increasingly viewed as value centers, not just internally, but also in influencing key customer accounts and inspiring IT innovations through a process of co-creation and showcasing for customers.

Intel Business Performance

While improvements in IT value and the IT budget are important, ultimately, the most important performance metrics are business growth and improved profitability. Figure 7 shows Intel’s revenue and net income growth during the IT organization’s transformation, 2000 to 2004. The figure dramatically shows the dot-com bubble in 2000 and its bursting in 2001.

Following the dot-com crash, Intel IT significantly contributed to Intel’s growth, both through systems availability and increased value. Figure 8 shows IT Intensity (IT budget divided by revenue) compared to Intel’s revenue. Notice that as Intel grew, IT intensity (expressed as a percentage of revenue) declined. (IT intensity expressed as a percentage of cost of goods sold also decreased in this period.) This continual decrease was due, in no small part, to some of the practices described in this article.

THE IT CAPABILITY MATURITY FRAMEWORK

Intel IT’s six-year transformation worked under four strategies, with specific goals for each:

1. Manage the IT budget, where the goal was to create a sustainable economic model through careful cost management;
2. Manage IT assets and value chain, where the goal was to develop IT as a corporate core competency;
3. Manage IT for business value, where the goal was to optimize the business value of IT;
4. Manage IT like a business, where the goal was to run IT like a market-driven service organization, running IT as efficiently and effectively as possible in support of Intel’s goals.

Based on my observations of our transformation, as well as additional research, I developed a framework that captures these strategies and the maturity levels in such IT transformations. This framework, which
I call the IT Capability Maturity Framework (IT CMF), is shown in Figure 8. It is grounded in prior academic research, such as the Software Capability Maturity Model. It can provide a useful roadmap for IT organizations aiming to substantially boost their contribution to business value.

The IT Capability Maturity Framework maps an IT transformation to five levels of maturity for four IT strategies that support long-term enterprise competitiveness. In increasing its maturity, an IT organization evolves unmanaged, reactionary processes to disciplined, high-performing processes and better outcomes.

**Strategy 1: Managing the IT Budget**

Managing the IT budget is crucial for an IT organization to gain credibility from its business partners. In managing the budget, IT management aims to meet business requirements, as well as free up resources for innovation and growth. A Gartner report in 2004 stated that 81% of typical IT budgets were used to keep the lights on, leaving only 19% available to fund new innovations and business transformation.

Taking cost out of the IT budget relies on such practices as automating components of IT service and support, adjusting service levels as needed, and renegotiating supplier contracts, as needed. Reducing costs can also rely on nurturing “disruptive” technologies, that is, technologies that can deliver new or equivalent services at lower costs. Examples of disruptive technologies include virtualization of servers and Voice over IP.

The goal of managing the IT budget is to reach a sustainable economic model. The five maturity levels are shown in Figure 9.

At Level 1, IT spending is ad hoc, with few budget controls.

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13 Instead of focusing only on process maturity, IT Capability Maturity Framework also focuses on outcome maturity. Maturity states are identified for each level for the four inter-related strategies. Please review Paulk, M.C., Curtis, B., Chrissis, M.B., and Weber, C., “Capability Maturity Model for Software, Version 1.1”, Software Engineering Institute, CMU/SEI-93-TR-24, DTIC Number ADA263403, February 1993 for a detailed description of the Software CMM.

14 An eight-hour CIO-level workshop based on these strategies has been presented to more than 250 executives in 20 locations around the globe. In addition, based on an extensive survey of 50 CIOs regarding these strategies, there is strong empirical evidence that maturing these strategies is statistically significant in achieving increased value from IT in other enterprises. For further details please see Curley, M. “Systematically Increasing the Value from IT using the IT Capability Maturity Framework,” Proceedings of the International Conference on Enterprise Information Systems, Madeira, June 2007.

15 Weill, Westerman and McDonald report that cost-cutting management is an ever-present mandate for CIOs. See Westerman, G., Weill, P., and McDonald M. “Business Agility and IT capabilities,” MIT CISR Research Briefing March 2006. CIOs should use the budgeting process as a key management tool in making their organization successful.


At Level 2, the IT budget is defined and performance-against-budget is monitored until it is predictable. At Intel, CIO Doug Busch set the visible goal of being within +/− 0.5% of budget. That announcement alone improved performance because employees knew work was being measured.

