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# Justifying And Funding Infrastructure Investments

by Craig Symons  
for CIOs



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by **Craig Symons**

with Alex Cullen and Tim DeGennaro

### EXECUTIVE SUMMARY

IT-enabled business change investments by definition are linked to business strategic objectives and business benefits. These benefits can and should be quantified using an IT value methodology and documented in a business case. This makes for straightforward decision-making with respect to justifying and funding these proposed investments. IT infrastructure investments can rarely be linked directly to a single strategic business objective — making it much more difficult to quantify the business value. Furthermore, the benefits of many infrastructure investments are intangible and/or position the organization to realize benefits in the future, making them difficult to justify using standard financial tools and business case templates. As a result, many organizations try to fund these investments on faith without rigorous analysis of a business case and, too often, fail to get them funded at all. But it doesn't have to be this way — tools and techniques exist for valuing infrastructure investments.

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### NOTES & RESOURCES

Forrester interviewed vendors and user companies.

#### Related Research Documents

["Financing IT Improvements"](#)

August 29, 2007

["Establishing And Verifying Business Benefits"](#)

July 31, 2007

["Measuring The Business Value Of IT"](#)

September 25, 2006

## FUNDING INFRASTRUCTURE INVESTMENTS IS PROBLEMATIC AT BEST

Incorporating a value measurement methodology, standard business cases, and a post-implementation benefits measurement are best practices in IT investment management.<sup>1</sup> Based on the responses to a recent Forrester survey on IT governance and steering committees, these practices have gained traction in IT organizations although they are not universally adopted yet, as 32% of respondents do not use standard business cases and 63% do not perform a post-implementation benefits measurement (see Figure 1).

When it comes to investments in infrastructure, anecdotal evidence suggests that there is even less compliance with best practices. A review of current practices around justifying and funding infrastructure investments reveals a wide array of practices.

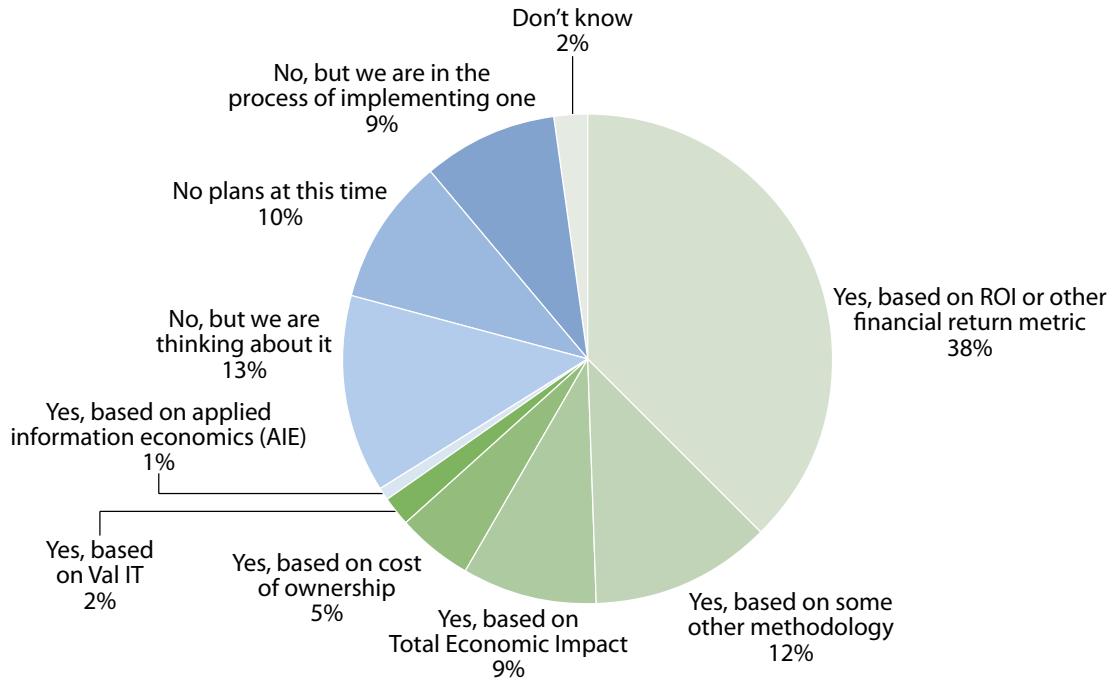
### Infrastructure Investments Aren't Business Case Justified But Are Funded Anyway