At Level 3, IT management introduces systematic cost-reduction techniques with the goal of reducing both aggregate and unit IT costs. As noted earlier, Intel IT introduced two, among many, techniques to cut costs. One was to introduce Linux as a disruptive technology in engineering computing. The other was to redesign the business processes of the PC support group.

At Level 4, IT management expands funding options to leverage the existing IT budget and introduce budgeting flexibility. Like Intel, other IT organizations can complement IT funding with co-funding from the business or other sources.

At Level 5, the IT organization achieves a sustainable economic model, which means that it can meet the ongoing growth demands of its enterprise with a stable or declining IT budget. This was an ongoing goal for Intel that required ongoing management commitment and attention.

Understanding and managing the IT budget can provide significant leverage, enabling costs to be reduced and savings to be reinvested in new IT investments, or elsewhere, to help the company’s bottom line.

**Strategy 2: Managing the IT Assets and Value Chain**

IT assets and the IT value chain, together, comprise IT capability. IT capability can be defined as “what the IT function can do for the business.” In the IT CMF model presented here, it is viewed as a production function. IT capability includes the knowledge, skills, tools, process abilities, and motivation present and available in the IT organization to support or perform enterprise business activities.

Managing IT assets and the IT value chain involves systematically managing four aspects of IT: (1) IT’s assets, (2) the value chain that creates business value from IT, (3) the core competencies that deliver IT business value, and (4) the complete workflow through the entire IT value chain.

The premise of managing IT capability is that sustainable competitive advantage from IT comes not from delivering individual stove-piped solutions, but from delivering new strategic applications—and doing this faster and better than competitors. When IT capability matures, it is well understood by enterprise executives, it becomes a differentiator for the

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enterprise, and it is woven into the overall enterprise business strategy.\(^9\)

In a Level 1 company, there is no formal IT presence. Users themselves typically purchase and try to maintain computer systems for their own use.

At Level 2, the IT function is viewed similar to an external supplier or utility provider. It offers little or no strategic input to the business.

At Level 3, the IT organization has established a track record of providing quality services, it has delivered some new solutions, and it has gained the reputation as an organization of technology experts. To reach this level, Intel IT began measuring customer satisfaction, and taking actions to improve three key assets: IT infrastructure, IT people, and IT-business relationships.

At Level 4, the IT organization has earned the reputation as a strategic business partner to the enterprise at large. At Intel, CIO Doug Busch earned this reputation, in part, by managing two key IT assets: desktop PCs and servers. He replaced the desktop PCs with notebook computers, which actually changed how Intel worked. He got the servers under control, which reduced costs by reducing new purchases. At Level 4, IT leaders are frequently or permanently invited to the business table to discuss and help set strategic direction. This has been the case at Intel.

At level 5, IT capability is perceived as one of a select few strategic and differentiating capabilities of the company. It can provide both operational and information superiority over the competition.

**Strategy 3: Managing IT for Business Value**

Research shows that CIOs consistently have difficulty measuring and managing the value contribution from IT.\(^9\) Managing IT for business value focuses investment decisions on expected benefits and verifying that these benefits are actually delivered. This approach corresponds to the “Begin with the end in mind” mantra that Stephen Covey advocates in his book, *Seven Habits of Highly Effective People*.\(^21\)

In taking such a benefits realization approach, IT management adopts core business practices, including return-on-investment measures, firm-wide coordination of investments, business case discipline, and continuous portfolio management and reprioritization. Managing IT for business value helps IT move from total cost of ownership (TCO) analysis to optimizing the value of IT investments—the Level 5 goal of this strategy.

At Level 1, there are no defined or repeatable processes for managing IT’s business value.

At level 2, IT organizations focus on TCO by identifying, controlling, and managing the total direct and indirect costs of provisioning and supporting IT solutions to the business. As noted earlier, Intel shifted its ratio of desktops to notebooks from 80:20 to 20:80, based on its TCO analyses.

At Level 3, IT organizations focus on the business value that solutions deliver. Generating business value is achieved when the focus on cost shifts to return on investment (ROI). At Intel, this shift to Level 3 was spurred by CIO Busch’s goal that IT was to deliver $100 million in new value without increasing spending.

Level 4 companies use techniques such as portfolio management to better optimize their portfolio of IT investments against agreed-on criteria.\(^22\) Other advanced practices, such as options management and assigning accountability for both forecast benefits and actual benefits realization, are commonplace at Level 4. As noted earlier, Intel IT shifted from evaluating individual investments to grouping IT investments into like categories so they could be compared.