At many firms, current funding mechanisms for infrastructure investments are inadequate and can often lead to poor decisions, such as purchasing network capacity well in excess of expected needs or investing in system monitoring tools at the expense of more worthwhile expenditures on security. Without the benefit of a methodology for creating and reviewing a business case for these investments, organizations typically use one of five methods:

- **Stealth funding keeps the business in the dark.** Rather than directly fund infrastructure investments, the expense is buried in other areas of the IT budget by “padding them” and then “underspending” to use the “surplus” to fund infrastructure investments. The rationale behind hiding these expenses is that “the business doesn’t understand infrastructure and architecture so there is no use explaining it.” This obviously does not work for major expenditures such as server consolidation or virtualization or other projects that require access to large sums of capital.
- **Faith funding strains credibility.** Infrastructure investments are funded openly but without any attempt at value measurement or business case development. IT rationalizes the investment in infrastructure as necessary to keep up with technology or required to provide the agreed upon service levels to the business, or IT believes that the investment is required by the business to support its initiatives. Executive management and the business users are expected to believe that IT knows what’s best for the organization, and they trust IT to make the right decisions. This lack of accountability, compounded by years of growing IT budgets without any demonstrable value, undermines IT’s credibility and typically is the trigger for outsourcing discussions.
- **“Tax”-based funding can be wasteful.** The IT organization levies a tax on the business units in general or on business-sponsored IT investments to fund infrastructure investments. Each business unit is assessed based on some metric such as revenues, headcount, etc. The receipts from this tax are used by IT to fund infrastructure investments. This differs from chargeback in that there is no attempt to link the tax to any usage of IT services and the tax rate is set and cannot be influenced by any behavior by the business. This becomes a form of faith-based investment.

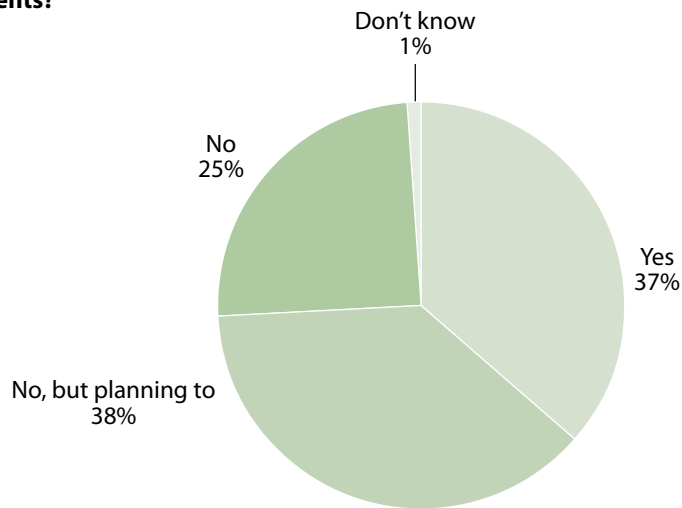
**Figure 1** Current Investment Management Practices

**1-1** "Do you use a standard business case template for IT investment proposals?"



Base: 317 technology decision-makers

**1-2** "Do you perform post-implementation reviews to measure the actual benefits obtained by IT investments?"



Base: 317 technology decision-makers

- **Chargeback often leads to wrong decisions.** IT uses chargeback to recover all of its costs of providing IT services, including new investments. With chargeback there is some attempt to link IT charges to some level of IT usage implying that business users can affect the level of chargeback by changing their behavior. Unfortunately, without detailed, consumption-based chargeback, users have no way of really linking IT charges to value — and the benefit to business areas of new infrastructure investment is highly suspect. This can lead to making wrong decisions, such as cutting back the use of IT when in fact increasing the use of IT may be more beneficial.<sup>2</sup>

### The Worst Case: Infrastructure Investment Isn't Valued; Hence, It's Not Funded

The worst scenario occurs when infrastructure investments are not funded at all due to the absence of any value measurement or business case. When IT capital investment budgets are established or divvied up across investment choices, infrastructure needs can't compete with business-sponsored initiatives. Many organizations are paying the price today for not investing in infrastructure in the past. These issues include outdated and no longer supported software, expensive to maintain hardware, a lack of agility, and other problems that make IT a barrier rather than an enabler.

### INFRASTRUCTURE VALUE CAN BE MEASURED — AND NEW INVESTMENTS JUSTIFIED

The investment funding problem IT executives face isn't that IT infrastructure doesn't have value, it's that organizations struggle with how to measure and communicate that value in a way that makes sense to executives and business leadership. The reality is that infrastructure provides the foundational capabilities for the higher-level IT investments that generate direct business value — but this does not lend itself to traditional cash flow or ROI measurements.

### IT Infrastructure Provides The Foundation For The Value Of The Complete IT Portfolio

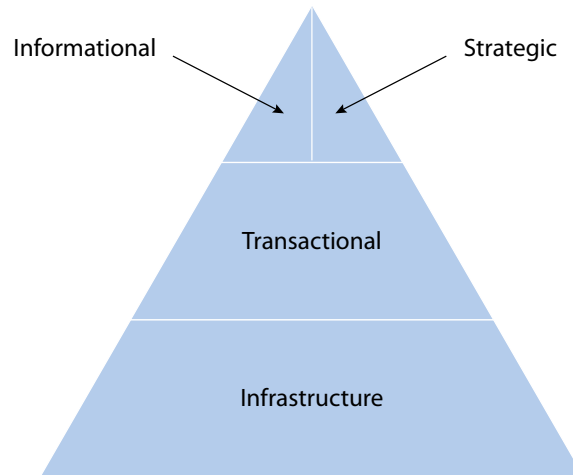
A valuable model for thinking about the context of IT infrastructure was developed several years ago by Peter Weil and Marianne Broadbent at the Center for Information Systems Research at MIT.<sup>3</sup> They view information technology as a portfolio that consists of four types of investments: infrastructure, transactional, informational, and strategic (see Figure 2). It is clear that infrastructure provides the foundation that supports the other three types of investments:

- **Transactional IT automates basic processes.** Much of the early focus of IT (when it was DP) was automating back-office functions. Modern-day implementations are typically based on an ERP application. Business functions supported by transactional IT include order processing, general ledger, accounts receivable, etc. The main objective of transactional IT is to lower the costs of doing business by substituting IT for people.

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**Figure 2** Infrastructure In Context

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Source: Center for Information Research, Sloan School of Management, MIT

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Source: Forrester Research, Inc.

- **Informational IT.** Managing and controlling a firm requires access to information and support for decision-making, which is the thrust of informational IT. Often, informational systems use capabilities provided by the infrastructure and transactional systems. Knowledge management and collaboration applications are examples of informational IT. The main objective of informational IT is to make better decisions, faster.
- **Strategic IT.** Strategic IT is typically game-changing IT. The goal is to provide a competitive differentiator that will enable an organization to gain market share and drive incremental growth. Eventually these investments are matched by competitors and no longer provide an advantage. Often they evolve into transactional or even infrastructure IT. For example, an airline's capability to enable its customers to print out boarding passes before they leave home provides a competitive advantage for a period of time until all other major airlines offer the capability, at which point it becomes a necessary cost of doing business.

### Infrastructure Investments Differ From Other IT Portfolio Investments

The foundational nature of IT infrastructure investments is what makes them more difficult to value. These differences are manifested in two significant ways:

- **The benefits of infrastructure investments tend to be more intangible.** Because infrastructure investments are typically not directly linked to a business objective, their benefits tend to be described in terms like "improved security," "provide for more agility," or "increase efficiency."