At Level 5, IT organizations demonstrate optimal return from IT investments through their use of sophisticated investment analysis techniques.

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\(^9\) Read Barney, J.B. “Firm Resources and Sustained Competitive Advantage,” *Journal of Management* (17:1), pp. 99-120, for an excellent paper on competing through resources.


\(^21\) Covey, S.R. *Seven Habits of Highly Effective People*, Simon and Schuster, 1989.

\(^22\) Weill, P., and Aral, S. “Managing the IT Portfolio: Returns from the Different Asset Classes,” *MIT CISR Research Briefing*, March 2004. This briefing analyzed allocations and returns across portfolios of four types of IT investments: strategic, transactional, informational, and infrastructure. There is clear evidence that portfolio management, and intentionally over-investing in a certain asset class with a specific objective in mind, can lead a company to out-perform its competition.
**Strategy 4: Managing IT Like a Business**

Managing IT like a business means taking a business-like approach to running the IT organization. This strategy involves applying solid professional business practices to the IT function. Some examples are: managing customers professionally using account managers, using chargeback and service level agreements to manage demand, and institutionalizing governance principles.

Managing IT like a business also involves implementing a number of critical processes to ensure that IT delivers output commensurate with the enterprise’s goals. In addition, maturing this strategy can help the IT organization move from being perceived as a cost center to being seen as a value center with a high level of IT-business alignment.

At Level 1, the IT organization is completely focused on technology and has few or no asset or cost management systems in place.

At Level 2, the IT organization is seen as a cost center. It has basic IT asset management and cost management practices in place. Intel IT created MOAT (The Mother of All Templates) that gave a comprehensive view of all IT product and service costs—to help reduce costs and manage current demand.

At Level 3, the IT organization is viewed as a service center. IT staff think less about which information technologies to provide and more about delivering services that meet current needs and generate value from current investments and infrastructure. Intel IT moved from a gross chargeback approach to chargeback based on consumption, thereby giving division general managers visibility and control over the IT services they used.

At Level 4, IT is viewed as an investment center. It has implemented ERP for IT to support efficient and effective IT operations, and the IT budget is driven more by business strategy than by external benchmarks or targets defined by the CFO. Intel IT reorganized itself into service organizations with full accountability for defining, pricing, and delivering services to the specific Intel businesses they supported. It also formed an innovation organization to look to the future.

At Level 5, the IT function is operating as an entrepreneurial value center, actually leading the business in the creation of new products, services or even business models through innovative use of technology. Intel IT publishes an annual report, as businesses do, and Intel’s sales and marketing organization draws on the IT@Intel program and the IT innovation centers to influence prospective Intel customers and help catalyze innovative solutions.

**RECOMMENDATIONS FOR PRACTITIONERS**

By integrating the numerous management practices described in this article, Intel IT met Intel’s needs, while delivering both improved IT value and IT efficiency. The IT CMF framework offers a path for other companies to achieve greater business value from IT.

To transform an IT organization in a similar manner, IT management needs to synchronize changes across the maturity levels for the four strategies in the IT CMF model. Having high maturity in some strategies, while low maturity in others, will likely result in sub-optimal value output from the IT organization.

Similarly, moving up a level on one strategy will likely require inputs from the same maturity level from one or all of the other strategies. An IT organization that is struggling to improve in one area (such as IT assets) might assess whether shortfalls in another area are actually inhibiting its progress. An IT organization cannot aspire to be a Level 5 value center if has not yet mastered basic TCO management or ROI measurement.

IT executives need a business plan to map out and drive transformation of their IT organization. This plan not only needs to document the current and the desired future states of IT, but also identify the key actions and required investments to achieve the transformation.

At Intel, we learned that our business plan needed to be a living document. We had to make revisions, to incorporate changes in business strategy and conditions, and incorporate the emergence of new disruptive technologies. Throughout the process, we needed to get buy-in from our business partners. They were critical in making our IT transformation successful.

We also looked for win-win investments—investments that improved both business value and IT efficiency. This combination of investment characteristics reduced
the barriers to adopting new innovations because both IT and the business worked for the investment. More importantly, such win-win investments helped create a virtuous circle in which our IT budget or unit costs went down, freeing up money for IT investments.

We learned that we had to invest in IT to reap a return. Specifically, we had to explicitly invest in our IT assets and value chain to address long-term competitiveness. Different levels of maturity require different levels of investment and effort. We decided that, like leading financial services firms, we needed IT to be a core competency for Intel.

ABOUT THE AUTHOR

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