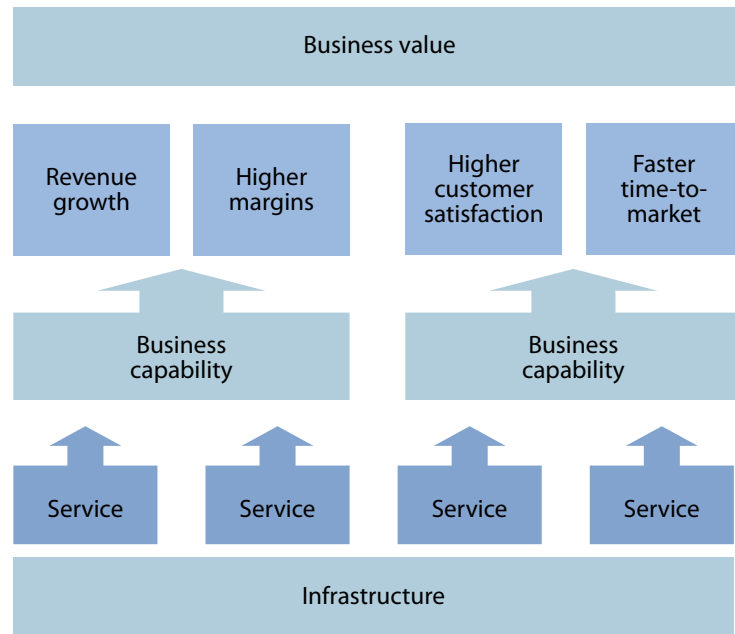
These are descriptions that appear difficult, if not impossible, to quantify. The logic used is that intuitively, if we make these investments, things will be better.

- **Infrastructure investments often provide for future value.** Due to their nature as foundational, infrastructure investments often not only deliver value today, they also leave open the possibility of delivering value in the future through incremental investments. This is very similar to the concept of financial options. For example, investing in a blade server rack that will initially only be half filled provides for future capacity expansion by adding additional blades at a relatively modest incremental cost, or implementing an ERP application for accounting leaves open the option to add HR, CRM, and other modules at a later time.

### Calculating Infrastructure Value Begins With Business Visible Services

The difficulty in trying to value infrastructure investments lies in their existence as assets such as computer hardware (e.g., a server or storage array), software (e.g., Linux operating system, Oracle database), or networking (e.g., routers, switches, wireless access points). However, when these assets are redefined by the service they provide — such as email services, data access services, disaster recovery services, security services, or hosting services — it becomes a different story (see Figure 3):

**Figure 3** The Infrastructure Value Chain



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Source: Forrester Research, Inc.

- **Infrastructure services enable business capabilities that have business value.** The power of the service perspective is that it takes a set of discrete components and redefines them into a tangible service that can almost always be linked to tangible value by business users. For example: a Web hosting service enables a business capability of online ordering by customers, which in turn provides value by reducing the cost of sales, or a disaster recovery service provides the business capability of continuous service, which provides value by eliminating the loss of revenues due to key systems outages.
- **Outsourcing alternatives provide means to benchmark costs and features.** The existence of a mature outsourcing market has created an environment where almost every IT service can be provided by an external service firm such as IBM Global Services, Accenture, or EDS. This creates opportunities to benchmark cost and value.

### Intangible Benefits From Infrastructure Investments Can Be Measured

Where infrastructure investments appear to provide intangible benefits, an attempt must be made to measure and quantify those benefits. There is a methodology that has been developed to assist in measuring so-called intangibles. In his book *How to Measure Anything: Finding the Value of "Intangibles" in Business*, Doug Hubbard describes this methodology in depth.<sup>4</sup> The core of his process revolves around the concept of a clarification chain:

- **Clarification chains connect intangible benefits to tangible results.** A clarification chain is simply a short series of connections that transforms an intangible to a tangible. For example, we may recognize that improving customer satisfaction is something that we care about. If it is something that we care about, then it must be detectable in some way. If it is detectable, then it must be detectable in some amount. In other words if you can observe something, then you can certainly observe if there is more of it or less of it. If you can observe it in some amount, then it is measurable.

**Infrastructure investment benefits are made tangible by their business impact.** The reality is that almost every intangible can be made more tangible by applying a disciplined approach to defining it. For example, we are considering making an investment to improve our security. Intuitively, we know that this is a good thing — but how much of a good thing? Using the clarification chain, we would certainly agree that we care about improving security, and we can answer questions like: What do we mean by improved security, and what does it look like? Improved security would imply fewer unplanned outages as a result of viruses, denial of service attacks, etc. What is the cost associated with an unplanned outage? How many fewer would we expect by making this investment?



### Infrastructure Investments Create Future Value Options

Some infrastructure investments can increase an organization's options in the future. Current IT investments in infrastructure often make it possible to respond more quickly to unexpected and unforeseeable needs in the future. Some investments may provide current benefits as well as position the organization to leverage the investment in later years to add incremental value. The value of an option is a well-understood concept in the securities markets. Options give their owners the right to buy or sell a stock at a given price within a specified time period. The key benefit of an option is that it provides for the opportunity of greater profit in the future while requiring much less capital upfront than it would to buy or sell the actual stock.

If we apply the concept to IT, the cost of a proposed investment might exceed its current tangible and intangible benefits. However, if the project creates opportunities for additional benefits in the future, then it has an options value that should be quantified and added to the other benefits. This future options value can be quantified using established methodologies.<sup>5</sup> The value of the investment is the sum of the tangible, intangible, and options benefits. The total investment in terms of benefits and costs should be evaluated using standard value methodology, such as Forrester's Total Economic Impact, the IT Governance Institute's Val IT, and Hubbard Decision Research's Applied Information Economics.<sup>6</sup>

### HYPOTHETICAL EXAMPLE — ACME WIRELESS NETWORK INFRASTRUCTURE

Acme, a consumer goods company, was deciding whether to upgrade its networking infrastructure to support wireless network access throughout its five-building corporate campus. The cost of the upgrade included the acquisition and installation of the required access points, as well as the wireless adapters that desk-side client devices would require and new wireless capable laptops for mobile employees. These costs were estimated to be \$1.75 million. When it came to estimating the value of this upgrade, Acme was able to identify \$350,000 of tangible savings that would result from reducing future wiring costs as well as an ongoing reduction in the cost of moves, adds, and changes — hardly a compelling investment case.

However, Acme also believed that there would be intangible benefits as a result of productivity gains and potential future benefits as well. Its investment proposal contained the following measures for these intangible and future benefits:

- **Intangible benefits from improved productivity.** Acme ran a small pilot against a cross-section of professional users. During the pilot it observed that the average employee saved 2 hours per week as a result of being able to connect anywhere. By taking the average weighted hourly cost of a professional employee and multiplying this against a 2-hour-per-week productivity increase, Acme was able to quantify this benefit.

- **Future options benefits from mobility.** Acme also realized that as wireless hot spots increased over time that employees with wireless laptops would be able to be even more productive because they would be able to connect to the network when traveling beyond the campus. Furthermore, this wireless access capability could be leveraged in the event that a building or the entire campus became unusable for any reason since Acme could easily and quickly set up temporary space with full network access without having to do any wiring.

When the tangible benefits were combined with the intangible benefits and the future options benefits, the decision to invest in this network infrastructure upgrade became evident (see Figure 4).

**Figure 4** Acme's Network Infrastructure Investment Analysis

<b>Acme wireless network infrastructure upgrade</b>	
<b>Benefit type</b>	<b>Benefit amount</b>
Tangible benefits	\$350,000
Intangible benefits	\$1,813,000*
<b>Future options benefits</b>	
Mobility option	\$450,000
Disaster/recovery option	\$125,000
<b>Total benefits</b>	<b>\$2,738,000</b>
Costs	\$1,750,000
<b>Business value</b>	<b>\$988,000</b>

\*Total hourly savings were 3,626 (2 hrs/wk x 49 weeks) per year  
Fully burdened hourly cost for professional employees was \$37/hr  
500 employees x \$37/hr x 3,626 hours = \$1,813,000

## RECOMMENDATIONS

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### ESTABLISH AN INFRASTRUCTURE VALUE CHAIN

The benefits of infrastructure investments can be quantified, even if they are mostly thought to be intangible. By using well-established tools, processes, and methodologies, organizations can measure and compare proposed infrastructure investments alongside other investment proposals with directly measurable business benefits.

- **Adopt a service portfolio management process.** Change the asset mindset of IT to a service mindset. Begin by assessing everything that IT is doing for its users/customers and then define them as services. Each service is typically provided by some combination of IT assets.
- **Stop making excuses for not measuring value.** Almost anything, no matter how intangible, can be measured. Adopt processes and techniques for quantifying the value of intangibles, and make sure that this is included in infrastructure investment proposals.
- **Don't overlook the options value.** Infrastructure investments often have the potential for future benefits. There are readily available methodologies for quantifying this options value. IT should work closely with the finance organization to better understand and use the appropriate tools and ensure that this is incorporated into infrastructure business cases.

## WHAT IT MEANS

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### IT IS A BUSINESS

IT organizations are really no different than any other organization and should be held to the same management principles and measurement. The more transparent that the CIO makes IT's investment process, the more business value will be realized and observed. CIOs who fail to do this will most likely be forced into holding serious outsourcing discussions as the business leadership looks to gain more clarity and control over their IT costs and benefits.

## ENDNOTES

- <sup>1</sup> IT capabilities are increasingly embedded in the core business processes of organizations today, and for a growing number of organizations, they are also enabling new products and services and contributing to competitive differentiation. Given IT's importance, making the right IT investment decisions is critical to organizational success. Yet our research indicates that many do not have formal IT investment processes, do not use consistent and robust business cases, and do not measure actual benefits delivered. See the July 19, 2007, "[Making The Right IT Investment Decisions](#)" report.
- <sup>2</sup> IT chargeback remains the best tool for influencing end user behavior, but only if it delivers enough information about the actual cost of IT services that are consumed and enables end user management to link its IT consumption to value. See the December 18, 2006, "[IT Chargeback: Influencing User Behavior](#)" report.
- <sup>3</sup> Information technology is the single largest capital expense in many firms today and is integral to achieving business goals. It is the new infrastructure for organizations that enables new products and services, new organizational forms, access to new markets, and innovative ways to deliver services faster. In the Harvard Business School Press book *Leveraging The New Infrastructure: How Market Leaders Capitalize On Information Technology*, Peter Weill and Marianne Broadbent describe a process for IT decision-making around IT investments.
- <sup>4</sup> Measurement challenges abound especially when it comes to IT and specifically IT investments. Measuring the business value of IT is difficult at best. For easy-to-follow methods for measuring intangibles, measuring risk, or even measuring the value of information see the book *How to Measure Anything: Finding the Value of "Intangibles" in Business* by Douglas W. Hubbard.
- <sup>5</sup> The value of flexibility and future options within IT systems directly parallels the value of other business options. Once this connection is made, the specific value of flexibility can be quantitatively calculated and communicated using tools such as the Black-Scholes options pricing model where the cost of the flexibility can be directly compared to the value of the options created. See the June 8, 2004, "[Valuing IT Flexibility](#)" report.
- <sup>6</sup> Forrester reviewed a number of IT value methodologies that were developed during the past few years and employed in actual IT investment analysis. All of the methodologies provide a set of tools to help organizations more accurately predict returns from their IT investments and overcome many of the weaknesses in using simple financial metrics. See the September 25, 2006, "[Measuring The Business Value Of IT](#)" report.

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